

Jane's

Fighting Ships 2009-2010

Edited by Commodore Stephen Saunders RN

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Glossary: Jane's Fighting Ships

Type abbreviations are listed at head of Pennant List

AAW	Anti-Air Warfare	EEZ	Exclusive Economic Zone
ACDS	Advanced Combat Direction System	EHF	Extreme High Frequency
ADCAP	ADvanced CAPabilities	ELF	Extreme Low Frequency radio
AEW	Airborne Early Warning	ELINT	Electronic intelligence, for example, recording radar, W/T and so on
AIP	Air Independent Propulsion	EMALS	Electromagnetic Aircraft Launching System
ALSC	Afloat Logistics and Sealift Capability	ERGM	Extended-Range Guided Munitions
ARCI	Acoustic Rapid COTS Insertion	ESM	Electronic Support Measures for example, intercept
ARM	Anti-Radiation Missile	ESSM	Evolved Sea Sparrow Missile
ASDS	Advanced Swimmer Delivery System	EW	Electronic Warfare
A/S, ASW	Anti-Submarine (Warfare)	FLIR	Forward-Looking Infra-Red
ASM	Air-to-Surface Missile	FRAM	Fleet Rehabilitation And Modernisation programme
ASROC	Rocket assisted torpedo, part of whose trajectory is in the air	GCCS	Global Command and Control System
ASV	Air-to-Surface Vessel	GFCG	Gun Fire-Control System
AUV	Autonomous Underwater Vehicle	GPS	Global Positioning System
BPDMS	Base Point Defence Missile System	grt	gross registered tonnage (see tonnage)
Cal	Calibre - the diameter of a gun barrel; also used for measuring length of the barrel for example a 6 in gun 50 calibres long (6 in/50) would be 25 ft long	HDTI	High Definition Thermal Imager
CEC	Co-operative Engagement Capability	HIFR	Helicopter In-Flight Refuelling
CIWS	Close-In Weapon System	HF	High Frequency
CODAG,	Descriptions of mixed propulsion systems:	Horsepower (hp)	Power developed or applied:
CODOG,	combined diesel and gas turbine electric,	or (hp(m))	
CODAGE	diesel or gas turbine, gas turbine and gas turbine, gas	(a)	bhp: brake horsepower = power available at the crankshaft
CODLAG,	diesel and gas turbine, diesel-electric and gas turbine,	(b)	shp: shaft horsepower = power delivered to the propeller shaft
CODLAG,	turbine or gas turbine, steam and gas turbine, gas	(c)	ihp: indicated horsepower = power produced by expansion of gases in the cylinders of reciprocating steam engines
COGOG,	turbine and electricity	(d)	1 kW = 1.341 hp = 1.360 metric hp 1 hp = 0.746 kW = 1.014 metric hp 1 metric hp = 0.735 kW = 0.968 hp
COSAG,		(e)	Sustained horsepower may be different for similar engines in different conditions
COGAL			
COTS	Commercial Off-The-Shelf	IFF	Identification Friend/Foe
cp	controllable pitch (propellers)	IRST	Infra-Red Search and Track
DDS	Dry Dock Shelter	JMCIS	Joint Maritime Command Information System
DP	Dual Purpose (gun) for surface or AA use	JTIDS	Joint Tactical Information Distribution System
Displacement	Basically the weight of water displaced by a ship's hull when floating:	kT	kiloton
	(a) Light: without fuel, water or ammunition	kW	kilowatt
	(b) Normal: used for Japanese MSA ships. Similar to 'standard'	LAMPS	Light Airborne Multipurpose System
	(c) Standard: as defined by Washington Naval Conference 1922 - fully manned and stored but without fuel or reserve feed-water	LAMS	Local Area Missile System
	(d) Full load: fully laden with all stores, ammunition, fuel and water	Length	Expressed in various ways:
dwt	deadweight tonnage (see tonnage)	(a)	oa: overall = length between extremities
EARS	Electromagnetic Aircraft Recovery System	(b)	pp: between perpendiculars = between fore side of the stem and after side of the rudderpost
ECM	Electronic countermeasures, for example, jamming	(c)	wl: waterline = between extremities on the water-line
ECCM	Electronic counter-countermeasures		



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GLOSSARY: JANE'S FIGHTING SHIPS

LF	Low Frequency	SSDE/SSE	Submerged Signal and Decoy Ejector
MAD	Magnetic Anomaly Detector	SSDS	Ship Self-Defence System
MDF	Maritime Defence Force	SSM	Surface-to-Surface Missile
Measurement	See Tonnage	SSTDs	Surface Ship Torpedo Defence System
MF	Medium Frequency	STIR	Surveillance Target Indicator Radar
MFCS	Missile Fire-Control System	STOBAR	Short Take Off and Barrier Arrested Recovery
MG	Machine Gun	STOVL	Short Take Off and Vertical Landing
MIDAS	Mine and Ice Detection Avoidance System	SUM	Surface-to-Underwater Missile
MIRV	Multiple, Independently targetable Re-entry Vehicle	SURTASS	Surface Towed Array Surveillance System
MPA	Maritime Patrol Aircraft	SWATH	Small Waterplane Area Twin Hull
MSA	Japan Maritime Safety Agency	TACAN	Tactical Air Navigation beacon
MSC	US Military Sealift Command	TACTASS	Tactical Towed Acoustic Sensor System
MW	Megawatt	TAINS	Tercom Aided Inertial Navigation System
NBC	Nuclear, Biological and Chemical (warfare)	TAS	Target Acquisition System
net	net registered tonnage (see tonnage)	TASM	Tomahawk Anti-Ship Missile
n mile	nautical mile (mean value 1.8532 km)	TASS	Towed Array Surveillance System
NMRS	Near-term Mine Reconnaissance System	TBMD	Theatre Ballistic Missile Defence
NTDS	Naval Tactical Direction System	Tercom	Terrain Contour Matching
oa	overall length	TLAM	Tomahawk Land Attack Missile
OTC	Officer in Tactical Command	Tonnage	Measurement tons, computed on capacity of a ship's hull rather than its 'displacement' (see above):
OTH	Over The Horizon Targeting		(a) Gross: the internal volume of all spaces within the hull and all permanently enclosed spaces above decks that are available for cargo, stores and accommodation. The result in cubic feet divided by 100 = gross tonnage
PAAMS	Principal Anti-Air Missile System		(b) Net: gross minus all those spaces used for machinery, accommodation and so on ('non-earning' spaces)
PAP	Poisson Auto Propulse		(c) Deadweight (dwt): the amount of cargo, bunkers, stores and so on, that a ship can carry at her load draught
PDMS	Point Defence Missile System	Tonne	1,000 kilos = 2,204.6 lb
PWR	Pressurised Water Reactor		Imperial (long) ton = 1.016 tonne or 2,240 lb
QRCC	Quick Reaction Combat Capability		US (short) ton = 0.9072 tonne or 2,000 lb
RAIDS	Rapid Anti-ship missile Integrated Defence System	UAV	Unmanned Aerial Vehicle
RAM	Radar Absorbent Material	UCAV	Unmanned Combat Aerial Vehicle
RAM	Rolling Airframe Missile	UHF	Ultra-High Frequency
RAS	Replenishment At Sea	USM	Underwater-to-surface missile
RAST	Recovery, Assist, Secure and Traverse system	USV	Unmanned Surface Vehicle
RBU	Anti-submarine rocket launcher	UUV	Unmanned Undersea Vehicle
RCS	Radar Cross Section	VDS	Variable Depth Sonar, can be lowered to best listening depth. In helicopters called 'dunking sonar'.
RIB	Rigid Inflatable Boat		Vertical replenishment
Ro-Ro	Roll-on/Roll-off	Vertrep	Vertical replenishment
ROV	Remote Operated Vehicle	VLF	Very Low Frequency radio
rpm	revolutions per minute	VLS	Vertical Launch System
SAM	Surface-to-Air Missile	VSTOL	Vertical or Short Take-Off/Landing
SAR	Search And Rescue	VSV	Very Slender Vessel
SATCOM	SATellite COMmunications	VTOL	Vertical Take-Off/Landing
SAWCS	Submarine Acoustic Warfare Countermeasures System	wt	waterline length
SES	Surface Effect Ship		
SHF	Super High Frequency		
SINS	Ship's Inertial Navigation System		
SLBM	Submarine-Launched Ballistic Missile		
SLCM	Ship-Launched Cruise Missile		
SLEP	Service Life Extension Programme		
SMCS	Submarine Command System		
SRBOC	Super Rapid Blooming Offboard Chaff		



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How to use: Jane's Fighting Ships

(see also Glossary and Type abbreviations)

- (1) Details of major warships are grouped under six separate non-printable headings. These are:-
 - (a) **Number and Class name.** Totals of vessels per class are listed as 'in service + building (proposed)' or 'in service + transfer (proposed)'.
 - (b) **Building programme.** This includes builders' names and key dates. In general the 'laid down' column reflects keel laying but modern shipbuilding techniques make it difficult to be specific about the start date of actual construction. Launching and christening can be similarly confusing, now that many ships are lowered into the water and formally christened some time later. Some nations commission their ships on completion of building, others after the ships have completed trials. In this hardcopy edition any date after April 2009 is projected or estimated and therefore liable to change.
 - (c) **Hull.** This section tends to have only specification and performance parameters and contains little free text. Hull related details such as **Military lift** and **Cargo capacity** may be included when appropriate. **Displacement** and **Measurement** tonnages, **Dimensions**, **Horsepower** and so on, are defined in the Glossary. Throughout the life of a ship its displacement tends to creep upwards as additional equipment is added and redundant fixtures and fittings are left in place. For the same reasons, ships of the same class, active in different navies, frequently have different displacements and other dissimilar characteristics. Unless otherwise stated the lengths and widths given are overall and the draught is at full load. Sustained maximum horsepower is given where the information is available and may not be the same for similar engines operating in different hulls under different conditions. **Speed** is the maximum obtainable under trials conditions.
 - (d) **Weapon systems.** This section contains operational details and some free text on weapons and sensors which are laid out in a consistent order using the same subheadings throughout the book. The titles are:- **Missiles** (subdivided into SLBM, SSM, SAM, A/S); **Guns** (numbers of barrels are given and the rate of fire is 'per barrel' unless stated otherwise); **Torpedoes**; **A/S mortars**; **Depth charges**; **Mines**; **Countermeasures**; **Combat data systems**; **Weapons control**; **Electro-optic systems**; **Radars**; **Sonars**. The Weapons control heading is used for weapons' direction equipment. In most cases the performance specifications are those of the manufacturer and may therefore be considered to be at the top end of the spectrum of effective performance. So-called 'operational effectiveness' is difficult to define, depends upon many variables and in the context of range may be considerably less than the theoretical maximum. Numbers inserted in the text refer to similar numbers included on line drawings.
 - (e) **Aircraft.** Only the types and numbers are included here. Where appropriate each country has a separate section listing overall numbers and operational parameters of front-line shipborne and land-based maritime aircraft, normally included after the Frigate section if there is one.
 - (f) **General comments.** A maximum of six sub-headings are used to sweep up the variety of additional information which is available but has no logical place in the other sections. These headings are: **Programmes**; **Modernisation**; **Structure**; **Operational**; **Sales** and **Opinion**. The last of these allows space for informed comment. Some ships remain theoretically in the order of battle in some navies even though they never go to sea and could be more accurately described as in reserve. Where this is known comment is made under **Operational**.
- (2) Minor or less important ship entries follow the same format except that there is often much less detail in the first four headings and all additional remarks are put together under the single heading of **Comment**. The distinction between major and minor depends upon editorial judgement and is primarily a function of firepower. The age of the ship or class and its relative importance within the Navy concerned is also taken into account.
- (3) The space devoted to front-line maritime aircraft reflects the importance of air power as an addition to the naval weapon systems armoury, but the format used is necessarily brief and covers only numbers, roles and operational characteristics. Greater detail can be found in *Jane's All the World's Aircraft* and the appropriate volume of the *Jane's Weapon Systems* series.
- (4) Other than for coastal navies, tables are included at the front of each country section with such things as strength of the fleet, senior appointments, personnel numbers, bases and so on. There is also a list of pennant numbers and a deletions column covering the previous three years. If you cannot find your favourite ship, always look in the **Deletions** list first.
- (5) No addenda is included because modern typesetting technology allows changes to the main text to be made up to a few weeks before publication.
- (6) Shipbuilding companies and weapons manufacturers frequently change their names by merger or takeover. As far as possible the published name shows the title when the ship was built or weapon system installed. It is therefore historically accurate.
- (7) Like many descriptive terms in international naval nomenclature, differences between Coast Guards, Maritime Police, Customs and other paramilitary maritime forces are often indistinct and particular to an individual nation. Such vessels are usually included if they have a paramilitary function and are armed.
- (8) When selecting photographs for inclusion, priority is given to those that have been taken most recently. A glossy picture five years old may look nice but often does not show the ship as it is now.
- (9) The Navies by country section is geared to the professional user who needs to be able to make an assessment of the fighting characteristics of a Navy or class of ship without having to cross refer to other Navies and sections of the book. Much effort has also been made to prevent entries spilling across from one page to another.
- (10) Regular updates can be found online at jfs.janes.com.
- (11) Photographs are dated and where * appears a new or re-scanned photograph has been substituted or added. Many are followed by a seven digit number to ease identification.

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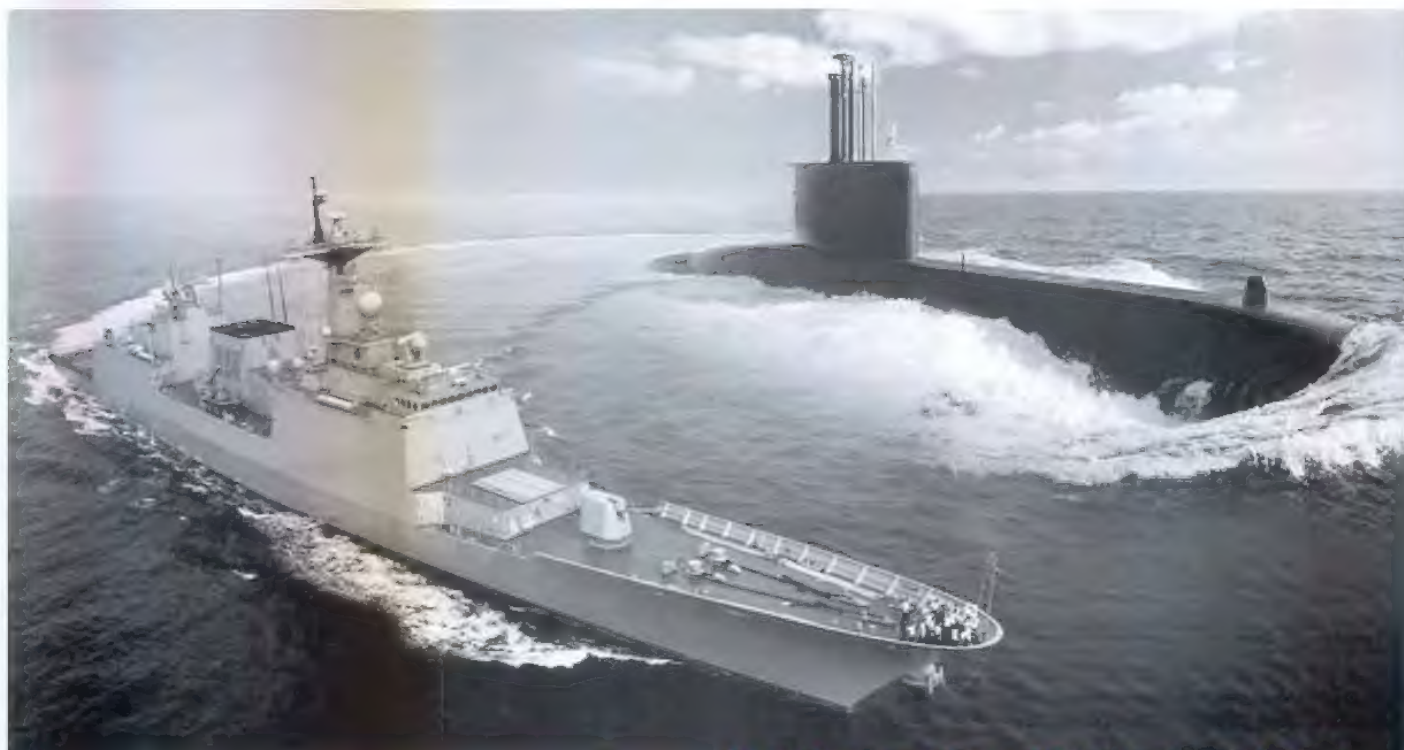
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Ensigns and flags of the world's navies

In cases where countries do not have ensigns their warships normally fly the national flag.



Albania
Ensign



Argentina
National Flag and Ensign



Bangladesh
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Bermuda
Ensign



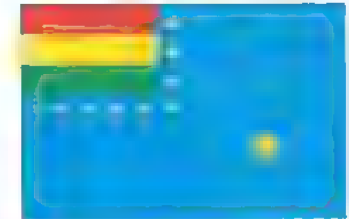
Algeria
Ensign



Australia
Ensign



Barbados
Ensign



Bolivia
Ensign



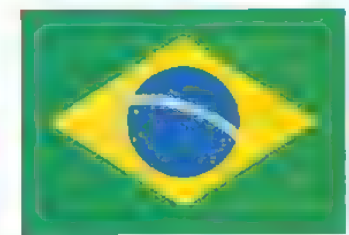
Angola
National Flag and Ensign



Azerbaijan
Ensign



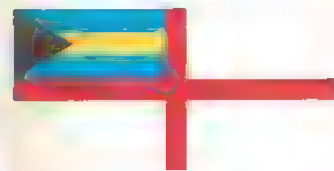
Belgium
Ensign



Brazil
National Flag and Ensign



Anguilla
National Flag



Bahamas
Ensign



Belize
National Flag and Ensign



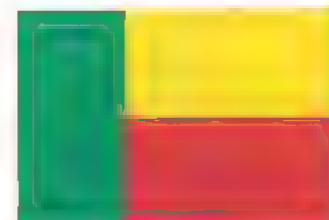
British Indian Ocean Territory
National Flag



Antigua and Barbuda
Ensign



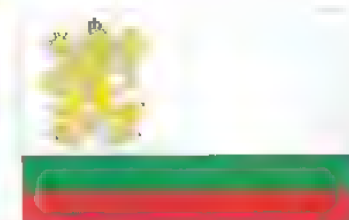
Bahrain
National Flag and Ensign



Benin
National Flag and Ensign



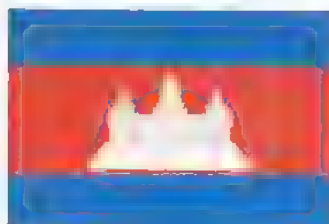
Brunei
Ensign



Bulgaria
Ensign

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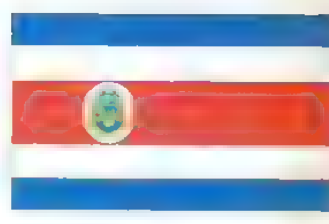
ENSIGNS AND FLAGS OF THE WORLD'S NAVIES



Cambodia
National Flag and Ensign



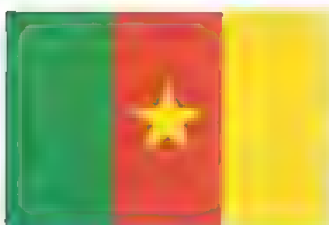
China
Ensign



Costa Rica
Ensign



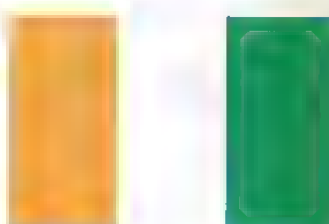
Denmark
Ensign



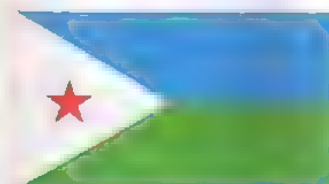
Cameroon
National Flag and Ensign



Colombia
Ensign



Côte d'Ivoire
National Flag and Ensign



Djibouti
National Flag and Ensign



Canada
National Flag and Ensign



Comoros
National Flag and Ensign



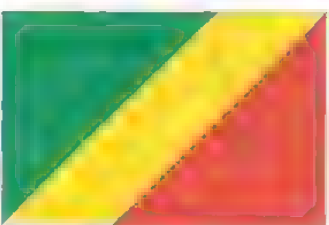
Croatia
Ensign



Dominica
National Flag and Ensign



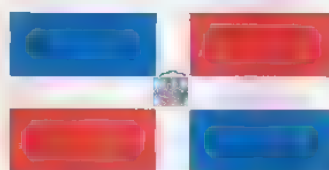
Cape Verde
National Flag



Congo-Brazzaville
National Flag and Ensign



Cuba
National Flag and Ensign



Dominican Republic
Ensign



Cayman Islands
National Flag



Democratic Republic of Congo
National Flag and Ensign



Cyprus
National Flag and Ensign



East Timor
National Flag and Ensign



Chile
National Flag and Ensign



Cook Islands
National Flag

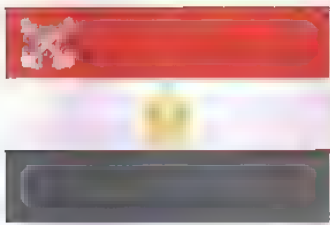


Cyprus, Turkish Republic of Northern (Not recognised by United Nations)
National Flag and Ensign



Ecuador
Ensign

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Egypt
Ensign



Falkland Islands
Falkland Islands Flag



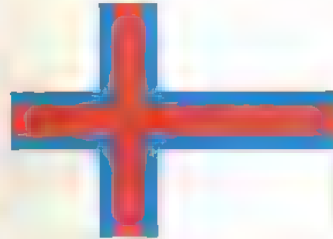
Gambia
National Flag and Ensign



Guatemala
National Flag and Ensign



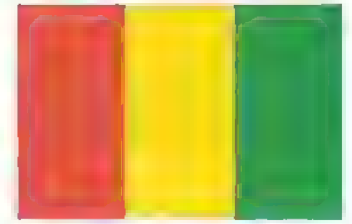
El Salvador
National Flag and Ensign



Faroe Islands
Territory Flag



Georgia
Ensign



Guinea
National Flag and Ensign



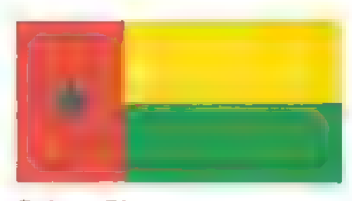
Equatorial Guinea
National Flag and Ensign



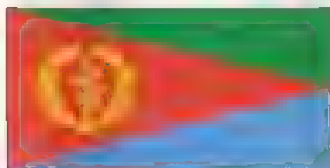
Fiji
Ensign



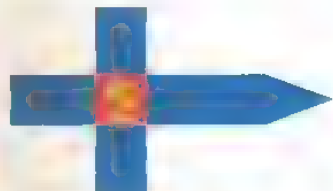
Germany
Ensign



Guinea-Bissau
National Flag and Ensign



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National Flag and Ensign



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Ensign



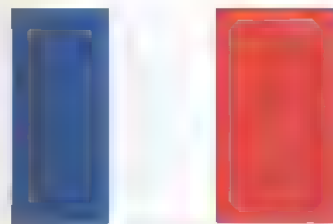
Ghana
Ensign



Guyana
National Flag and Ensign



Estonia
Ensign



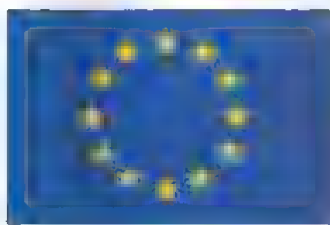
France
National Flag and Ensign



Greece
National Flag and Ensign



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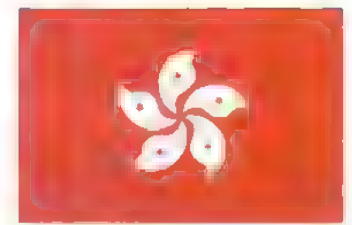
European Union
Flag of the European Union



Gabon
National Flag and Ensign



Grenada
Ensign



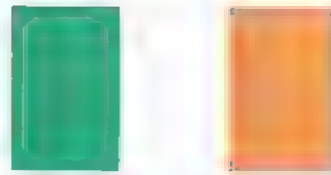
Hong Kong
Regional Flag and Ensign

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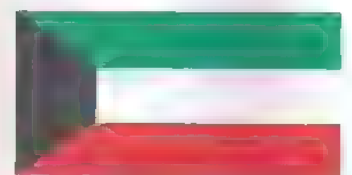
Hungary
National Flag



Ireland
National Flag and Ensign



Jordan
Ensign



Kuwait
National Flag and Ensign



Iceland
Ensign



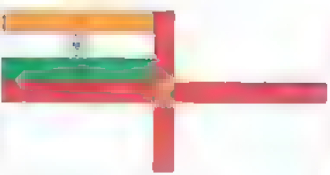
Israel
Ensign



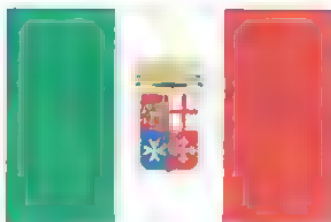
Kazakhstan
Ensign



Latvia
Ensign



India
Ensign



Italy
Ensign



Kenya
Ensign



Lebanon
National Flag and Ensign



Indonesia
National Flag and Ensign



Jamaica
Ensign



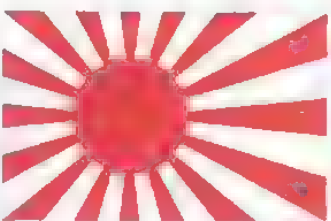
Kiribati
National Flag and Ensign



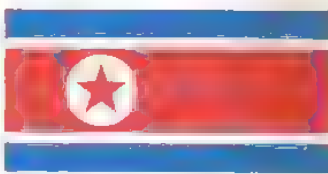
Liberia
National Flag and Ensign



Iran
National Flag and Ensign



Japan
Japan (Navy) Ensign



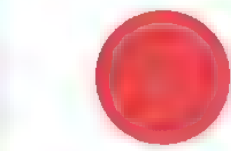
Korea, North
National Flag and Ensign



Libya
Ensign



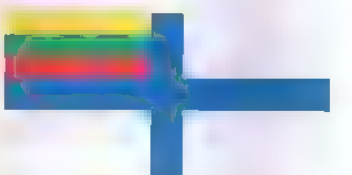
Iraq
National Flag



Japan
Japan (MSA) Ensign

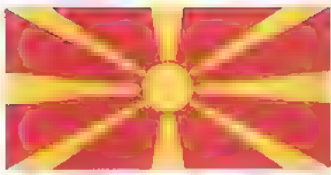


Korea, South
National Flag and Ensign

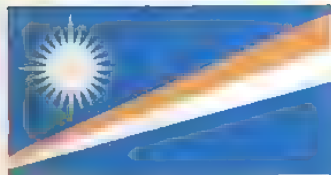


Lithuania
Ensign

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Macedonia, Former Yugoslav Republic of
National Flag



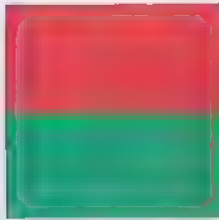
Marshall Islands
National Flag and Ensign



Morocco
Ensign



New Zealand
Ensign



Madagascar
National Flag and Ensign



Mauritania
National Flag and Ensign



Mozambique
National Flag and Ensign



Nicaragua
National Flag and Ensign



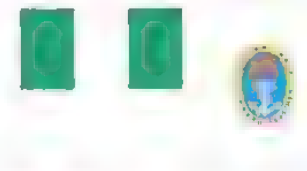
Malawi
National Flag



Mauritius
Ensign



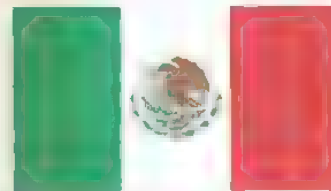
Myanmar
Ensign



Nigeria
Ensign



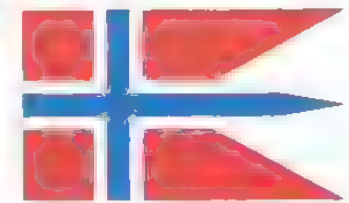
Malaysia
Ensign



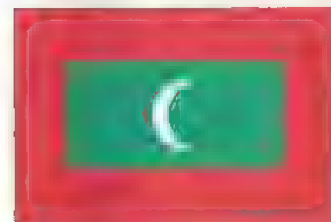
Mexico
National Flag and Ensign



Namibia
National Flag and Ensign



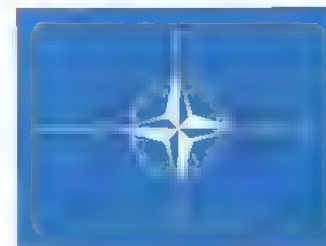
Norway
Ensign



Maldives
National Flag and Ensign



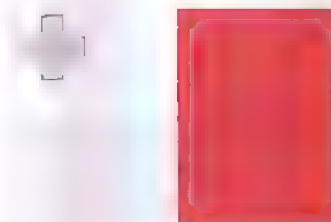
Federated States of Micronesia
Flag of the Federation



NATO
Flag of the North Atlantic Treaty Organisation



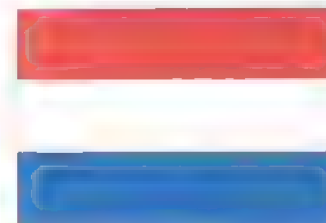
Oman
Ensign



Malta
National Flag and Ensign



Montenegro
National Flag



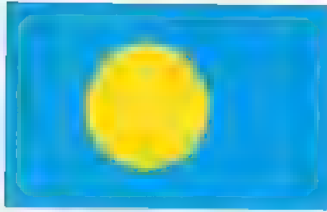
Netherlands
National Flag and Ensign



Pakistan
Ensign

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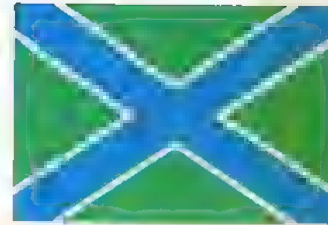
ENSIGNS AND FLAGS OF THE WORLD'S NAVIES



Palau
National Flag and Ensign



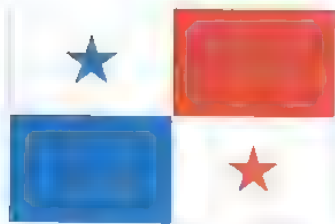
Philippines
National Flag and Ensign



Russian Federation
Border Guard Ensign



Senegal
National Flag and Ensign



Panama
National Flag and Ensign



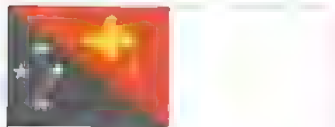
Poland
Ensign



St Kitts and Nevis
Ensign



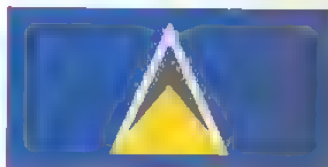
Serbia
Naval Ensign



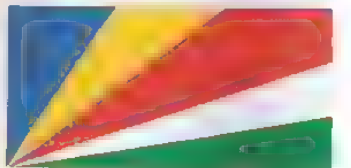
Papua New Guinea
Ensign



Portugal
National Flag and Ensign



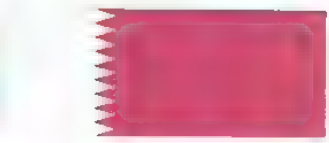
St Lucia
Ensign



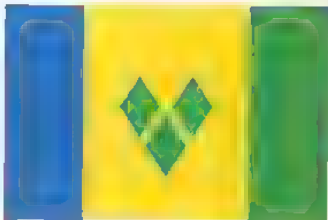
Seychelles
National Flag



Paraguay
National Flag and Ensign



Qatar
National Flag and Ensign



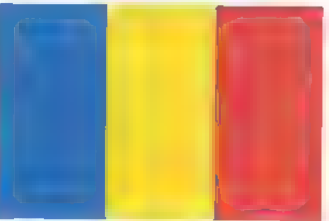
St Vincent and the Grenadines
National Flag and Ensign



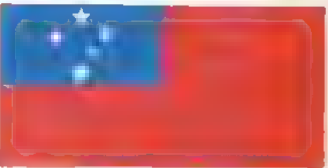
Sierra Leone
Ensign



Paraguay
National Flag and Ensign (reverse)



Romania
National Flag and Ensign



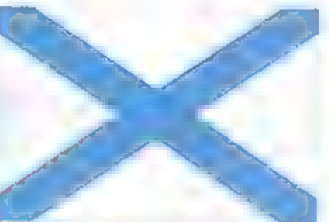
Samoa
National Flag and Ensign



Singapore
Ensign



Peru
National Flag and Ensign



Russian Federation
Ensign



Saudi Arabia
National Flag and Ensign



Slovenia
National Flag and Ensign

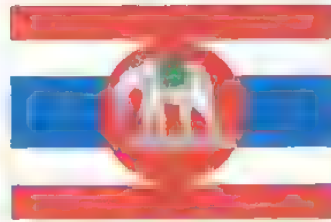
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Solomon Islands
Ensign



Sweden
Ensign



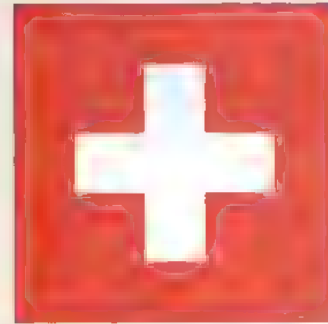
Thailand
Ensign



Turkmenistan
National Flag



South Africa
Ensign



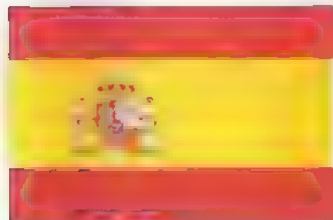
Switzerland
National Flag



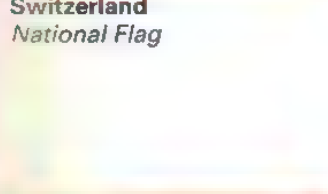
Togo
National Flag and Ensign



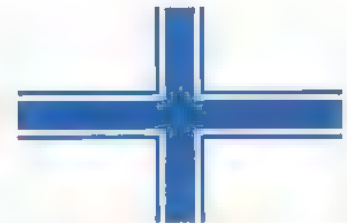
Tuvalu
National Flag and Ensign



Spain
National Flag and Ensign



Tonga
Ensign



Ukraine
Ensign



Sri Lanka
Ensign



Syria
National Flag and Ensign



Trinidad and Tobago
Ensign



United Arab Emirates
National Flag and Ensign



Sudan
National Flag and Ensign



Taiwan
National Flag and Ensign



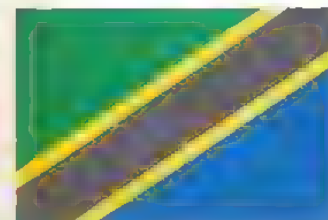
Tunisia
National Flag and Ensign



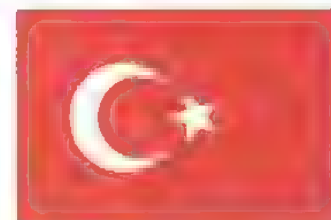
United Kingdom
Ensign



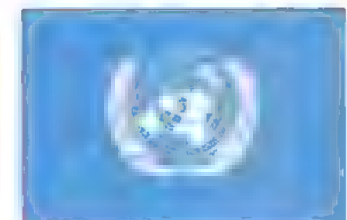
Suriname
National Flag and Ensign



Tanzania
National Flag and Ensign



Turkey
National Flag and Ensign



United Nations
Flag of the United Nations Organisation

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ENSIGNS AND FLAGS OF THE WORLD'S NAVIES



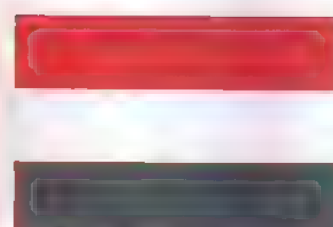
United States
National Flag and Ensign



Vanuatu
Ensign



Vietnam
National Flag and Ensign



Yemen
National Flag and Ensign



Uruguay
National Flag and Ensign



Venezuela
Ensign



Virgin Islands (UK)
National Flag



Zimbabwe
National Flag



DARING

8/2007*, BAE Systems Marine / 1353577

Executive overview: Fighting Ships

Introduction

The hijacking of *Sirius Star* on 15 November 2008 was one of the most noteworthy of many incidents of piracy over the last year. Fully laden with oil, the ship was captured approximately 450 n miles southeast of the Kenyan coast while en route to the United States via the Cape of Good Hope. While the ship was later released after the payment of a ransom, the incident symbolises the sophistication, boldness and ruthlessness of the Somali pirates, the difficulties in combating them faced by maritime forces and the lack of a suitable international system within which pirates can be brought to justice.

The world's navies have not been inactive; indeed there has been a welcome commonality of purpose demonstrated by nations, not all of whom are natural military partners. Multilateral efforts have included NATO and EU task groups as well as ships from Australia, China, India, Japan, South Korea, Russia and Singapore. Nor has there been any lack of robustness when forced to take self-defensive measures. Two assumed pirates were killed when a team from the British frigate, *Cumberland*, returned fire on a dhow that it was attempting to board, while the Indian frigate, *Tabar*, sank a Thai fishing vessel when fired upon by hijackers who had boarded the ship. Despite these efforts, the frequency of hijacking incidents has continued to rise.

According to the International Maritime Bureau, 51 vessels were attacked in the first three months of 2009 compared with 111 in the whole of 2008. This figure was a 200 per cent increase on the previous year. The capture of two ships up to 500 n miles offshore during late March and the *Maersk Alabama* incident in April 2009 demonstrated that their audacity and willingness to operate at long distances from land remain undiminished.

Three steps are required to mitigate the problem. First, the legal framework that covers military operations against pirates and the prosecution of suspects is in need of revision. Second, there is a need to improve maritime domain awareness. The 'horizon' of a single ship is limited by the performance of its sensors, and those of its embarked aircraft. While these could be augmented by land-based maritime patrol aircraft, the use of long dwell-time UAVs offer greater potential to build a reliable picture in which irregular or suspicious activity can be spotted. Third, tougher military measures are required both ashore and afloat. Surprise,

which has been the most effective weapon in the pirates' armoury, needs to be turned against them by using pre-emptive measures. Deterrence across a huge area of ocean is unlikely to succeed if ships are constrained to wait for the initiation of a hijacking which can take as little as 15 minutes. Ultimately, the solution to the problem lies in Somalia itself but, as restoration of the rule of law in that country remains a distant prospect, the problems of piracy in the region are destined to continue.

United States and Canada

US Africa Command (AFRICOM) became operational as a unified command on 1st October 2008 although its initial reception from African nations has been somewhat chilly due, it has been suggested, to American failure to gain prior support from key nations or from the African Union. For this reason, AFRICOM headquarters is likely to remain at Stuttgart, Germany, for the time being while Camp Lemonier in Djibouti, established in 2002 as a base for counterterrorism and humanitarian missions in the Horn of Africa, is to continue as the only US base on the continent. Despite lack of progress on land, a less politically sensitive sea-based approach is beginning to take effect.

The aim of the Africa Partnership Station (APS), modelled on the Global Fleet Stations concept, is both to provide a military presence in selected areas and to improve maritime security. This is achieved by the deployment of international training teams to build the skills, expertise and professionalism of African maritime forces. Typically, these are faced with problems of piracy, trafficking in drugs, humans and weapons, oil theft and illegal fishing. The first APS deployment to the Gulf of Guinea region was conducted by *Fort McHenry* and *Swift* from November 2007 to April 2008 and a further visit to the same area during February–May 2009 was made by *Nashville*. Time between major deployments is covered by shorter exercises and visits by ships, maritime patrol aircraft and mobile training teams. In the future, APS deployments are likely to expand into other regions of Africa. Overall the programme's relatively low profile is well suited to confidence-building and winning 'hearts and minds' and, in time, it could prove to be one of the US Navy's more enduring and productive initiatives.

The revival on 1 July 2008 of the US Fourth Fleet, originally established in 1943 and later disbanded in 1950, has also been controversial. Changing



GREEN BAY

6/2008*, US Navy, 1353678

attitudes to the US in South and Central America have evolved into outright hostility from some nations (Venezuela and Bolivia) to at best equivocation elsewhere in the continent. This has been a surprising trend in an area which, since the declaration of the Monroe Doctrine in 1823, has been regarded as part of the United States' backyard. A good example of deteriorating relationships has been the decision by the Ecuadorian government not to renew the lease of Manta airfield with a consequent loss of a conveniently located forward operating base for US maritime patrol and AWACS aircraft. Therefore, an underlying aim of the re-established fleet is to build relationships as well as to rationalise the various maritime missions conducted by US Southern Command. These include counter-terrorism and drug operations, security co-operation and training as well as humanitarian assistance and disaster relief.

The revival of the fleet is also recognition of the increasing strategic importance of the region, based on rising economic and military power: Latin America has been the United States' fastest growing regional trade partner in recent years. As with AFRICOM, the current aims and ethos of the new fleet are more about the exercise of 'soft' power than power projection. Ships and submarines are assigned on a temporary rather than permanent basis and recent activities have included exercises such as UNITAS and PANAMAX, both part of the Partnership of the Americas initiative. A notable achievement was the treatment of almost one hundred thousand patients during the 2008 deployment of the hospital ship *Comfort* to 12 nations in the region.

Notwithstanding these organisational and, to some extent, cultural changes, the US Navy is faced with hard decisions at a time when the future size and shape of the fleet is being scrutinised and debated by the new Obama administration and by Congress. Perhaps the only certainty about the new shipbuilding plan is that it is to be very different from its predecessor. In particular, aspirations to achieve a 313-ship navy are destined to be abandoned in favour of a more modest total, reflecting a possible cut of approximately 50 ships. Not only is there likely to be a reduction in numbers, but there could also be a shift of emphasis as a high-tech, high-cost approach is modified by a lower risk and more affordable plan. The carrier force is already planned to reduce from 11 to 10 during the two-year plus gap between the decommissioning of *Enterprise* in 2013 and the commissioning of *Gerald R Ford* in 2015. Adjustment to a five-year carrier build cycle means that this will become the permanent size of the force by 2040. The DDG 1000 programme has been reduced to three ships, although this is still subject to the successful negotiation of contracts. All of them are now likely to be built at Bath Iron Works rather than being shared between two shipyards. The future cruiser CGX programme has been delayed to allow time for a fundamental review of the requirement which could include consideration of nuclear propulsion. If so, overall numbers may be reduced from 19 ships to a possible eight and the design may not now be a derivative of DDG 1000.

It is unclear whether the resultant shortfall is to be compensated by the construction of other ships. In the short term, the DDG-51 building programme is to be re-started and this may be followed by an as yet undefined Future Surface Combatant. Plans for amphibious shipping and sea-basing programmes are also to be re-evaluated. Despite a somewhat checkered history, the Littoral Combat Ship programme looks to be one of the few to survive in its present form. Trials of *Freedom* were reported to have been successful and *Independence* is to sail for the first time in 2009. Meanwhile, the names of the next two ships were announced in March 2009 and construction of two competing designs looks set to continue. Ultimately, a class of 55 ships is planned. The Virginia-class submarine programme also remains unaffected; a building rate of two per year is expected to start in 2011.

The Canadian Navy's efforts to re-shape the fleet to undertake expeditionary operations continue to be frustrated by funding difficulties. In 2007, plans to establish a Standing Contingency Force were put 'on hold' but encouragement was taken at the time from the government's continuing commitment to the Joint Support Ship project. These three ships were to be capable of sealift and afloat support while also being equipped with a hospital and facilities for a Joint Task Force headquarters. Unfortunately, the bidders for the project were unable to meet the requirement within the allotted budget and so a review of the project was initiated in 2008. The extent to which the requirement is to be 'de-scoped' remains to be seen. However, it is possible that the whole concept will be abandoned in favour of solving the most pressing issue: replacement of the afloat support capability currently provided by the 40-year-old *Protecteur* and *Preserver*.

Not all Canadian news has been bad. The Halifax class modernisation programme is to get underway in 2010 with a view of extending ships' lives into the 2020s. These ships and the ageing Iroquois-class destroyers are to be replaced by the Canadian Surface Combatant programme which is to use a common hull and a modular approach. The Arctic Patrol Ship programme remains intact and there are plans to procure a new maritime patrol aircraft to enter service in about 2020. In the immediate future, the submarine

fleet is to be boosted by the return of *Victoria* and *Windsor* to operational duties in 2010, the same year in which the new Sikorsky Cyclone helicopter is to start entering service.

China

Future historians may come to regard 2009 as the year that the Chinese Navy finally came of age. The deployment to the Gulf of Aden of the modern destroyers, *Wuhan* and *Haikou*, supported by a supply ship, was the first overseas naval operational mission to be conducted since 1949. The opportunity to contribute to international efforts to suppress piracy in the region must have seemed heaven-sent to the Chinese Navy leadership which, with a well-developed eye for image, has increased the tempo of naval diplomacy and of participation in minor exercises with foreign navies in recent years. The mission to protect shipping against Somali pirates certainly has all the key ingredients: it is a relatively straightforward and uncontroversial operation; it involves international co-operation in a good cause and generates a lot of positive publicity both at home and abroad. It quickly became clear that this was not just a photo-opportunity. The ships got down to business and, soon after arrival in theatre, began merchant-ship escort duties on 12 January. All of this is in marked contrast to a series of incidents in early March 2009 in which the two US Navy surveillance vessels were apparently harassed by a frigate and a fisheries patrol vessel. Both *Impeccable* and *Victorious* were reportedly located about 100 miles from the Chinese coast in the South China Sea and, if so, were entitled to conduct their operations in international waters. Aggressive manoeuvring and/or the use of threatening language are both dangerous and unproductive; such incidents in the Cold War achieved little except to raise tensions.

The pace of underwater operations has increased as the submarine service begins to emerge from a period of major change that has included the decommissioning of older coastal submarines and the introduction into service of a new generation of nuclear-powered and conventional boats. These have not been without their teething problems and, as has been observed on these pages before, it would have been surprising if the build-up of the necessary levels of training and experience had not proved to be difficult. According to the Federation of American Scientists (FAS), the number of out-of-area submarine deployments, which had dipped to two in 2006, recovered to seven in 2007 and reached a total of 12 in 2008. This rising trend probably reflects the introduction into service of the Type 093 Shang-class nuclear-powered attack boats to supplement the ageing Han class and while, in overall terms, the scale of operations remains comparatively low, a pattern of increasing activity is likely to continue. More extensive use of the 25 modern conventional submarines is expected and, in particular, the Yuan class, probably equipped with Air Independent Propulsion (AIP), offers the potential for the conduct of covert operations. Meanwhile, the Jin-class ballistic missile submarines have yet to undertake a deterrent patrol. A test-firing of the JL-2 missile reportedly took place in June 2008 but there have been no indications that it has yet proved capable of operational deployment.

The sixth (since 1998) in the series of biannual Defence White Papers, 'China's National Defence in 2008' was published on 20 January 2009. The overall tone of the paper is measured and reasonable as it seeks to soothe international concerns about the rationale behind China's military build-up. 'China pursues a national defense policy which is purely defensive in nature' and 'China will never seek hegemony or engage in military expansion now or in the future, no matter how developed it becomes' are typical statements. Even the vexed question of Taiwan is treated in emollient terms. Following a change of government on the island, 'The attempts of the separatist forces for "Taiwan independence" to seek "de jure Taiwan independence" have been thwarted, and the situation across the Taiwan Straits has taken a significantly positive turn'. Nevertheless, the data provided in the White Paper does give cause for concern. According to the figures, the Chinese defence budget rose by a massive 19.3 per cent in 2007 and has more than doubled in five years to 355.4 billion Renminbi Yuan (USD52 billion). While the paper goes to some lengths to demonstrate that this is merely a reflection of increased Gross Domestic Product (GDP), which also more than doubled during the same period, and that defence expenditure remains low (about 1.4 per cent of GDP) in comparison with other countries, the rate of change has been very marked.

One of the interesting facts published in the paper was that the number of naval overseas visits decreased from 13 to five in 2008. This perhaps reflects a shift from a diplomatic offensive in 2007 to a more operational posture. Otherwise, the treatment of maritime matters was disappointing; the chapter on naval forces was particularly bland and did little more than to record the evolution of the PLA(N) from a coastal defence force into one capable of 'offshore defensive operations'. Future programmes were summarised as follows: 'efforts are being made to build new types of submarines, destroyers, frigates and aircraft'. The Chinese government should not be surprised that such opaque statements only increase suspicion that published expenditure data does not tell the whole story. The



HOUBEI CLASS

1/2008*, A Sheldon-Duplax / 1353579

programme that frequently gives rise to intense speculation, the building of an aircraft carrier, was not even mentioned and remains something of an enigma. However, the refurbishment of the ex-Russian ship, *Varyug*, continues and, following the move of the ship to a drydock on 27 April 2009, it is possible that the ship will emerge from Dalian in 2010 to perform, initially, a training role. It has been difficult to gauge progress in this project, given the lack of information about the original material state of the ship, but there seems little doubt that refit work has proved to be more technically demanding and time-consuming than originally intended, a situation which many other navies will find familiar. Therefore, it is reasonable to assume that any indigenous programme will have been similarly delayed. As yet there are no firm indications of building at any of the major dockyards and it is quite possible that the initiation of such a prestigious project would be publicised at the time.

In other areas of the fleet, the pace of shipbuilding has been quieter than in previous years; construction of the Yuan class of diesel submarines has resumed, suggesting that problems with the first of class have been overcome, while building of the Jiangkai II-class frigates also continues at two shipyards. No doubt a great deal is going on behind the scenes; the Chinese Navy still contains a number of increasingly obsolescent ships, incapable of conducting the networked operations to which it aspires. The transformation process is set to continue.

United Kingdom

For the Royal Navy, it has been another mixed year in which positive steps in some areas have been marred by setbacks in others.

To begin with the good news, the first Type 45 destroyer, *Daring*, arrived in her home port Portsmouth for the first time on 28 January 2009. She is to be followed by a further five ships, the seventh and eighth ships of the programme having been cancelled in 2008 as had been previously feared. Unquestionably, the new class of ships is to be highly capable and, in the words of *Daring*'s Commanding Officer, marks the start of a new era for the service. Designed to provide a high level of protection to a force operating within a 3.5 n mile radius against up to eight supersonic sea-skimming missiles, the newly named Sea Viper system is certainly one of the best of its type in the world. It also has the potential to be adapted in the future for an anti-ballistic missile defence role, although this would probably require an improved missile. For the time being, much remains to be done to get the first of class into service. An extensive programme of Stage 2 trials, including system integration and weapon acceptance, must be completed before the ship is commissioned in late 2009 or early 2010. Following test firings of the missile in the Mediterranean from the trials platform, *Longbow*, the first firing from a ship is to be conducted by second-of-class, *Dauntless*, in October 2010.

The future aircraft carrier project survived measures in late 2008 to solve the 'funding gap' in the defence budget, although the building programme is now to be lengthened by 1-2 years as a result. Perversely, this approach could well add to the eventual overall cost rather than reduce it. Nevertheless, the programme has developed considerable momentum. In a revised manufacturing strategy announced in March 2009, much of the building work has been allocated; the ships are still to be assembled at Rosyth, where work to extend and modernise No 1 Dock is underway, and construction of Block 3 is now to be undertaken on the Clyde rather than at Barrow. A number of major contracts have also been let. While commissioning dates have not been declared, it is probable that *Queen Elizabeth* will enter service in 2015 and *Prince of Wales* in 2018, 20 years after the intention to procure the ships was announced in the 1998 Defence Review. One of the reasons cited for the delay in the ship programme was to align the production of the ship with the procurement of the Joint Combat Aircraft (F-35B Joint Strike Fighter). Plans to move ahead with this programme were confirmed in March 2009 when the UK MOD committed to the procurement of three initial production aircraft which are to be used in the initial operational test and evaluation phase; the F-35B made its maiden flight on 28 June 2008.

The future of the destroyer/frigate force remains uncertain. The ageing Type 42 destroyers, of which only five now remain operational, are to be decommissioned over the next four years as the Type 45s enter service. However, the overall number of destroyers and frigates will only be 23 once the transition to the new class has been accomplished in 2013. The Future Surface Combatant (FSC) programme was supposed to have been brought forward as a result of the cut in Type 45 numbers but there is little confidence that this will happen. This is despite the fact that BVT Surface Fleet was awarded a contract in February 2009 to assist with preparation for the next phase of development. Although it is known that there are likely to be three variants (high-capability multimission; low-capability general purpose and ocean capable patrol ship), there is no commitment to overall numbers or timescale. Neither does it augur well that the lives of the Type 23 frigates, the workhorses of the fleet, have been extended to up to twice their original design intent. It was also discouraging to read the comment in the *RUSI Journal* by the Shadow Defence Minister, Dr Julian Lewis, that "if the Royal Navy is to have any chance of restoring the escort fleet, it must make the FSC as 'cheap as chips' ". There is always a balance to be struck between quantity and quality but experience in recent and ongoing conflicts suggests that the answer lies in spending more money on Defence, not cutting corners.

Another area of concern is the future of the afloat support replacement programme MARS. It had been expected that a contract for the construction of up to six fleet tankers, to enter service 2013-18, would be let in 2009.



KENT

8/2008*, Kazumasa Watanabe /1353687

This segment of the programme had been given priority because the current Leaf- and Rover-class single-hull tankers are both reaching the end of their lives and no longer comply with regulations that require such ships to have double-hulls. It now seems likely that these ships, and subsequent plans for two fleet support and three logistics vessels, have been deferred by up to three years.

The situation for the submarine flotilla is also depressing. The number of hulls has been dwindling steadily over the years and current plans point to a force of just seven boats. The last of the Swiftsure class and first of the Trafalgar class are due to decommission in 2009 and, taking into account submarine refit periods, operational availability is likely to be about four boats. Meanwhile, the Astute class programme continues to struggle. Sea-trials of the first-of-class are not to begin until at least mid-2009 and the follow-on boat, *Ambush*, is not to be 'rolled out' until the end of 2009 or early 2010. While the keel of the fourth boat, *Audacious*, was formally laid in March 2009, and long-lead items have been ordered for hulls five and six, there is no commitment to an eighth boat. Construction of the later Astute class at Barrow is to run concurrently with that of the 'Trident II' boats whose building programme is to start in 2014 if the first boat is to be delivered in 2022 and to become operational in 2024 as planned. While the size of these boats has not been confirmed, it was announced in March 2009 that the successor SSBN is to have 12 missile tubes, rather than the 16 of the Vanguard class. This probably points to a smaller boat although one of the principal determinants of the design is to be a common US/UK missile compartment, sealed to accommodate a successor missile to Trident. Overall, given the record of the Astute class, it is not surprising that the Public Accounts Committee described the timetable for replacement as "extremely tight".

The UK's 40-year record of undetected deterrent patrols came to an abrupt end on about 3 February 2009 when *Vanguard* collided with the French ballistic missile submarine *Le Triomphant*. Both boats are thought to have been on patrol or in transit at the time. It is stating the obvious to say that submarines of allied nations should not have been in the same area at the same time, not least because there are established procedures precisely to avoid such a situation. While the locations of submarine patrol areas in general and deterrent areas in particular are highly classified and France may not have been a full participant in NATO waterspace management arrangements, it should have been possible at least to have agreed to operate in different general areas of the Atlantic Ocean. If this sort of discussion had not taken place, it reflects poorly on those concerned. Neither is it good enough to say that it was a 'one in a million' chance. The integrity of the nuclear deterrent and the safety of the crews of both countries were

unnecessarily put at risk. Perhaps the only good thing to emerge from this unhappy incident is that the boats are almost impossible to detect.

Europe and the Mediterranean

NATO's 60th anniversary summit was held on 4 April 2009 at the French border city of Strasbourg and its neighbouring German town, Kehl. Co-hosted by the German Chancellor Angela Merkel and French President Nicolas Sarkozy, the highlights included the admission of Albania and Croatia into the Alliance and France's return to the integrated military structure. Contrary to popular belief, France did not leave the Alliance itself in 1966 and, during its absence from inner decision-making circles, continued to work quietly alongside NATO countries at a military level. This has particularly been the case at sea where ships and aircraft have been able to co-operate without causing political embarrassment.

It is to be hoped that France's renewed membership will lead to a resolution of at least some of the issues that have bedevilled EU/NATO relations over the last few years. While the two organisations ought to have a lot in common, competition has tended to hinder co-operation. However, the deployment of anti-piracy forces to the Gulf of Aden has provided the opportunity to work together, particularly over such crucial issues as Rules of Engagement. NATO carried out its first such mission in the region between October and December 2008. In Operation Allied Provider, four Standing NATO Maritime Group 2 (SNMG2) warships deployed in response to a UN request to conduct deterrence patrols and to provide escort to vessels delivering humanitarian aid to Somalia. An EU force, Operation Atalanta, took up station as the NATO ships completed their task. This operation is to be sustained throughout 2009 and command of the force is to be exercised in rotation by the Greek, Spanish and Dutch navies respectively. This force was boosted by a second NATO deployment in March–July 2009.

While one of the main outcomes of France's 2008 Defence White Paper was the renovation of transatlantic relations, some re-shaping of the naval force structure is to be implemented to reflect a re-appraisal of defence priorities. One major finding was that "protection of our population and territory calls for a major overhaul" and, as a result, a greater distinction is now to be made between forces required for this task and those required for intervention operations. The naval component of France's intervention capability is to continue to be spearheaded by the air group and naval combat aircraft are to be merged with those of the air force to form a pool of 300 aircraft from both services. However, the decision on whether to proceed with the construction of a second aircraft carrier has been deferred until 2011–12. Nevertheless, force projection capabilities are to be boosted



O. DENBURG

7/2008*, Michael Nitz 1353680

by the procurement of two further Mistral-class amphibious vessels; the first of which began construction at Saint-Nazaire in April 2009. Both are to be in service by 2020. The main effect of the redrawn balance between intervention and national protection forces is a reduction in Anti Air Warfare (AAW) capability (from six to four specialised ships) while assets required for national protection are to be boosted by the conversion of the five Brest-based 'Avisos' to a patrol ship role. Submarine forces remain unchanged as a result of continued commitment to an independent nuclear deterrent and to a force of six cruise-missile carrying nuclear-powered attack boats.

The EU's Operation Atalanta is to be boosted in 2009 by the deployment of two Swedish Stockholm-class corvettes, supported by the logistic support ship, *Trossö*. While it is not the first time that Swedish naval forces have been deployed for out-of-area operations, the despatch of such ships originally built for coastal defence duties, highlights their unsuitability for long-distance transits and for operations in ocean waters. Recognition that the Swedish Navy is not best equipped to contribute to this sort of operation is reflected in the Combat Support Ship (L 10) programme for two multipurpose ships. These are to be capable of conducting replenishment at sea, amphibious support, repair and maintenance, medical support and transport of about 170 troops. The requirement could be met by a modified Ro-Ro ferry design but the preference is likely to be for a purpose-built design, tailored to support the Visby class and built to commercial standards. Meanwhile, the Visby class programme will at last reach fruition in 2009 when, after a difficult and frustrating proving period, the first ships become available for operational service.

Looking ahead, thoughts are now turning to the procurement of less complex patrol ships better suited to tasks around the world. Sweden has been one of the pioneers of Air-Independent Propulsion (AIP) which is now fitted to all five of its submarines. The Södermanland class, which were retrofitted with this capability 2000-05, are due to be replaced by two next generation A 26 class from about 2017. Few details have been released about the new boats but the design is likely to be required to meet a much broader requirement than their predecessors. Much will have been learned from the two-years spent by *Gotland* in San Diego as an anti-submarine training target for the US Navy. Meanwhile, despite current emphasis on overseas operations, home defence has not been neglected. The refit and modernisation of the first two Koster (modified Landsort)-class minehunters was completed in early 2009 and the remaining three are expected to be completed in 2010.

Procurement of submarines by the Hellenic Navy has been in a state of flux for the last two years due to delays in the Type 214 submarine programme. Despite the launch in Germany of the first-of-class *Papanikolis*, in 2004, her commissioning is still awaited, pending resolution of alleged technical difficulties. Meanwhile construction of the other three boats at Hellenic Shipyards is at various stages of completion although it is not clear if and when they will enter operational service. In contrast, the Neptune II upgrade programme for the last three *Glavkos* (Type 209/1200) submarines has taken a dramatic turn. Following completion in early 2009 of *Okeanos*' refit, which included the installation of AIP, the upgrade programme for the other two boats was abandoned in favour of the construction of two new AIP-equipped Type 209/1400s. These are also to be built at Hellenic Shipyards. A decision on the way ahead for the acquisition of six new frigates is expected in 2009. The leading contender appears to be the French FREMM class, following the announcement by the Greek Minister of Defence, Mr Evangelos Meimarakis, on 22 January 2009 that negotiations had started. The ships are likely to be the air-defence (FREDA) variant featuring an A70 vertical launcher capable of firing both air-defence and land attack missiles. Meanwhile, the mid life upgrade of the first six *Elli* (Kortenaer)-class frigates is due to be completed in 2010 at which time a major upgrade of the *Hydra* (Meko 200) class is due to begin.

Developments on one side of the Aegean tend to be inextricably linked with those on the other, despite a welcome reduction in tensions in recent years. In spite of problems in the Greek Type 214 programme, the Turkish Navy opted to start contract negotiations in 2008 for the acquisition of six similar submarines, also to be equipped with AIP. The boats are to be built at Gölcük Shipyard with the first of class to enter service in 2015. The principal naval surface ship programme is the *Ada* (MİLGEM) class project for up to 12 anti-submarine warfare and offshore patrol vessels. The first-of-class, *Hevbeliada*, was launched on 27 September 2008 on the same day that the second of class, *Büyükkada*, was laid down. There are also 16 smaller *Dearsan* anti-submarine and littoral patrol craft to be built in batches of four. The principal Coast Guard programme is for the construction of four offshore vessels required for SAR and EEZ patrol duties. The design of the ships is based on the Italian *Sirio* (Comandante) class. Other Coast Guard programmes include continuing construction of the *Kaan 33* class. These are being built by the *Yonca-Onuk* Shipyard which has achieved export success over the last few years with sales to Georgia, Malaysia and Pakistan.

The Israeli Navy is poised for expansion over the next few years with both submarine and surface ship programmes in progress or planned.

The first of a second batch of two Dolphin-class submarines is expected to be launched in Germany in 2009-10. Although few details of this project have been released, the boats are reported to be equipped with AIP and are planned to enter service in 2012. The other major programme is for a class of three surface combatants. These are likely to be based on the Lockheed Martin variant of the Littoral Combat Ship although the ships are to be more powerfully armed than the US versions. Weapons will almost certainly include an area air-defence system such as Standard or Barak 8. The geographical focus of Israeli naval operations is likely to remain the Mediterranean Sea. Although deployments to the Red Sea and beyond are possible, operations are constrained by the availability of only one small base (Eilat) and the need to rely on other nations for shore based and/or afloat support facilities.

Russia

It has been a busy year for the Russian Navy, which has committed a number of its major units to operations and deployments. During the conflict with Georgia in August 2008, the Navy played a supporting role in what was overwhelmingly a land/air operation. While the primary Russian aim was to secure the regions of South Ossetia and Abkhazia, a key element of the plan was to destroy all Georgian military capabilities. This included the naval base at Poti in which most of the Georgian Navy was destroyed alongside. The only reported action at sea was the sinking of an unknown vessel by an SS-N-9 missile fired by the corvette, *Mirach*. Apart from this, the principal role of the Russian Navy was to blockade Georgia's ports in order to deter/prevent arms shipments or reinforcements from entering the country. The Black Sea Fleet certainly did not take any chances. Led by the guided-missile cruiser *Moskva*, the task group included the destroyer *Smetlivy*, three Grisha-class frigates, one Nanuchka- and two Tarantul class corvettes and three amphibious vessels. Although there was speculation that amphibious landings had been conducted in the vicinity of Ochamchire, it is more likely that the landing ships were employed in a ferry role and that troops were offloaded at the port without vehicles and equipment. Conclusions from the conflict are difficult to draw and are perhaps more political than military. The Russians seemed well-prepared, suggesting good intelligence, and responded quickly with overwhelming force. However, what the military leadership will wish to hear from the analysts is just how effective these joint operations might have been against a more powerful and well-organised enemy.

In well-publicised attempts to raise operational tempo and to 'show the flag', deployments of other warships, notably by the capital ships *Admiral Kuznetsov* and *Pyotr Velikiy*, also caught the headlines. As in 2007, the carrier departed in December from Severomorsk to visit the Mediterranean where exercises were conducted with the Black Sea Fleet and visits made to

Turkey and Syria. The trip was relatively uneventful except for a fire, which led to the unfortunate death of a sailor, and a large oil spill which allegedly occurred while the ship was operating south of Ireland.

The deployment of the battle-cruiser *Pyotr Velikiy*, leading another group of ships, was the highest-profile diplomatic mission by the Russian Navy for many years. The flotilla visited the Caribbean to participate in exercises with the Venezuelan Navy and subsequently, for the first time since the end of the Cold War, to make a port-call to Cuba. The destroyer, *Admiral Chabanenko*, made a symbolic transit of the Panama Canal, the first by a Russian warship since the Second World War, to visit Balboa. Making its way back across the South Atlantic, *Pyotr Velikiy* visited Cape Town in January 2009 before proceeding to Mormugao in the Indian state of Goa. During this period, the ship was joined by the destroyers *Admiral Vinogradov* (Pacific Fleet) and *Admiral Levchenko* (Northern Fleet) for INDRA-2009, a biannual Russian Indian exercise. The Indian Navy was represented on this occasion by the destroyer *Delhi* and the frigate *Tabar*. A feature of the exercise was that its second phase was dedicated to anti-piracy operations and conducted off the Somali coast.

All this activity has been superficially impressive and there has almost been a whiff of nostalgia as Russian ships once more ply the world's oceans. However, it is premature to talk about a Russian resurgence and/or the establishment of sustained presence in various regions of the world. It would take years to achieve such a posture and it is worth remembering that even at the height of the Soviet Navy's strength, ships were forced to spend much of the time at anchor due to lack of supporting infrastructure. It is also obvious today that while a few reliable ships are very busy, many others do not seem to venture very far. Nevertheless, the Russian Navy will have earned enormous benefit from the more frequent and ambitious operations of the last few years. A new generation of officers and sailors, both ashore and afloat, are learning about the difficulties of maintaining morale, operational effectiveness and a sound material state during long deployments. The experience gained will pay dividends in the future.

It is against this background that aspirations to build a force of five or six aircraft carrier groups must be viewed. To be fair to the Commander-in-Chief, Admiral Vysototsky, his announcement in July 2008 seemed to be a long-term vision, to be achieved in perhaps 50 years, and did not appear to be a commitment to a short-term programme. Despite the fact that there are a number of existing carrier designs, including those of the Ulyanovsk, Kuznetsov and smaller Kiev classes, a considerable amount of development work would be needed to bring these up to date. Even if this could be done relatively quickly, the requirement to design and build a next-generation VSTOL or CTOL carrier-borne aircraft needs to be taken into account. There are also industrial considerations. The last generation of carriers was built at Nikolayev in Ukraine so the facilities at Severodvinsk will need to



be upgraded to handle ships of this size: construction of a new 420 m dry dock is under consideration. Therefore, even if a firm decision has already been taken, it could be many years before the first ship is commissioned. Furthermore, procurement of a carrier force needs to be balanced against other competing priorities. The destroyer force now averages about 21 years old and a replacement programme has not been announced. The frigate force is even older and, despite the long-awaited emergence in early 2009 of the second Neustrashimiy-class frigate, *Yaroslav Mudryy*, from Yantar shipyard at Kaliningrad, construction of both the Steregushchiy- and Gorshkov-class frigates seems to be taking longer than expected.

Replacement of the submarine force is also proving troublesome. Sea trials of the first of a new class of ballistic-missile submarines, *Yan Dolgorukiy*, did not start until 2009 while its Bulava missile is yet to be proven. There are also delays in the construction of the next generation attack submarine, *Severodvinsk*, and of the conventional Lada-class boats. Taken overall, most if not all naval programmes are experiencing serious problems and, after 20 years of neglect, it will take a long time and a great deal of money to put things right.

Indian Ocean, Gulf and Caspian

The golden anniversary of the commissioning of the carrier *Viraat* (ex-*Hermes*) on 18 November 2009 is likely to be celebrated by former ship's companies of two navies who have served in her: she is one of those ships that inspires particular affection. While her longevity is a testament to the robustness of the original design, the requirement for expenditure on a third major refit since transfer from the Royal Navy in 1987, necessitated by delays in future carrier programmes, will be exasperating for the Indian naval high command. The aim of the latest work is to extend the life of the ship until 2012 when *Vikramaditya*, which has been undergoing refurbishment at Severodvinsk since 2004, is planned to enter service. Fortunately, there are now grounds for optimism that this project, which had generated a somewhat acrimonious dispute, is at last making some progress.

The ship was re-launched in December 2008 at about the same time as agreement was reached between the Russian and Indian governments on the funding of cost overruns. As a result, the way-ahead now looks clear for the final purchase agreement to be signed in 2009 with a view to starting sea trials in 2011. Meanwhile, progress was also made in the other major surface ship contract. The keel of the Indigenous Aircraft Carrier was formally laid by the Defence Minister at Kochi Shipyard on 28 February 2009. The ship, which is going to be nearly 40,000 tons, is to be the largest warship ever built in the country and is likely to be followed by at least one further unit in order to realise the ambition of a three-carrier force. It remains to be seen whether the matng of some 872 blocks, some 400 of

which have already been fabricated, can be achieved within the planned construction timescale. The ship is planned to be commissioned by 2015.

There could be a number of other highlights for the Indian Navy during 2009. Lease of the nuclear submarine *Chakra* (ex-*Nerpa*) is expected to start in September following certification by the Russian Navy, although the programme may have been delayed by the unfortunate accident in which 20 people were killed by the release of fire-suppressant gas during sea trials in November 2008. Meanwhile, launch of the indigenous nuclear submarine, the so-called Advanced Technology Vessel, is planned to take place at Vishakapatnam during the year. The project has been clothed in secrecy and even the formal confirmation of its existence in December 2007 did little more than fuel speculation about its design and capability. The submarine is likely to have a ballistic missile capability but, limited to one boat and (probably) less than 10 launch tubes, it is expected that its operating pattern will be different to the continuous at sea policy adopted by most other SSBN operators.

There was also good news from some of the surface ship programmes. Sea trials of *Shivalik*, the first of a new class of frigate, are due to begin in 2009 at about the same time as the first of the Batch 2 Talwar class, under construction at Yantar Shipyard, Kalningrad, is due to be launched. Reportedly, negotiations for the procurement of a third batch of these ships began in early 2009. The spirited performance of *Tubar* during an anti-piracy patrol off Somalia will have done much to enhance the reputation of this class. The reach of the navy is also to be augmented by the procurement of eight Boeing Poseidon maritime patrol aircraft, for which a contract was signed in December 2008. Unfortunately, the transformation of the Indian Navy continues to be frustrated by setbacks. Construction of the Scorpene class conventional submarines had not begun by early 2009 and the first indigenous refit of a Kilo class, *Sindhukirti*, which began at Hindustan Shipyard, Vishakapatnam in 2006, could take as long as nine years to complete.

Following a review of coastal security in the wake of terrorist attacks on Mumbai in November 2008, there is to be a major overhaul of India's maritime defence organisation and infrastructure. The principal actions that have arisen are to designate the navy as the responsible authority for overall maritime security; to establish a command and intelligence network linking naval and Coast Guard operations centres; the improvement of port and inshore defence; the establishment of a new 'Coastal Command' and the establishment of a coastal radar and AIS chain to improve situational awareness.

In neighbouring Pakistan the third Khalid-class submarine, *Hamza*, the first to be entirely completed in Karachi, was commissioned on 26 September 2008. She is also the first to be equipped with AIP and the



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first two boats of the class, commissioned in 1999 and 2003 respectively, are now to be similarly upgraded. Meanwhile, a further submarine programme is likely to be initiated in 2009. The principal contenders are widely considered to be the French Scorpene class and the German Type 214 class but procurement of a Chinese submarine, for example the Yuan class, should not be ruled out. China and Pakistan have been strategic allies for many years and naval ties have grown stronger recently. The Karachi Shipyard and Engineering Works are being modernised to facilitate construction of the fourth and final F22P frigate and licences to construct further similar, or possibly larger, vessels may also be obtained. There are also plans to expand ship construction and refit facilities at other ports such as Gwadar and Omara.

In the Gulf, the United Arab Emirates has been making much of the news. The first Baynunah-class corvette is to be launched at Cherbourg during 2009 while Abu Dhabi Shipbuilding (ADSB) is making progress on the construction of the five follow-on vessels. The shipyard is due to deliver its first ship eight months after the first-of-class with the others to follow at six-month intervals. ADSB is also to build 12 further 26-m Ghamatha class in a missile-armed interception craft configuration while the 12 existing craft are to be modified as troop carriers and mortar platforms. Meanwhile, a Comandante class anti-submarine corvette has been ordered from Italian shipbuilder Fincantieri. Six such ships entered Italian Navy service in 2001-03 and four of the Coast Guard configuration are currently under construction in Turkey. This 1,500-ton ship, and any follow-on vessels, is effectively a substitute for the rarely used Kortenaer frigates, transferred from the Netherlands in 1996-97.

The rejuvenation of the South African Navy over the last 10 years has gone remarkably smoothly in view of the challenges posed by the transition from an underfunded coastal force to a blue-water navy capable of exerting regional influence. Four new frigates and three new submarines have entered service and the navy is now poised to take a further major step, the acquisition of two Strategic Support Ships. These multirole ships are to enter service from about 2014 while a third unit, configured as a replenishment ship (to replace *Draakensberg*), is to be commissioned in about 2017.

The primary function of the new vessels is to transport, land and support a battalion group of some 1,500 troops with up to 350 vehicles. This is in addition to the capability to act as a mobile base and offshore headquarters, to conduct disaster and emergency relief missions and to provide logistic and medical support. An LHD design, which includes both a well-deck for operating small landing craft and a flight deck with six spots for medium helicopters, is a strong possibility.

Other contracts in the offing are for an initial batch of six offshore patrol vessels, to be built in a South African Shipyard, and for a new hydrographic survey ship to replace *Protea*. It is not surprising that the expansion of the navy poses a considerable recruitment, training and retention problem and this is linked to the need for a change of culture as the navy comes to terms with a period of profound change. As the Commander of the Navy, Admiral Johannes Mudimu, stated, "we must now move from force preparation to force employment".

East Asia and Australasia

A new Australian Defence White Paper, due to be published in 2009, is almost certain to be affected by the global financial crisis. However, all the indications are that the government will try to stick to its election pledge to increase defence spending by three per cent per year and, in view of the Prime Minister's comments in September 2008 that Australia would need to become a more serious maritime power, the Royal Australian Navy could be a beneficiary. The challenge now will be to translate political aspirations into firm contracts. While approval for a fourth Hobart-class air warfare destroyer is not now expected, endorsement of a new submarine programme is likely to go ahead. These boats are not only to replace the Collins class from about 2020, but also to double the size of the flotilla to about 12 boats. This is despite the fact that current manning problems restrict operational availability to three out of six boats.

Work on a successor class began in December 2007 and, while initially all options are likely to be examined, it is probable that the solution will be to adopt a recent European design equipped with predominantly American weapons and sensors. The geography of Australia suggests that nuclear power might at least bear some consideration. However, the submarines are more likely to be equipped with AIP in view of public and political opposition to nuclear energy. Other projects to be considered are the acquisition of a strategic sealift ship, to complement the Canberra-class LHDs, and the replacement of the current amphibious watercraft capability. Procurement of the L-35B variant of the Joint Strike Fighter, to operate from the LHDs, is also a possibility. Thoughts will also no doubt be turning to the size and shape of the future frigate force. The ANZAC class, about to begin the ASMD upgrade programme, is not due for replacement until about 2025 but, as other nations are discovering, a like-for-like replacement approach may not deliver the number of hulls required.

Following the announcement by the Japanese government that it intended to send units of the Japanese Navy to join international anti-piracy operations off the coast of Somalia, the destroyers *Sazanami* and *Samidare* sailed from Kure on 14 March 2009. Japanese Coast Guard officers were



embarked to handle any law-enforcement matters. The deployment of any MSDF forces outside Japan's borders tends to be controversial in view of the constraints placed on their use by the Self-Defence Forces Law. Therefore, despite the fact that this mission is not as politically sensitive as Japan's Indian Ocean refuelling operation, which has supported coalition forces in Afghanistan since 2001, further legislation is likely to be required. Initially, the deployment is to be conducted under the maritime police-action provision of the law. This already covers a fairly wide spectrum which includes the protection of Japanese ships, ships managed by Japanese companies or vessels carrying Japanese crew members or cargo for Japan. However, a new law on anti-piracy is expected to enable Japanese forces to assist in combating pirate attacks on foreign ships. This would mark another important step in extending the limits within which the Japanese Navy is mandated to operate. In a world in which defence can start a long way from home, it should be possible for it to participate in international, global operations without compromising the basic tenets of Japanese Defence policy.

If any ship is likely to 'push the boundaries' in the future, a prime candidate is the new helicopter-carrier, *Hyuga*, commissioned on 18 March 2009. She is to be followed by a second unit which is to enter service in 2011. The new ships, much larger than the *Haruna* class which they replace, call for a new concept of operations to exploit not just their primary ASW role but also their flexibility and utility to undertake a wide range of tasks. It is likely that they will be centrepiece of many future overseas operations, whether military or in response to a civilian emergency.

Meanwhile work progresses on the next generation of destroyers and submarines. The 5,000 ton 19DD-class destroyers, the first of which is to be laid down in July 2009, are to be a follow-on to the *Takanami* class to which they bear a resemblance. Their principal armament is expected to be Evolved Sea Sparrow and Type 90 surface-to-surface missiles. The *Souryu*-class submarines are now beginning to enter service; the first-of-class was commissioned in March 2009 and the second-of-class *Unryu* was launched in October 2008. These boats, fitted with AIP, are also likely to prompt new operating patterns to exploit their enhanced capability. A similarly equipped submarine, the German *U32*, successfully conducted a submerged transit of some 1,500 n miles in 2006.

There has also been less welcome news. A test-firing of a Standard SM 3 anti-ballistic missile on 20 November from the destroyer *Choukai*, the second ship of the class to be converted to the BMD role, was a failure. Given the 80 per cent success rate of these missiles, it is more likely that this was due to an individual missile fault rather than systemic failure. Finally, the official investigation into the pre-dawn collision on 19 February 2008 between the destroyer *Atago* and a fishing boat, which resulted in two fatalities, concluded that the ship was mainly at fault. This unfortunate incident is a reminder that keeping a good watch is as important today as it ever was.

Elsewhere in the region, the Malaysian Navy made an historic step forward when it took delivery of its first submarine on 29 January 2009. *Tunku Abdul Rahman* is a *Scorpene*-class boat which is to be stationed at a new submarine base at Sepanggar, near Kota Kinabalu in Sabah. The location of the base will enable the submarines to operate both in the South China and Sulu seas. The second-of-class, *Tun Razak*, is to be delivered in late 2009. Before the boats become operational, it will be necessary to establish a submarine rescue capability. The likely host ships are *Mahsuri* and *Setia Sekel* but there were no indications, as of early 2009, that Malaysia is planning to join the International Submarine Escape and Rescue Liaison Office, which co-ordinates submarine rescue activities worldwide.

Progress in other Malaysian programmes has been mixed. The decision to procure two new improved *Lekiu*-class frigates was made in 2006 but an order is not now expected until 2010. The *Kedah*-class corvettes have had something of a troubled history but the programme now appears to be proceeding satisfactorily. *Pahang* has taken part in anti piracy operations in the Gulf of Aden, the first Malaysian-built ship, *Perak*, was commissioned in late 2008 and the remaining three ships are to enter service by 2010. The next major procurement initiative is likely to be the acquisition of up to three multirole ships capable of both military and civilian emergency roles.

In common with Malaysia and a number of other nations worldwide, the Royal Thai Navy (RTN) has also decided that there is a requirement for a multirole ship; approval for the project was given by the Thai cabinet on 9 September 2008. The amphibious ship (LPD) is to be designed and built by ST Marine of Singapore and is almost certainly based on the *Endurance* class that entered Singapore service from 2000. Delivery is expected in 2012 and the contract also includes the construction of two LCMs and two LCVs. Unfortunately, progress in this project has probably resulted in cut-backs in others. The main casualty of the LPD order appears to have been the new frigate programme. Instead of buying two such ships, which were going to be based on the Malaysian *Lekiu* class, the programme has now been scaled down to the procurement of offshore patrol ships. A number of designs, including proposals from BVT Surface Fleet and

Fassmer, are believed to be in the running but, as of early 2009, no decision had been taken. The order, when it comes, will follow a number of steady, if not spectacular, improvements to the surface fleet in recent years. Two new Chinese-built corvettes entered service in 2006 and the patrol force inventory has been augmented by the introduction into service of the first three of nine modified T 91 (T 991) class. In addition a new survey ship, based on the Dutch *Snellius* class, was commissioned in August 2008.

The Singapore Navy has also reached some important milestones. Following the decommissioning of the six 1970s vintage *Sea Wolf*-class fast attack craft in May 2008, the final two of the six *Formidable*-class frigates were commissioned on 16 January 2009. This class ushers in a new era of surface ship operations not only as very capable individual units but also as key nodes in the Singapore Armed Forces command-and-control network which integrates the information and responses of all the uniformed services. This is particularly important in a region where warning time is likely to be short. *Intrepid* successfully completed a first Aster 15 firing test off Toulon in April 2008 but it has also emerged that the frigates could, in the future, be equipped with the 100 km Aster 30. It had been reported that the ships were equipped with four eight-cell Sylver A43 vertical launch modules but it is now believed that two of the four modules are of the deeper A50 variant, capable of accommodating the longer area defence missile. While acquisition of these weapons is not thought to be imminent, Singapore could become the first country in the region to have such a capability.

Next on the navy's agenda is the introduction into service from about 2010 of two submarines of the *Vastergotland* class. Their pre-transfer refits are likely to be similar to those undertaken by two sister-ships that remain in Swedish service. Both of these were modernised with AIP, involving the insertion of a 12 m 'plug', improved optronics and a divers' lock-out to facilitate Special Forces operations. The two refitted boats are to replace at least two of the *Challenger* class that entered Singapore service in 2000 but which are now 40 years old.

Latin America

After many years of stagnation, 2008 proved to be a landmark year for the Brazilian Navy. Following endorsement of the nuclear-submarine (SSN) programme by President Lula in 2007, the project developed momentum in September 2008 when it was formally re-launched by the Commander of the Brazilian Navy. The aim is to complete South America's first SSN by 2020. The announcement followed a Franco-Brazilian arms package which confirmed France as Brazil's strategic partner in the development of its future submarine force. In the SSN project, there is to be French design support (provided by DCNS) on the hull and propulsion while nuclear aspects are to be taken forward by the Brazilian Navy. A prototype reactor, under development at the Aramar Experimental Centre, is to serve as a basis for the power-plant which is expected to be of the order of 48 MW. In addition, Brazil is to acquire four *Scorpene* or *Martin* class conventional boats which are to be built at a new shipyard at Sepetiba Bay.

Meanwhile, in a separate contract, the five *Tupi/Tikuna*-class boats are to be upgraded by Lockheed Martin in parallel with the acquisition of the Mk 48 heavyweight torpedo from the United States. There have also been developments in the surface fleet. The corvette *Barruso*, which was laid down in 1994, was finally commissioned on 19 August 2008 and it is possible that a further three vessels will be built. In the meantime, a modernisation programme for the *Inhauma*-class corvettes has been initiated. The last of the 1960s vintage *Garcia*-class frigates, *Pará*, was decommissioned in 2008, but the intention to procure six French FREMM-class frigates was announced later in the year; Brazil's current frigate inventory of *Broadsword* and *Niterói* classes is already over 30 years old. Plans to procure up to five new 1,800-ton Offshore Patrol Vessels have not yet been finalised but a *Fassmer* design, already used by both Chile and Argentina, is likely to be a strong contender. Meanwhile, a further four *Vigilante* class 500 ton patrol vessels were ordered in October 2008 and a class of 12 is expected. Elsewhere in the fleet, a second ex-UK LSL *Almirante Saboia* (ex-*Sir Bedivere*) is to enter service in 2009, following the transfer of *Garcia d'Avila* (ex-*Sir Galahad*) in 2007, an Antarctic support ship *Almirante Maximiano* is to enter service in 2009, following conversion in a German shipyard, and a disaster response ship may be acquired in co-operation with Argentina.

Procurement of such a ship was one direct result of the closer defence co-operation that is to be developed between Brazil and Argentina, following a summit between Brazilian President Lula and Argentinian President Kirchner in September 2008. Naval collaboration is also likely to include the construction of (unspecified) ocean patrol vessels for the Brazilian Navy, the joint procurement of civilian polar research ships and an Antarctic support ship (possibly *Almirante Maximiano*). Repairs to the icebreaker and support ship, *Almirante Irizar*, which was badly damaged by a fire in 2007, did not begin until late 2008 and the ship is not expected to become operational again until 2012.



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The principal Argentine surface fleet programme is for up to five off-shore patrol vessels which are likely to be similar to the Chilean Fassmer-designed vessels; construction of the first-of-class is expected to start in 2009. Elsewhere in the surface fleet, the *Almirante Brown*-class frigates have completed a refit programme and major modification of the fast attack craft, *Indomita*, started in January 2008. Her sister ship, *Intrepida*, is expected to follow. The outlook for the submarine flotilla is uncertain. There are no known plans to replace the current inventory and, if a new programme is not initiated in the next few years, it is possible that the capability will be lost altogether.

A major refit programme for the two most modern boats, the TR 1700 class, will be completed in 2010 when *San Juan* is expected to emerge from Donceq Garcia dockyard. However, the future of the Type 209 class *Salta* is more in doubt. Although she completed a refit in 2005, she is now 27 years old and her sister ship, *San Luis*, hitherto used as spares, is likely to be converted to a museum ship. There was better news for the Fleet Air Arm. Replacement Agave radars were reportedly acquired in 2008 with the result that operational availability of the Super Etendard aircraft may be raised from five to nine out of 11.

In Venezuela, the modernisation of the navy will begin to take effect in 2009 when the first of four 1,500-ton patrol vessels, *Guacamucuto*, enters service in 2009. Launched in October 2008 at Navantia, San Fernando, she is the first of four such ships to be commissioned. The other major surface ship programme is for four larger 2,500 ton offshore patrol vessels, also under construction in Spain, the first of which is to be commissioned in 2010. It had been expected that an order for three Project 636 Kilo-class submarines would be made when the Russian cruiser, *Pvoir Velikiy*, visited Venezuela in November 2008. However, the lack of a formal announcement suggests that the project remains 'on hold', possibly as a result of the global economic downturn. A key feature of the contract would have been a substantial loan to finance the deal and, with a fall in oil prices affecting both countries, it may have been considered too risky an undertaking at the moment. Meanwhile, both of Venezuela's Type 209 boats are believed to be non-operational.

In contrast, the Type 209 submarines operated by the Ecuador Navy are planned to be refitted in Chile 2009-2012. Both boats, *Shyri* and *Huancavilca*, were commissioned in the mid-1970s and have already received two major refits, in the 1980s and 1990s. The latest modernisation work, to include a new combat system and sonar suite, is expected to extend life until at least 2020. Chile has also been involved in the renewal of the surface fleet. Having decommissioned two ex-British Leander-class

frigates, originally built in the 1960s, two ex-Chilean Leanders were transferred in 2008, following an overhaul. These ships also are expected to remain in service until about 2020.

In Conclusion

The pirates of Somalia have performed at least one useful service over the last year: they have provided a much needed reminder of the importance of the sea and of potential maritime threats to global security. The vast majority of world trade, including critical supplies of energy and raw materials, travels by sea. Some 95 per cent of this travels through nine principal chokepoints including the Strait of Hormuz, the Malacca Strait and Bab El Mandab. It is a dangerous assumption that a relatively benign era, during which unprotected ships could proceed safely throughout much of the world, will necessarily prevail in the future. If anything, success in the Indian Ocean will not only have emboldened the pirates of Somalia but may also have encouraged other groups to adopt similar tactics elsewhere.

Neither are maritime threats confined to piracy. The terrorist attacks on Mumbai in November 2008, probably launched from mother-ships, could be replicated in other areas of the world, there is no reason why a ship-load of militants should not be able to strike at high profile targets many hundreds of miles away. So far, there has been no apparent link between piracy and maritime terrorism but the readiness of pirates to take enormous risks for money should be a warning against complacency. The use of large ships for some kind of terrorist action cannot be discounted.

Another valuable lesson reinforced by experience in the waters off Somalia is that quantity is an important component of capability. That an international group of warships has found it difficult to police such a huge area of ocean gives substance to the claim that 'ships cannot be in two places at once'. This is an argument too easily forgotten, or ignored, despite the fact that the equivalent 'boots on the ground' has been such a critical factor in the Iraq and Afghanistan land campaigns. There are also dangers that the wrong conclusions could be drawn from anti-piracy operations. The constabulary nature of this task should not be allowed to dilute the need to concentrate on the capability and readiness to conduct high-intensity warfare. The lessons of history are that such contingencies can materialise with very little warning, and it would be dangerous to ignore these in a complex, uncertain world in which the balance of power appears to be shifting.

Stephen Saunders

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Acknowledgements

The business of collecting information and recording change has always been a continuous process, but up to a few years ago its presentation had been cyclical. *Jane's Fighting Ships* hard-copy book remains annual, but for those users more impatient for change as it happens, the Online product, which is updated regularly, is ideal. The *Jane's Fighting Ships* microsite (<http://jfs.janes.com>) offers a dedicated portal into the electronic environment. Amongst the many offerings on the microsite is the NewsEdge service providing a regular feed of naval related news from hundreds of sources around the world. Feedback on the microsite is always useful and amongst refinements made over the last three years, ship silhouettes are in the process of being re-introduced for Online customers.

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Thanks are due also to the many people who send colour photographs, whether every year or as the opportunity offers. While not every one can be published, any image, including those that are seemingly insignificant or of doubtful value, has the potential to be useful by corroborating other information about the ship(s) in question. Ideally, images should be at 300 dpi resolution although, exceptionally, lower quality images of rarely photographed ships will be considered for printing. Images should be sent by email or on a CD-ROM, preferably as soon as possible after they have been taken. For those who have not changed to the digital medium, colour prints are of course still gratefully received.

Ian Sturton's excellent scale line drawings have long been a major feature of the publication while changes to Ranks and Insignia have been given a major update this year by Dr Nigel Thomas, an international expert. Similarly, updates to Ensigns and Flags are required each year and these have been provided by Graham Bartram, General Secretary of the Flag Institute, one of the world's main research and documentation centres for flags and vexicology. The importance of the US Navy in maritime affairs merits a special contributor in Tom Philpott who is the editor of *Military Update* in Washington DC.

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It is with great sadness that I record the deaths of two longstanding contributors. Paolo Marsan died after a long illness on 22 May 2008 and Harry Steele, for many years a *Jane's* photographer, died suddenly on 16 March 2009.

Jane's staff at Coulsdon ease the production process, and no praise can be high enough for Emma Donald (content editor); Jack Brenchley (senior compositor) and the composition team at Annet in Chennai, India; Kevan Box, Wayne Sudbury and Harriet Harding (scanning team); Jo Agius, Kate Whitehead, Mike Johnson and Leah Butson (image archiving); Martyn Buchanan (production controller) and Sara Morgan (publisher). Closer to home, my wife Ann is an indispensable member of the year-round editorial and administrative effort.

Cross referencing to other *Jane's* publications is made easy by *Jane's* Online service which includes, inter alia: *Jane's All the World's Aircraft*, *Jane's Amphibious and Special Forces*, *Jane's Air-Launched Weapons*, *Jane's C4I Systems*, *Jane's Electro-Optic Systems*, *Jane's International Defence Directory*, *Jane's Marine Propulsion*, *Jane's Naval Weapon Systems*, *Jane's Naval Construction and Retrofit Markets*, *Jane's Radar and Electronic Warfare Systems*, *Jane's Strategic Weapon Systems*, *Jane's Underwater Warfare Systems*, *Jane's Unmanned Maritime Vehicles and Systems*, *Jane's Unmanned Aerial Vehicles and Targets* and *Jane's World Air Forces*. *Jane's Sentinel Security Assessments* are an excellent source of politico-military information while *Jane's Defence Forecasts - Military Vessel Programmes*, is an online business tool for tracking and projecting military vessel upgrade and procurement programmes around the world. *Jane's* magazines provide up to the minute reports on defence issues. These include *Jane's Defence Weekly*, *Jane's International Defence Review*, *Jane's Foreign Report*, *Jane's Intelligence Review*, *Jane's Defence Industry*, *Jane's Missiles and Rockets* and *Jane's Navy International*. Amongst many other publications the Japanese magazine *Ships of the World* is also a source of useful data.

The focus of *Jane's Fighting Ships* remains seagoing personnel, whether on the bridge or in the operations room. The aim is to provide the operational capabilities of a ship or navy in a consistent and concise format. Individual entries are composed so that there is no need to turn a page or cross-refer to other sections. It is always a pleasure to get feedback from those at sea.

All updating material should be sent to:

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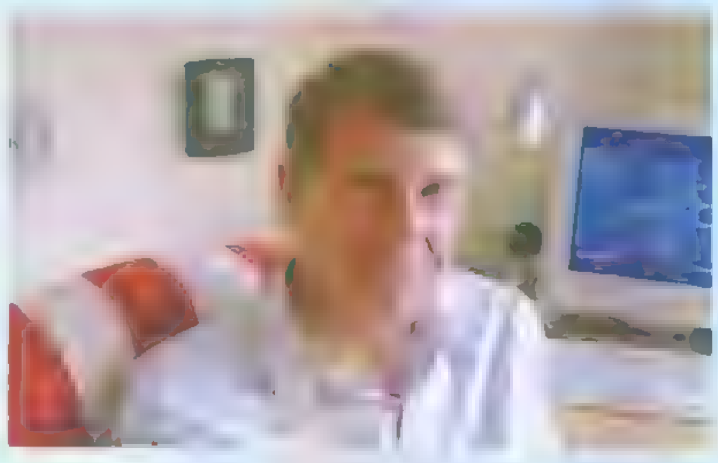
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Stephen Saunders

During a 32-year career in the Royal Navy, Stephen Saunders travelled extensively and worked with many different navies. A surface ship officer and anti-submarine warfare specialist, he served in most classes of warship from Mine Countermeasures vessels to Aircraft Carriers. He commanded the frigate HMS *Sirius* and, as Captain 1st Frigate Squadron, HMS *Coventry*, in the latter role he also commanded the Royal Navy's Armilla patrol when deployed to the Gulf. His broad staff experience included attachment to the NATO staff of Commander US 6th Fleet and several tours in the Ministry of Defence, London. Appointments in Naval Operational Requirements and Defence Concepts led to his final job as Director Force Development within the Defence Policy Division. He graduated from the National Defence College, Latimer, in 1982 and the Royal College of Defence Studies in 1994. Since leaving the Royal Navy in 1998, he has worked in the shipbuilding industry and as a defence consultant.



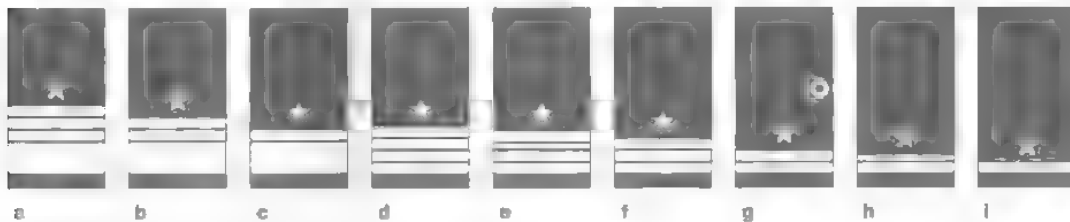
Ranks and insignia of the world's navies

This section portrays the rank insignia worn by commissioned officers of the world's navies and coast guards on formal occasions. The rank titles are described in the language of the relevant country followed by the Royal Navy equivalent.

The traditional uniform pattern has been the very dark blue double-breasted service tunic introduced by the Royal Navy in the 19th Century, with rank insignia worn as thin, medium and wide gold braid rings, with a loop or 'curl' on the uppermost ring, around both cuffs. Other navies and coast guards have changed the tunic colour to black or a lighter shade of dark blue, varied the widths and order of the rings, or replaced the 'curl' with a star or other symbol. Some Middle East, African, Caribbean or Pacific states wear Army insignia or Navy cuff rings on cloth shoulder-straps only, whilst others, especially from the former Warsaw Pact, wear rank insignia simultaneously on the shoulder-straps and cuffs of the tunic.

Similarly most states imitate the Royal Navy by wearing cuff rings on the shoulder-straps of greatcoats or white tropical dress tunics, with 'Flag-Officers' (admirals and sometimes commodores) having gold braid shoulder-straps with a national device above 5 - 1 silver wire Army-style stars. On shirts, pullovers or camouflage field uniforms officers wear their cuff rings on cloth shoulder-loops slipped into cloth shoulder-straps or breast-loops, as metal badges on collars or rectangular breast-patches.

Albania (Forcat e Mbrojtjes Detare Shqiptare)



Gold wire stars and gold braid rings on very dark blue cuffs. Rank titles are in Albanian. The Albanian Border Guard includes a Coast Guard (Rojë Bregdetare).

a: *Admiral, Admiral (rank not currently held)* **b:** *Nenadmiral, Vice Admiral (rank not currently held)*
c: *Kundëradmiral, Rear Admiral (rank not currently held)* **d:** *Kapiten i rangut 1 (të parë), Captain (Commandant, Navy)*
e: *Kapiten i rangut 2 (të dytë), Commander* **f:** *Kapiten i rangut 3 (të tretë), Lieutenant Commander* **g:** *Kapiten Lejtnant, Lieutenant*
h: *Lejtnant, Sub Lieutenant* **i:** *Nënlejtant, Acting Sub Lieutenant*

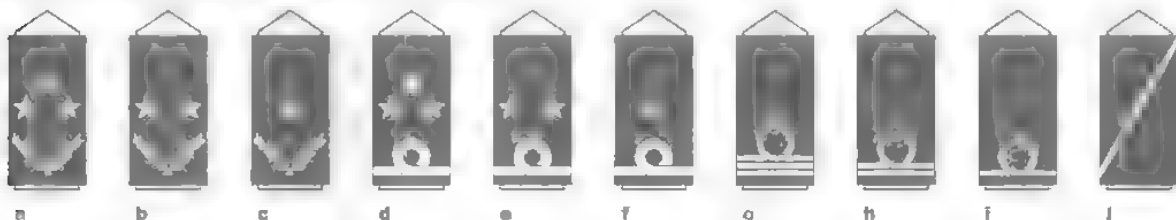
Algeria (Al-Quwwat Al-Bahria Al-Djaza'eria)



Gold braid stars and rings on dark blue cloth cuffs; a Commander (e) has silver braid second and fourth rings; a Midshipman (j) has a silver braid star. Rank insignia is worn simultaneously on shoulder-straps. Brass buttons. Algerian Army rank titles are used and written here in romanised Arabic. Algeria maintains a small Coast Guard.

a: *Fariq, Vice Admiral (rank not currently held)* **b:** *Liwa', Rear Admiral (Commander, Navy)* **c:** *'Amid, Commodore* **d:** *'Aqid, Captain*
e: *Muqaddam, Commander* **f:** *Ra'id, Lieutenant Commander* **g:** *Naqib, Lieutenant* **h:** *Mulazim Awwal, Sub Lieutenant*
i: *Mulazim Thani, Acting Sub Lieutenant* **j:** *Murashshah, Midshipman*

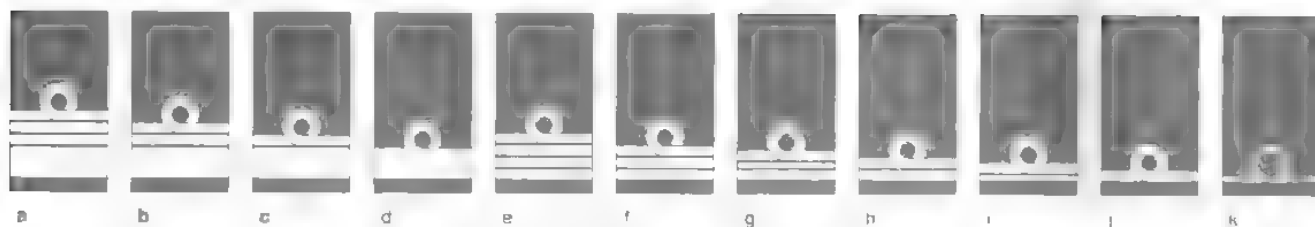
Angola (Marinha de Guerra Angolana)



Gold stars, wreaths, rings and stripes on dark blue cloth shoulder-loops on white cloth shoulder-straps; white bone buttons. Rank titles are in Portuguese.

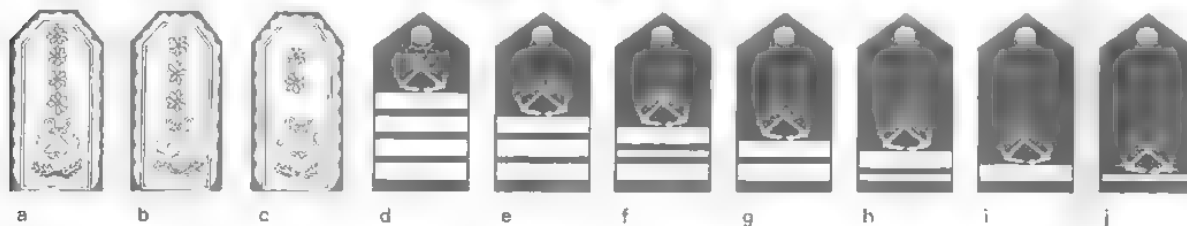
a: *Almirante, Admiral (Chief of Naval Staff)* **b:** *Vice-Almirante, Vice Admiral* **c:** *Contra-Almirante, Rear Admiral* **d:** *Capitão-de-Mar-e-Guerra, Captain*
e: *Capitão de Fragata, Commander* **f:** *Capitão de Corveta, Lieutenant Commander* **g:** *Tenente de Navio, Lieutenant*
h: *Tenente-de-Fragata, Sub Lieutenant* **i:** *Tenente de Corveta, Acting Sub Lieutenant* **j:** *Aspirante, Midshipman*

Argentina (Armada Argentina)



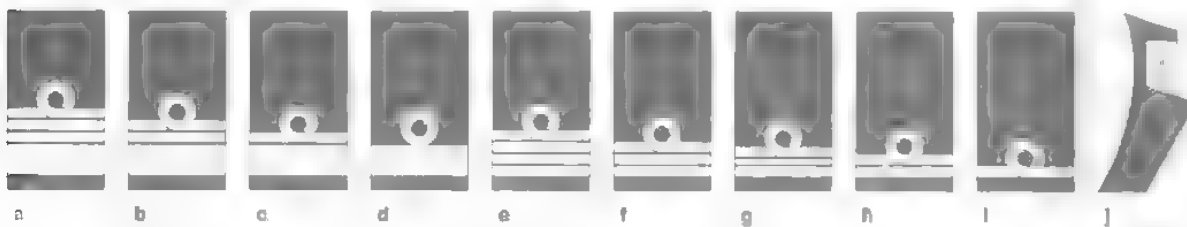
Gold braid rings with 'curl' on navy blue cloth cuffs. Rank titles are in Spanish
a: *Almirante*, Admiral (*Chief of Naval Staff*) **b:** *Vicealmirante*, Vice Admiral **c:** *Contraalmirante*, Rear Admiral **d:** *Comodoro de Marina*, Commodore
e: *Capitán de Navío*, Captain **f:** *Capitán de Fragata*, Commander **g:** *Capitán de Corbeta*, Lieutenant Commander **h:** *Teniente de Navío*, Lieutenant
i: *Teniente de Fragata*, (Senior) Sub Lieutenant **j:** *Teniente de Corbeta*, Sub Lieutenant **k:** *Guardiamarina*, Acting Sub Lieutenant

Argentina Coast Guard (Prefectura Naval Argentina)



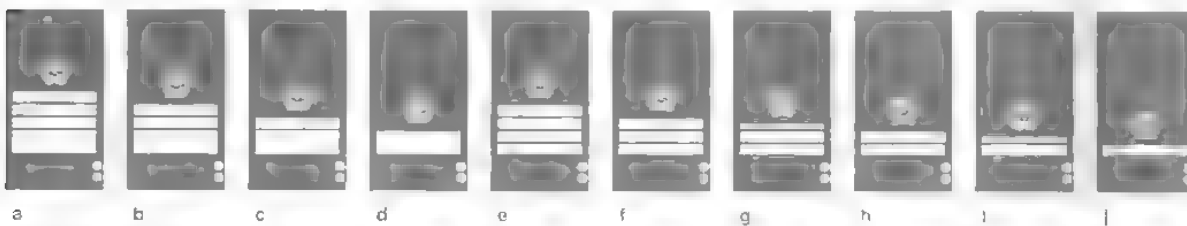
Silver suns, anchors and wreaths on gold braid shoulder-straps edged in very dark blue cloth (a-c); gold braid anchors and rings on very dark blue cloth shoulder-straps; brass buttons. Rank titles are in Spanish
a: *Prefecto Nacional*, Admiral (*Prefect-General, PNA*) **b:** *Subprefecto Nacional*, Vice Admiral **c:** *Prefecto General*, Rear Admiral
d: *Prefecto Mayor*, Captain **e:** *Prefecto Principal*, Commander **f:** *Prefecto*, Lieutenant Commander **g:** *Subprefecto*, Lieutenant
h: *Oficial Principal*, (Senior) Sub Lieutenant **i:** *Oficial Auxiliar*, Sub Lieutenant **j:** *Oficial Ayudante*, Acting Sub Lieutenant

Australia (Royal Australian Navy)



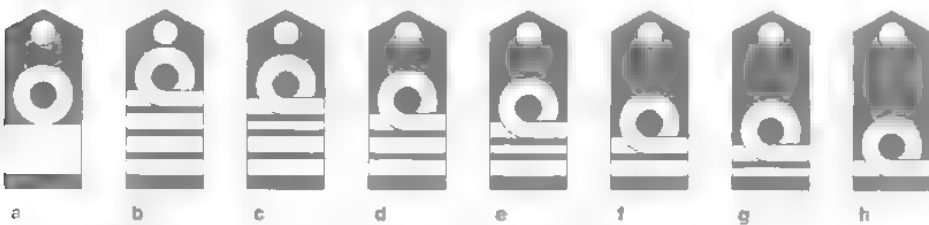
Gold braid rings with 'curl' on very dark blue cloth cuffs; brass button and white cord on white cloth collar patch (j). Royal Navy rank titles are used. The Australian Volunteer Coast Guard is a civilian organisation
a: Admiral (*rank not currently held*) **b:** Vice Admiral (*Chief of Navy*) **c:** Rear Admiral **d:** Commodore **e:** Captain **f:** Commander
g: Lieutenant Commander **h:** Lieutenant **i:** Sub Lieutenant **j:** Midshipman

Azerbaijan (Azerbycan herbi deniz qüvveleri)



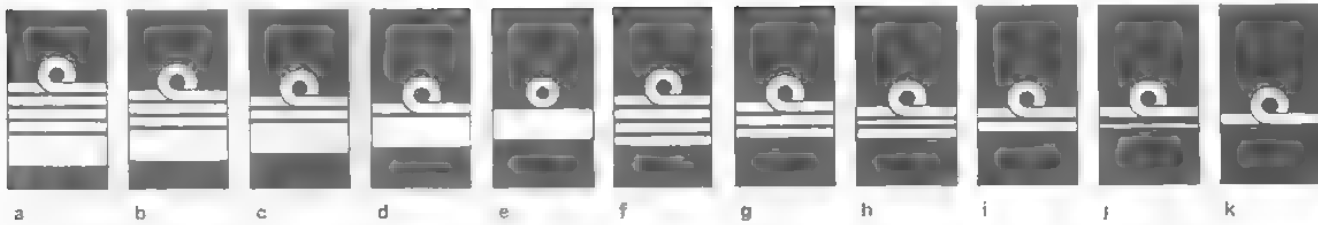
Gold wire stars and wreaths and gold braid rings on black cloth cuffs, brass buttons. Rank titles are in Azeri. The Azerbaijan Border Guard includes a small Coast Guard.
a: *Admiral*, Admiral (*rank not currently held*) **b:** *Vitse-admiral*, Vice Admiral (*Commander in-Chief, Navy*) **c:** *Kontr-admiral*, Rear Admiral
d: *1 (Birinci) dərəcəli kapitan*, Captain **e:** *2 (ikinci) dərəcəli kapitan*, Commander **f:** *3 (Üçüncü) dərəcəli kapitan*, Lieutenant Commander
g: *Kapitan-leytenant*, Lieutenant **h:** *Baş leytenant*, (Senior) Sub Lieutenant **i:** *Leytenant*, Sub Lieutenant **j:** *Kıçık leytenant*, Acting Sub Lieutenant

Bahamas (Royal Bahamas Defence Force)



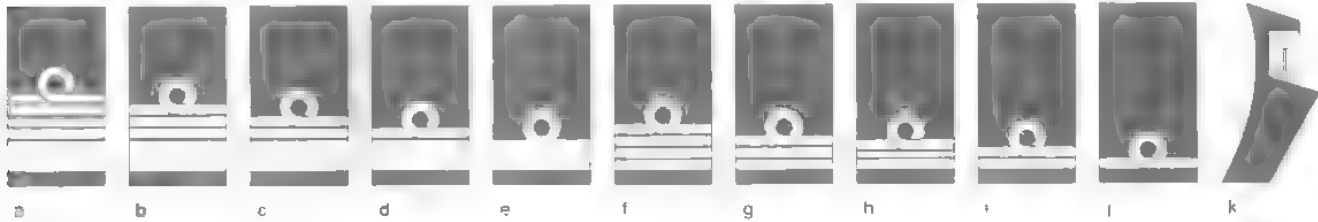
Gold braid rings with 'curl' on very dark blue cloth cuffs. Rank titles are in English
a: *Commodore*, Commodore (*Commander, RBDF*) **b:** *Captain*, Captain (*rank not currently held*) **c:** *Senior Commander*, (Senior) Commander
d: *Commander*, Commander **e:** *Lieutenant Commander*, Lieutenant Commander **f:** *Senior Lieutenant*, Lieutenant **g:** *Lieutenant*, Sub Lieutenant
h: *Sub Lieutenant*, Acting Sub Lieutenant

Bahrain (Royal Bahrain Navy)



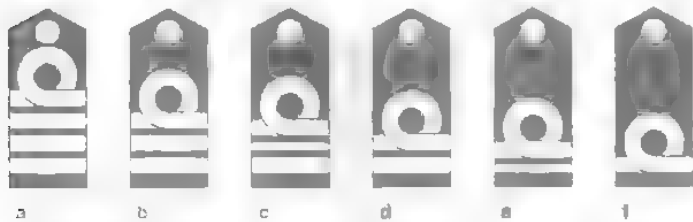
Gold braid rings with 'curl' on very dark blue cloth cuffs. Arabic Bahrain Army rank titles are used and written here in romanised script
a: *Mushir*, Admiral of the Fleet (*King of Bahrain*) **b:** *Fariq Awwal*, Admiral (*rank not currently held*) **c:** *Fariq*, Vice Admiral (*rank not currently held*)
d: *'Arwa'*, Rear Admiral (*rank not currently held*) **e:** *'Amid*, Commodore (*Commander, RBNF*) **f:** *'Aqid*, Captain **g:** *Muqaddam*, Commander
h: *Ra'id*, Lieutenant Commander **i:** *Naqib*, Lieutenant **j:** *Mulazim Awwal*, Sub Lieutenant **k:** *Mulazim Thani*, Acting Sub Lieutenant

Bangladesh (Nou Bahini)



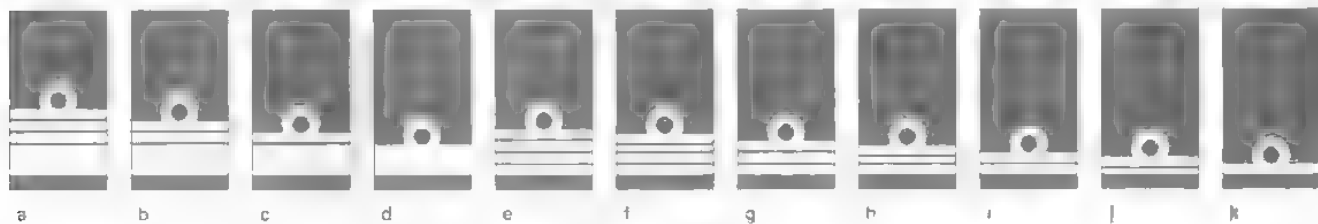
Gold braid rings with 'curl' on very dark blue cloth cuffs, brass button and white cord on white cloth collar-patch (k) Royal Navy rank titles are used. The Bangladesh Coast Guard forms part of the Ministry of Home Affairs. Personnel wear naval uniforms and insignia with a Commodore as the Director General
a: Admiral of the Fleet (*rank not currently held*) **b:** Admiral (*rank not currently held*) **c:** Vice Admiral (*Chief of Naval Staff*) **d:** Rear Admiral
e: Commodore **f:** Captain **g:** Commander **h:** Lieutenant Commander **i:** Lieutenant **j:** Sub Lieutenant & Acting Sub Lieutenant **k:** Midshipman

Barbados Coast Guard



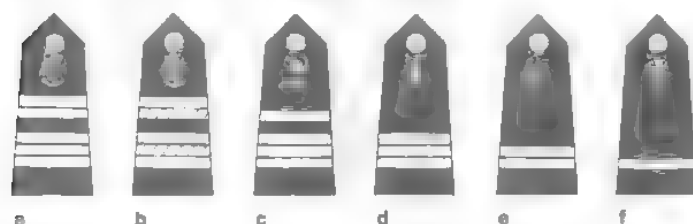
Gold braid rings with 'curl' on very dark blue cloth shoulder straps; brass buttons. Rank titles are in English
a: Captain, Captain (*rank not currently held*) **b:** Commander, Commander (*rank not currently held*)
c: Lieutenant Commander, Lieutenant Commander (*Commanding Officer BCG*) **d:** Lieutenant, Lieutenant **e:** Junior Lieutenant, Sub Lieutenant
f: Sub Lieutenant, Acting Sub Lieutenant

Belgium (Naval Component) (Zee-macht/Force Navale)



Gold braid rings on very dark blue cloth cuffs. Rank titles are in Flemish/French.
a: *Admiraal/Amiral*, Admiral (*King Albert II*) **b:** *Vice-admiraal/Vice amiral*, Vice Admiral (*Chief of Court Protocol*)
c: *Divisie-admiraal/Amiral de division*, Rear Admiral (*Commandant, Naval Component*) **d:** *Flottieljeadmiraal/Amiral de flottille*, Commodore
e: *Kapitein-ter-zee/Capitaine de vaisseau*, Captain **f:** *Korvetkapitein/Capitaine de corvette*, Lieutenant Commander
g: *Luitenant-ter-zee 1ste klasse/Lieutenant de vaisseau 1ère classe*, (Senior) Lieutenant
h: *Luitenant-ter-zee 2de klasse/Lieutenant de vaisseau 2e classe*, Lieutenant **i:** *Vaandrig-ter-zee/Enseigne de vaisseau*, Sub Lieutenant
j: *Vaandrig-ter-zee 1ste klasse/Enseigne de vaisseau 1ère classe*, Acting Sub Lieutenant
k: *Vaandrig-ter-zee 2de klasse/Enseigne de vaisseau 2e classe*, Acting Sub Lieutenant

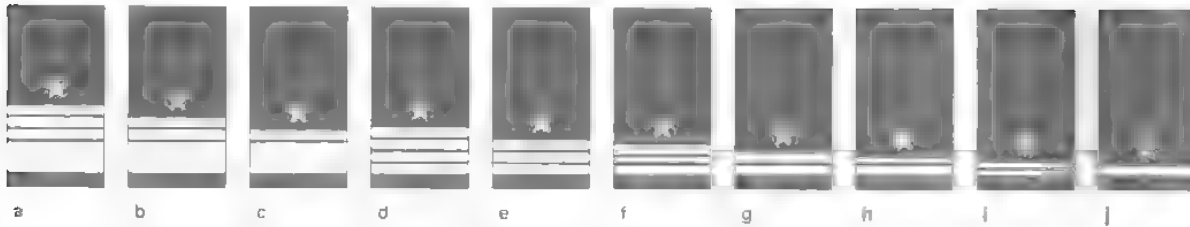
Benin (Forces Navales Béninoises)



Gold braid anchor and rings on very dark blue cloth shoulder-straps; a Commander (b) has silver second and fourth rings; brass buttons. Rank titles are in French
a: *Capitaine de vaisseau*, Captain (*rank not currently held*) **b:** *Capitaine de frégate*, Commander (*Commander, Navy*)
c: *Capitaine de corvette*, Lieutenant Commander **d:** *Lieutenant de vaisseau*, Lieutenant **e:** *Enseigne de vaisseau 1ère classe*, Sub Lieutenant
f: *Enseigne de Vaisseau 2e (deuxième) classe*, Acting Sub Lieutenant

RANKS AND INSIGNIA OF THE WORLD'S NAVIES

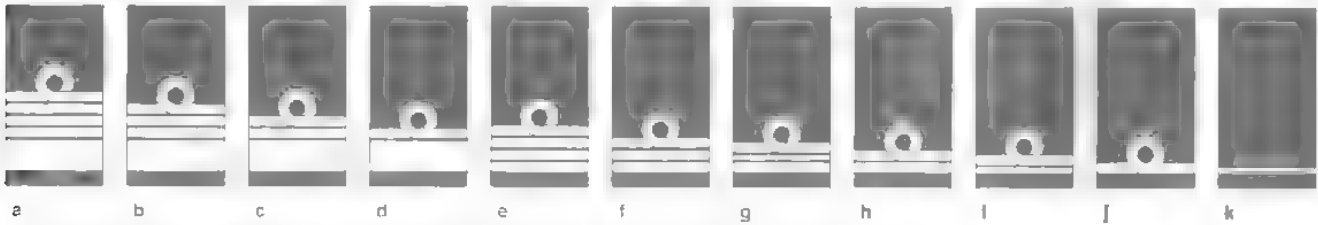
Bolivia (Armada Boliviana)



Gold wire stars and gold braid rings on very dark blue cloth cuffs. Rank titles are in Spanish.

a: Almirante, Admiral (Commander-in-Chief, Armed Forces) **b:** Vicealmirante, Vice Admiral (Commandant General, Navy) **c:** Contralmirante, Rear Admiral
d: Capitán de Navío, Captain **e:** Capitán de Fragata, Commander **f:** Capitán de Corbeta, Lieutenant Commander **g:** Teniente de Navío, Lieutenant
h: Teniente de Fragata, (Senior) Sub Lieutenant **i:** Teniente de Corbeta, Sub Lieutenant **j:** Alférez, Acting Sub Lieutenant

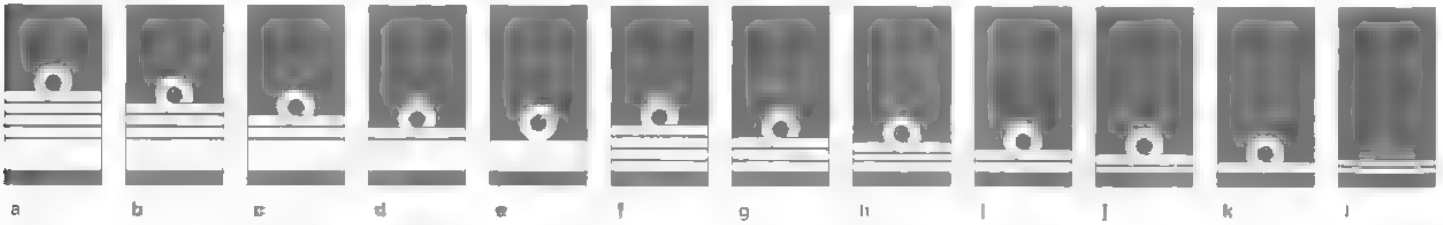
Brazil (Marinha do Brasil)



Gold braid stars and gold braid rings on very dark blue cloth cuffs. Rank titles are in Portuguese.

a: Almirante, Admiral of the fleet (rank not currently held) **b:** Almirante de Esquadra, Admiral (Commander of the Navy) **c:** Vice-Almirante, Vice Admiral
d: Contra Almirante, Rear Admiral **e:** Capitão-de-Mar-e-Guerra, Captain **f:** Capitão-de-Fragata, Commander
g: Capitão-de-Corveta, Lieutenant Commander **h:** Capitão Tenente, Lieutenant **i:** 1o (Primeiro) Tenente, Sub Lieutenant
j: 2o (Segundo) Tenente, Acting Sub Lieutenant **k:** Guarda Marinha, Midshipman

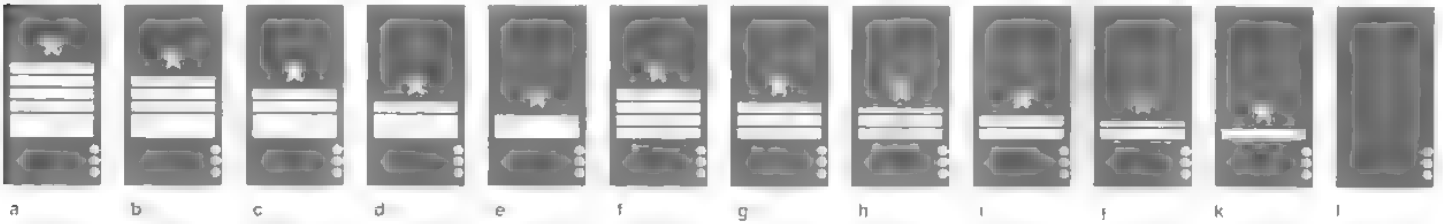
Brunei (Royal Brunei Navy) (Angkatan Tentera Laut Diraja Brunei)



Gold braid rings with 'curl' and national title on very dark blue cloth shoulder-strap; brass buttons. Rank titles are in Malay.

a: Fil Marsyal (L), Admiral of the Fleet (Sultan Haji Hassanah Bolkiyah Mu'izzaddin Waddaulah) **b:** Jeneral (L), Admiral (rank not currently held)
c: Leftenan Jeneral (L), Vice Admiral (rank not currently held) **d:** Mejar Jeneral (L), Rear Admiral (rank not currently held)
e: Brigedler Jeneral (L), Commodore (rank not currently held) **f:** Kolonel (L), Captain (Commander, Navy) **g:** Leftenan Kolonel (L), Commander
h: Mejar (L), Lieutenant Commander **i:** Kapten (L), Lieutenant **j:** Leftenan (L), Sub Lieutenant **k:** Leftenan Muda (L), Acting Sub Lieutenant
l: Kadet Kanan (L), Midshipman

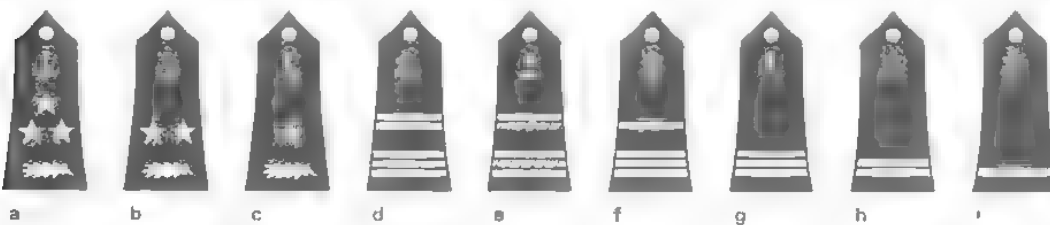
Bulgaria (Voennomorski sili)



Gold wire stars and gold braid bars on black cuffs, brass buttons. Rank insignia is also worn simultaneously on gold braid shoulder-strap. Rank titles are in romanised Bulgarian. The Bulgarian Border Police (Granichna Politsiya) includes a small Coast Guard wearing dark blue police uniforms and insignia

a: Admiral, Admiral (rank not currently held) **b:** Vitseadmiral, Vice Admiral (Commander-in-Chief, Navy) **c:** Kontraadmiral, Rear Admiral
d: Brigaden admiral, Commodore **e:** Kapitan I (parvi) rang, Captain **f:** Kapitan II (vtori) rang, Commander
g: Kapitan III (treti) rang, Lieutenant Commander **h:** Kapitan-leytenant, Lieutenant **i:** Starshi leytenant, (Senior) Sub Lieutenant
j: Leytenant, Sub Lieutenant **k:** Mladshi Leytenant, Acting Sub Lieutenant **l:** Ofitserski kandidat, Midshipman

Cambodia (Royal Cambodian Navy)



Gold wire anchors, stars, branches and gold braid rings on navy blue cloth shoulder straps; a Commander (e) has silver second and fourth rings; brass buttons
 Cambodian Army rank titles are used

a: Udon-Nearvey Ek, Vice Admiral (Commander, Navy) **b:** Udon-Nearvey-Tor, Rear Admiral **c:** Udon-Nearvey-Trey, Commodore
d: Vorak-Nearvey-Ek, Captain **e:** Vorak-Nearvey-Tor, Commander **f:** Vorak-Nearvey-Trey, Lieutenant Commander **g:** Aknouk-Nearvey-Ek, Lieutenant
h: Aknouk-Nearvey-Tor, Sub Lieutenant **i:** Aknouk-Nearvey-Trey, Acting Sub Lieutenant

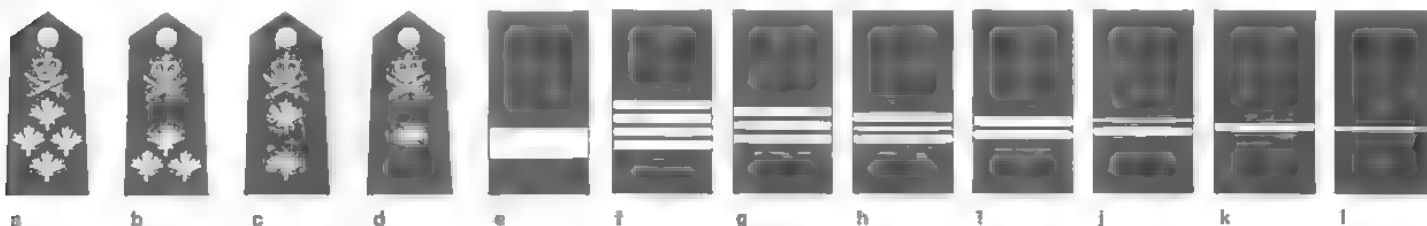
Cameroon (Marine Nationale du Cameroun)



Silver lions, anchors and stars on very dark blue cloth shoulder-straps edged gold (a-d), gold anchors, stars and rings on very dark blue cloth shoulder straps (e-k), brass buttons; a Commander (f) has silver braid first and second rings, a Midshipman (k) a gold braid ring with two mid-blue 'breaks'. Rank titles are in French.

a: *Amiral d'escadre*, Admiral (rank not currently held) **b:** *Vice-amiral d'escadre*, Vice Admiral (rank not currently held)
c: *Vice-amiral*, Rear Admiral (Chief of Naval Staff) **d:** *Contre-amiral*, Commodore **e:** *Capitaine de vaisseau*, Captain **f:** *Capitaine de frégate*, Commander
g: *Capitaine de corvette*, Lieutenant Commander **h:** *Lieutenant de vaisseau*, Lieutenant **i:** *Enseigne de vaisseau de 1ère (première) classe*, Sub Lieutenant
j: *Enseigne de vaisseau de 2e (deuxième) classe*, Acting Sub Lieutenant **k:** *Aspirant*, Midshipman

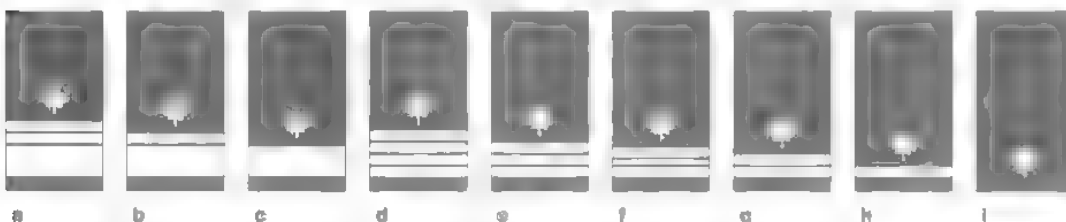
Canada



Gold embroidered crowns, crossed batons and scimitars and maple-leaves on very dark blue cloth shoulder-straps, brass buttons (a-d); gold braid rings on very dark blue cloth cuffs (e-l). Rank titles are in English/French.

a: *Admiral/Amiral*, Admiral (rank not currently held) **b:** *Vice Admiral/Vice amiral*, Vice Admiral (Chief of Maritime Staff)
c: *Rear Admiral/Contre-amiral*, Rear Admiral **d:** *Commodore/Commodore*, Commodore **e:** *Flag Officers* **f:** *Captain/Capitaine de vaisseau*, Captain
g: *Commander/Capitaine de frégate*, Commander **h:** *Lieutenant Commander/Capitaine de corvette*, Lieutenant Commander
i: *Lieutenant/Lieutenant de vaisseau*, Lieutenant **j:** *Sub Lieutenant/Enseigne de vaisseau de 1ère (première) classe*, Sub Lieutenant
k: *Acting Sub Lieutenant/Enseigne de vaisseau de 2e (deuxième) classe*, Acting Sub Lieutenant **l:** *Officer Cadet/Aspirant de marine*, Midshipman

Canada (Canadian Coast Guard/Garde côtière canadienne)



Gold wire maple-leaves and gold braid rings on very dark blue cloth cuffs. Rank titles are in English/French.

a: *Commissioner/Commissaire*, Vice Admiral (Commissioner, CCG) **b:** *Deputy Commissioner/Sous-commissaire*, Rear Admiral
c: *Assistant Commissioner/Commissaire adjoint* **d:** *Commanding Officer/Commandant*, Captain **e:** *Chief Officer/Capitaine en 2e (Second)*, Commander
f: *1st (First) Officer/1er (Premier) Officier*, Lieutenant Commander **g:** *2nd (Second) Officer/2e (Deuxième) Officier*, Lieutenant
h: *3rd (Third) Officer/3e (Troisième) Officier*, Sub Lieutenant **i:** *Officer Cadet/Éleve-officier*, Midshipman

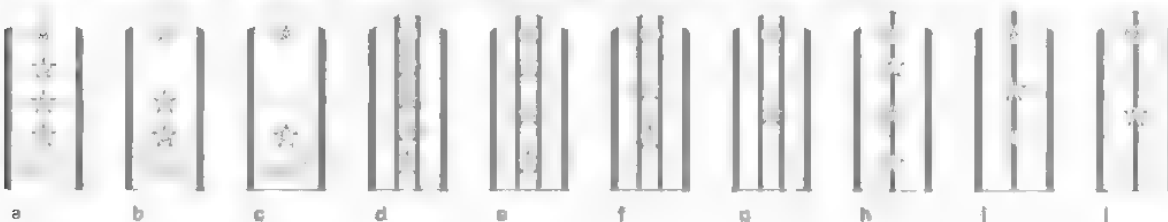
Chile (Armada de Chile)



Gold wire, gold braid rings and brass buttons on very dark blue cloth cuffs. Rank titles are in Spanish

a: *Almirante*, Admiral (Commander-in Chief, Navy) **b:** *Vicealmirante*, Vice Admiral **c:** *Contraalmirante*, Rear Admiral **d:** *Comodoro*, Commodore
e: *Capitan de Navío*, Captain **f:** *Capitan de Fragata*, Commander **g:** *Capitán de Corbeta*, Lieutenant Commander **h:** *Teniente 1º (Primero)*, Lieutenant
i: *Teniente 2º (Segundo)*, Sub Lieutenant **j:** *Subteniente*, Acting Sub Lieutenant **k:** *Guardiamarina*, Midshipman

China (People's Liberation Army Navy) (Zhongguó Rénmín Jiěfāngjūn Hǎijūn)

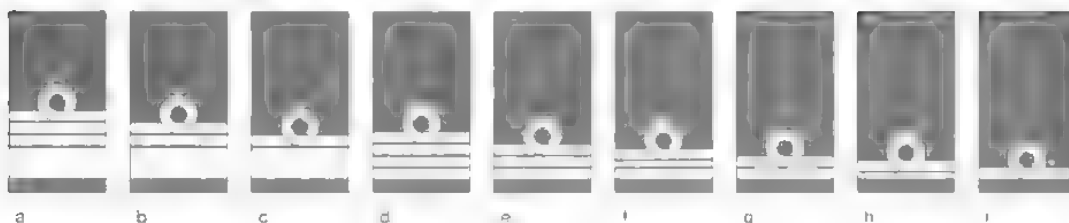


Gold metal stars (a-c), silver metal stars (d-j) and gold metal oak-leaves on gold braid shoulder-straps with black edging and centre-stripes; brass buttons. Rank titles are in romanised Mandarin Chinese written in 'Hanyu Pinyin'. The Chinese Border Guard includes a Coast Guard.

a: *Hǎijūn Shàngjiāng*, Admiral (Commander-in Chief, Navy) **b:** *Hǎijūn Zhōngjiāng*, Vice Admiral **c:** *Hǎijūn Shǎojiāng*, Rear Admiral
d: *Hǎijūn Dàxiào*, Commodore **e:** *Hǎijūn Shàngxiào*, Captain **f:** *Hǎijūn Zhōngxiào*, Commander **g:** *Hǎijūn Shǎoxiào*, Lieutenant Commander
h: *Hǎijūn Shàngwèi*, Lieutenant **i:** *Hǎijūn Zhōngwèi*, Sub Lieutenant **j:** *Hǎijūn Shǎowèi*, Acting Sub Lieutenant

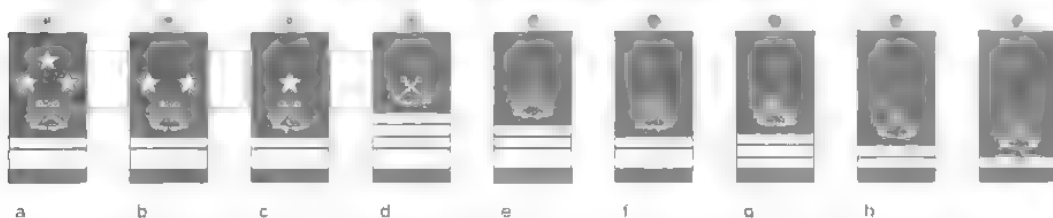
RANKS AND INSIGNIA OF THE WORLD'S NAVIES

Colombia (Armada Nacional de Colombia)



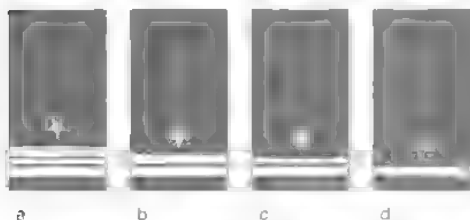
Gold braid rings with 'curl' on very dark blue cloth cuffs. Rank titles are in Spanish. The Colombian Navy maintains a small Coast Guard (Guardacosta)
a: *Almirante, Admiral (Commander, Navy)* **b:** *Vicealmirante, Vice Admiral* **c:** *Contraalmirante, Rear Admiral* **d:** *Capitán de Navío, Captain*
e: *Capitan de Fragata, Commander* **f:** *Capitan de Corbeta, Lieutenant Commander* **g:** *Teniente de Navío, Lieutenant*
h: *Teniente de Fragata, Sub Lieutenant* **i:** *Teniente de Corbeta, Acting Sub Lieutenant*

Democratic Republic of Congo (Marine Nationale Congolaise)



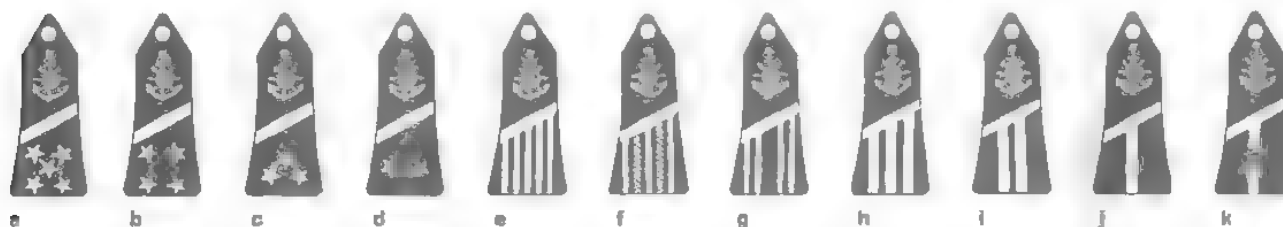
Silver braid stars and gold braid crossed anchors and rings on very dark blue cloth shoulder-loops. Rank titles are in French
a: *Lieutenant General, Admiral* **b:** *General-Major, Vice Admiral (Commander, Navy)* **c:** *General de Brigade, Rear Admiral*
d: *Capitaine de vaisseau, Captain* **e:** *Capitaine de frigate, Commander* **f:** *Capitaine de corvette, Lieutenant Commander*
g: *Lieutenant de vaisseau, Lieutenant* **h:** *Enseigne de vaisseau de 1ère (première) classe, Sub Lieutenant*
i: *Enseigne de vaisseau de 2e (deuxième) classe, Acting Sub Lieutenant*

Costa Rica (Coast Guard) (Servicio Nacional de Guardacostas)



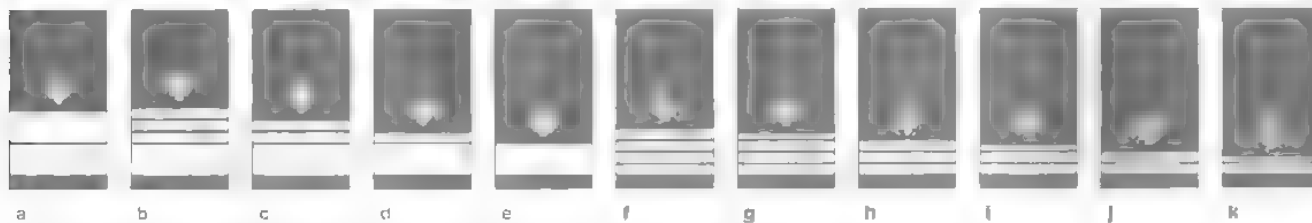
Gold wire stars and gold braid rings on very dark blue cuffs. Army rank titles in Spanish are used
a: *Mayor, Lieutenant Commander (Commander, Coast Guard)* **b:** *Capitán, Lieutenant* **c:** *Teniente, Sub Lieutenant*
d: *Sub Teniente, Acting Sub Lieutenant*

Côte d'Ivoire (Marine Nationale de la Côte d'Ivoire)



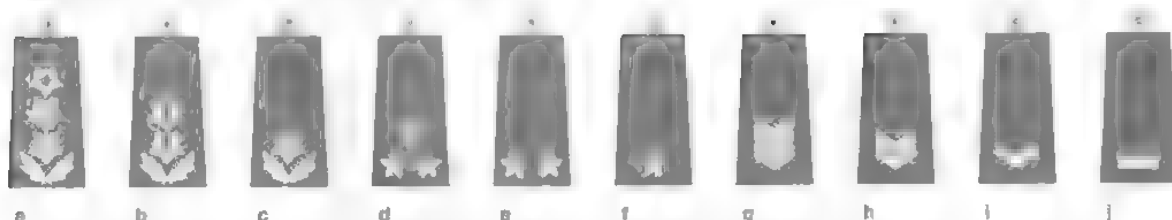
Gold metal stars and anchors with ship's wheels and gold braid diagonal and vertical stripes on very dark blue cloth shoulder-straps, brass buttons. **a** Commander (f) has silver braid second and fourth vertical stripes, a Midshipman (k) a gold braid vertical stripe with two mid blue 'breaks'. Rank titles are in French
a: *Amiral, Admiral (rank not currently held)* **b:** *Vice amiral d'escadre, Vice Admiral (rank not currently held)*
c: *Vice-amiral, Rear Admiral (rank not currently held)* **d:** *Contre amiral, Commodore (Commander, Navy)* **e:** *Capitaine de vaisseau, Captain*
f: *Capitaine de frigate, Commander* **g:** *Capitaine de corvette, Lieutenant Commander* **h:** *Lieutenant de vaisseau, Lieutenant*
i: *Enseigne de vaisseau de 1ère (première) classe, Sub Lieutenant* **j:** *Enseigne de vaisseau de 2e (deuxième) classe, Acting Sub Lieutenant*
k: *Aspirant, Midshipman*

Croatia (Hrvatska Ratna Mornarica)



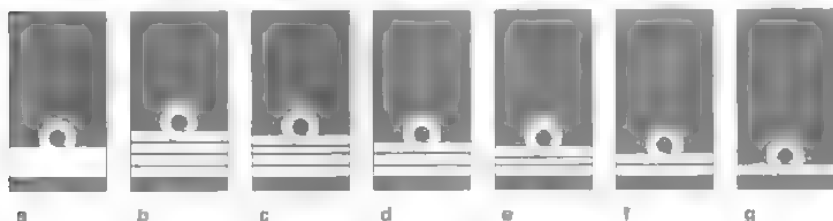
Gold wire rhomboids and gold braid rings on very dark blue cuffs. Rank titles are in Croatian.
a: *Stožerni Admiral, Admiral of the Fleet (rank not currently held)* **b:** *Admiral, Admiral (rank not currently held)*
c: *Viceadmiral, Vice Admira. (rank not currently held)* **d:** *Kontraadmiral, Rear Admiral (Commander, Navy)* **e:** *Komodor, Commodore*
f: *Kapetan bojnog broda, Captain* **g:** *Kapetan fregate, Commander* **h:** *Kapetan korvete, Lieutenant Commander* **i:** *Poručnik bojnog broda, Lieutenant*
j: *Poručnik fregate, Sub Lieutenant* **k:** *Poručnik korvete, Acting Sub Lieutenant*

Cuba (Marina de Guerra Revolucionaria)



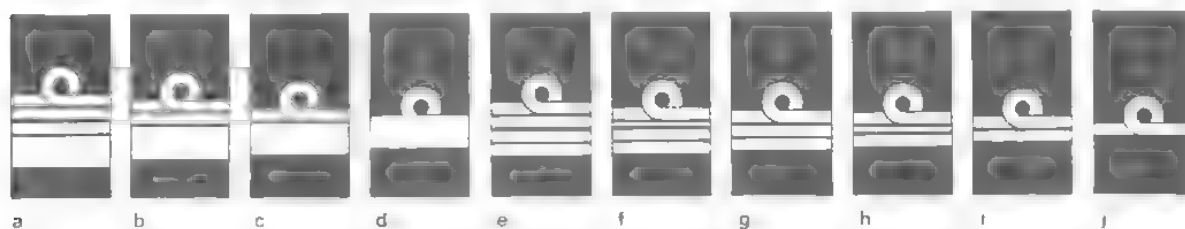
Large gold stars with black anchors on red bosses and silver rays on black braid shoulder-loops (a-c); gold stars, chevrons and bars on black cloth shoulder-loops on white shoulder-straps; white bone buttons. Rank titles are in Spanish. The Cuban Border Guard includes a small Coast Guard
a: *Almirante*, Vice Admiral (*rank not currently held*) **b:** *Vicealmirante*, Rear Admiral (*Commander, Navy*) **c:** *Contraalmirante*, Commodore
d: *Capitán de Navio*, Captain **e:** *Capitán de Fragata*, Commander **f:** *Capitán de Corbeta*, Lieutenant Commander **g:** *Teniente de Navio*, Lieutenant
h: *Teniente de Fragata*, (Senior) Sub Lieutenant **i:** *Teniente de Corbeta*, Sub Lieutenant **j:** *Alférez*, Acting Sub Lieutenant

Cyprus (National Guard Naval Command)



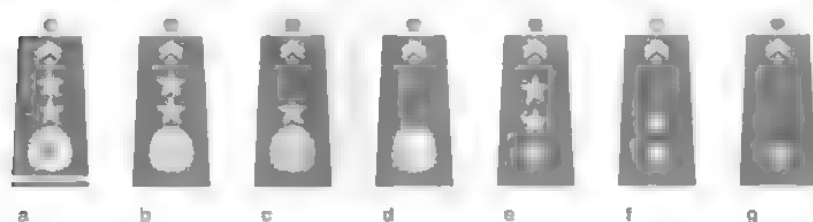
Gold braid rings with 'curl' on very dark blue cloth cuffs. Rank titles in romanised Greek. Cyprus also maintains a small Coast Guard entitled the Cyprus Port and Marine Police (*Limeniki & Nautiki Astinomia*) wearing dark blue Cyprus Police uniforms and insignia
a: *Archipoliarchos*, Commodore (*rank not currently held*) **b:** *Ploiarchos*, Captain (*Commander, Navy*) **c:** *Antiploiarchos*, Commander
d: *Plotarchis*, Lieutenant Commander **e:** *Ipoploiarchos*, Lieutenant **f:** *Antipoploiarchos*, Sub Lieutenant **g:** *Simaforos*, Acting Sub Lieutenant

Denmark (Kongelige Danske Marine)



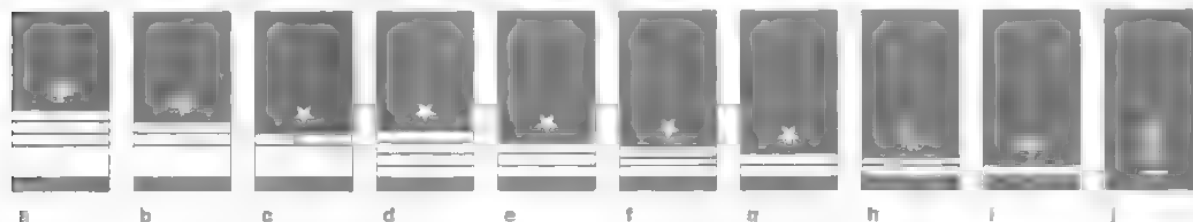
Gold braid rings with 'curl' on black cuffs. Rank titles are in Danish. The Danish Coast Guard (*Farlandsvæsenet*) is commanded by a Director-General.
a: *Admiral*, Admiral (*rank not currently held*) **b:** *Viceadmiral*, Vice Admiral (*rank not currently held*) **c:** *Kontreadmiral*, Rear Admiral (*Chief of the Navy*)
d: *Flotilleadmiral*, Commodore **e:** *Kommandør*, Captain **f:** *Kommandørkaptajn*, Commander **g:** *Orlogskaptajn*, Lieutenant Commander
h: *Kaptajnløjtnant*, Lieutenant **i:** *Premierløjtnant*, Sub Lieutenant **j:** *Løjtnant*, Acting Sub Lieutenant

Djibouti (Marine Nationale Djiboutienne)



Gold wire chevrons and red cloth star above gold embroidered stars and crest and red cloth bar on very dark blue cloth shoulder-loops. Army rank titles are used and are in French
a: *Colonel-Major*, Commodore (*Commander of the Navy*) **b:** *Colonel*, Captain **c:** *Lieutenant Colonel*, Commander
d: *Commandant*, Lieutenant Commander **e:** *Capitaine*, Lieutenant **f:** *Lieutenant*, Sub Lieutenant **g:** *Sous-lieutenant*, Acting Sub Lieutenant

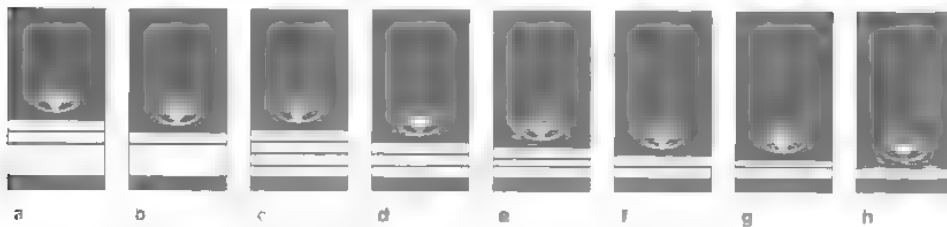
Dominican Republic (Marina de Guerra Dominicana)



Gold wire stars and anchor and gold braid rings and bar on very dark blue cuffs. Rank titles are in Spanish.
a: *Almirante*, Admiral (*rank not currently held*) **b:** *Vicealmirante*, Vice Admiral (*Chief of Naval Staff*) **c:** *Contraalmirante*, Rear Admiral
d: *Capitán de Navio*, Captain **e:** *Capitán de Fragata*, Commander **f:** *Capitán de Corbeta*, Lieutenant **g:** *Teniente de Navio*, Lieutenant
h: *Alférez de Navio*, Sub Lieutenant **i:** *Alférez de Fragata*, Acting Sub Lieutenant
j: *Guardiamarina*, Midshipman, 1st Year of training (*higher ranks 2-5 bars*)

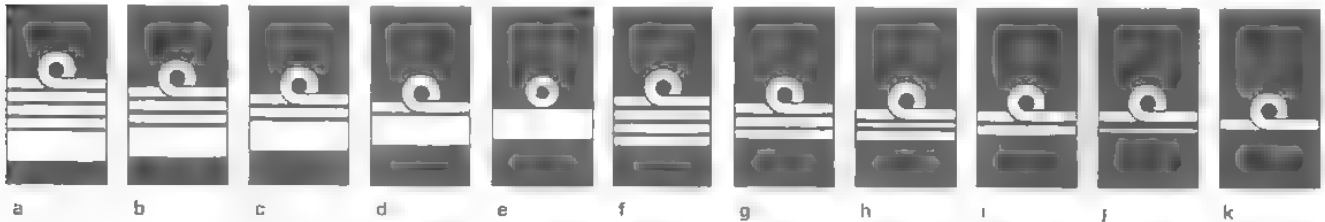
RANKS AND INSIGNIA OF THE WORLD'S NAVIES

Ecuador (Armada de Ecuador)



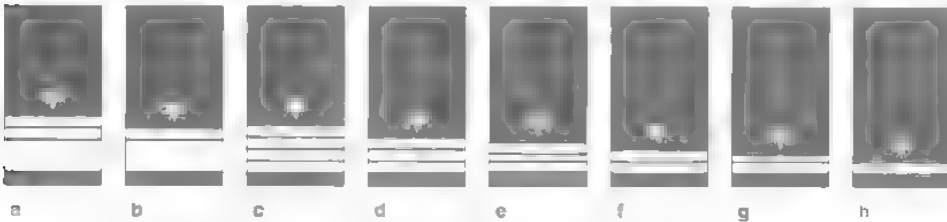
Gold wire condor in a very dark blue cloth oval edged in gold wire and gold braid rings on very dark blue cuffs. Rank titles are in Spanish
a: *Vicealmirante, Vice Admiral (Commandant-General)* **b:** *Contraalmirante, Rear Admiral* **c:** *Capitan de Navio, Captain*
d: *Capitan de Fragata, Commander* **e:** *Capitan de Corbeta, Lieutenant Commander* **f:** *Teniente de Navio, Lieutenant*
g: *Teniente de Fragata, Sub Lieutenant* **h:** *Teniente de Corbeta, Acting Sub Lieutenant*

Egypt



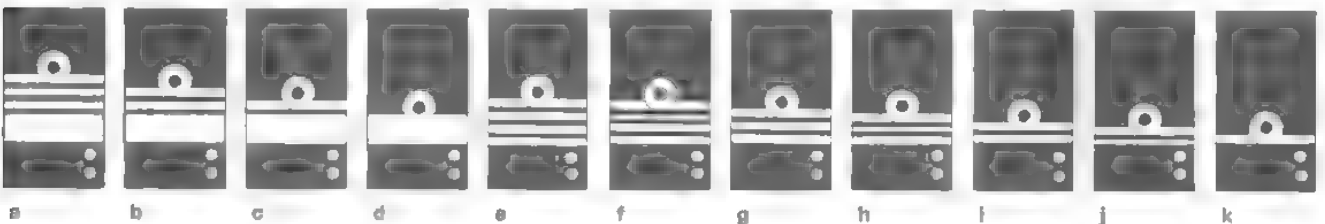
Gold braid rings with 'curl' on navy blue cloth cuffs. Arabic Egyptian Army rank titles are used and written here in romanised script.
a: *Mushir, Admiral of the Fleet (rank not currently held)* **b:** *Fariq Awwal, Admiral (rank not currently held)* **c:** *Fariq, Vice Admiral (Commander, Navy)*
d: *Liwa', Rear Admiral* **e:** *'Amid, Commodore* **f:** *'Aqid, Captain* **g:** *Muqaddam, Commander* **h:** *Ra'id, Lieutenant Commander* **i:** *Naqib, Lieutenant*
j: *Mulazim Awwal, Sub Lieutenant* **k:** *Mulazim Thani, Acting Sub Lieutenant*

El Salvador (Fuerza Naval de El Salvador)



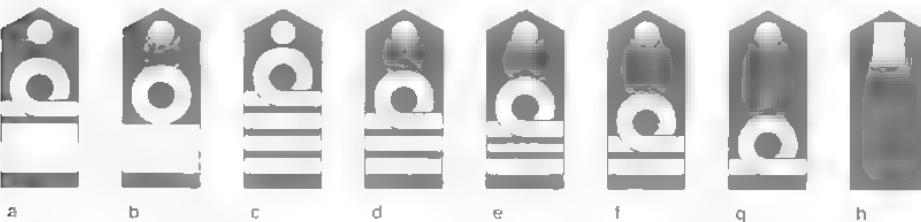
Gold wire stars and gold braid rings on very dark blue cuffs. Rank titles are in Spanish
a: *Vice Almirante, Vice Admiral (rank not currently held)* **b:** *Contraalmirante, Rear Admiral (Commander, Naval Force)* **c:** *Capitan de Navio, Captain*
d: *Capitan de Fragata, Commander* **e:** *Capitan de Corbeta, Lieutenant Commander* **f:** *Teniente de Navio, Lieutenant*
g: *Teniente de Fragata, Sub Lieutenant* **h:** *Teniente de Corbeta, Acting Sub Lieutenant*

Estonia (Eesti Merevägi)



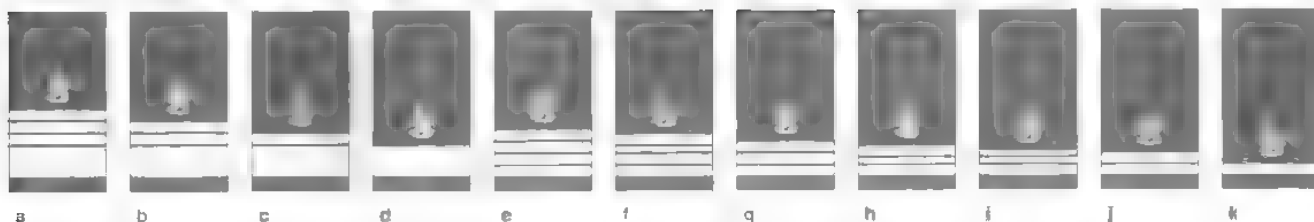
Gold braid rings with 'curl' on very dark blue cloth cuffs; brass buttons. Rank titles are in Estonian
a: *Admiral, Admiral (rank not currently held)* **b:** *Vitseadmiral, Vice Admiral (Chief of the Defence Forces)*
c: *Kontradmiraal, Rear Admiral (rank not currently held)* **d:** *Kommodoor, Commodore (rank not currently held)*
e: *Mereväekapten, Captain (Commander, Navy)* **f:** *Kaptenleitnant, Commander* **g:** *Kaptenmajor, Lieutenant Commander* **h:** *Vanemleitnant, Lieutenant*
i: *Leitnant, (Senior) Sub Lieutenant* **j:** *Nooremleitnant, Sub Lieutenant* **k:** *Lipnik, Acting Sub Lieutenant*

Fiji



Gold braid rings with 'curl' on very dark blue cloth cuffs; brass button and white cord on white cloth collar-patch (h) Royal Navy rank titles are used.
a: *Rear Admiral (rank not currently held)* **b:** *Commodore (Commander, Royal Fiji Military Forces)* **c:** *Captain (Deputy Commander, RFMF)*
d: *Commander (Commanding Officer, Navy)* **e:** *Lieutenant Commander* **f:** *Sub Lieutenant* **g:** *Midshipman*

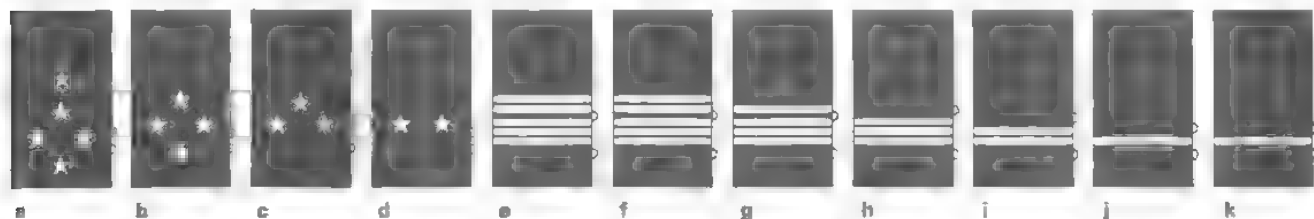
Finland (Suomen Merivoimat/Finska Marinen)



Gold wire Finnish heraldic lions and gold braid rings on navy blue cuffs. Rank titles are in Finnish/Swedish. The Finnish Coast Guard (*Merivartiosto/Sjöbevakning*) forms part of the Interior Ministry. Personnel wear naval uniforms and insignia with Captain (*Kommodori/Kommodor*) as the highest rank.

a: *Amiraali/Amiral, Admiral (Chief of Defence Staff)* **b:** *Vara-amiraali/Viceamiral, Vice Admiral (Commander, Navy)*
c: *Kontra-amiraali/Konteramiral, Rear Admiral* **d:** *Lippueamiraali/Flottiljarmiral, Commodore* **e:** *Kommodori/Kommodor, Captain*
f: *Komentaja/Kommandör, Commander* **g:** *Komentajakapteeni/Kommandorkapten, Lieutenant Commander*
h: *Kapteeniluutnantti/Kaptenlöjtnant, Lieutenant* **i:** *Yliuutnantti/Premiärlöjtnant, (Senior) Sub Lieutenant* **j:** *Luutnantti/Löjtnant, Sub Lieutenant*
k: *Aliluutnantti/Underlöjtnant, Acting Sub Lieutenant*

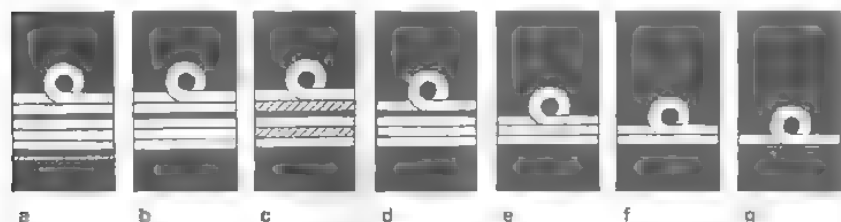
France (Marine Nationale)



Silver metal stars and gold braid rings on very dark blue cloth cuffs, brass buttons; a Commander (f) has silver braid second and fourth rings, a Midshipman (k) a gold braid ring with two mid blue 'breaks'. Rank titles are in French.

a: *Amiral, Admiral (Chief of Naval Staff)* **b:** *Vice-amiral d'escadre, Vice Admiral* **c:** *Vice-amiral, Rear Admiral* **d:** *Contre-amiral, Commodore*
e: *Capitaine de vaisseau, Captain* **f:** *Capitaine de fregate, Commander* **g:** *Capitaine de corvette, Lieutenant Commander*
h: *Lieutenant de vaisseau, Lieutenant* **i:** *Enseigne de vaisseau de 1ère (première) classe, Sub Lieutenant*
j: *Enseigne de vaisseau de 2e (deuxième) classe, Acting Sub Lieutenant* **k:** *Aspirant, Midshipman*

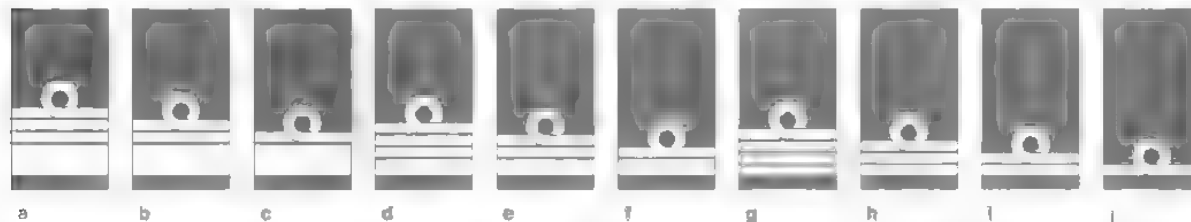
Gabon (Marine Gabonaise)



Gold braid rings with 'curl' on very dark blue cloth cuffs; a Commodore (a) has a silver braid bottom ring, a Commander (c) silver braid second and fourth rings. Rank titles are in French.

a: *Capitaine de vaisseau major, Commodore (Chief of Naval Staff)* **b:** *Capitaine de vaisseau, Captain* **c:** *Capitaine de frégate, Commander*
d: *Capitaine de corvette, Lieutenant Commander* **e:** *Lieutenant de vaisseau, Lieutenant* **f:** *Enseigne de vaisseau de 1ère (première) classe, Sub Lieutenant*
g: *Enseigne de vaisseau de 2e (deuxième) classe, Acting Sub Lieutenant*

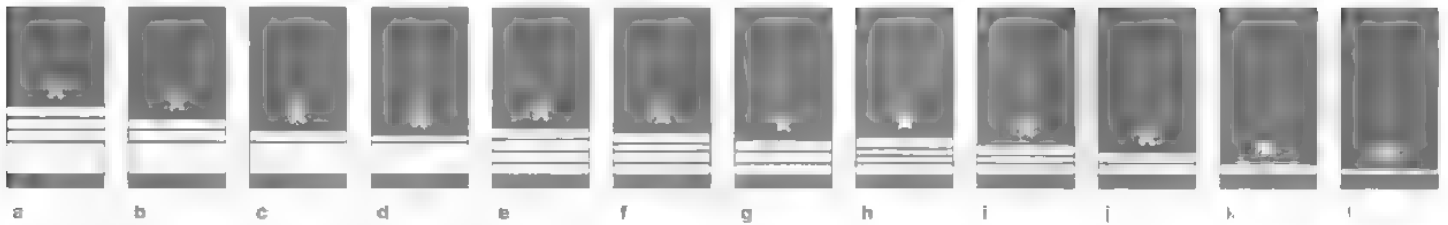
Georgia (Sak'art'velos samkhedro-sazghvao dzalebi)



Gold braid rings with 'curl' on very dark blue cloth cuffs. Rank titles are in Georgian written here in romanised script. The Georgian Border Guard includes a small Coast Guard.

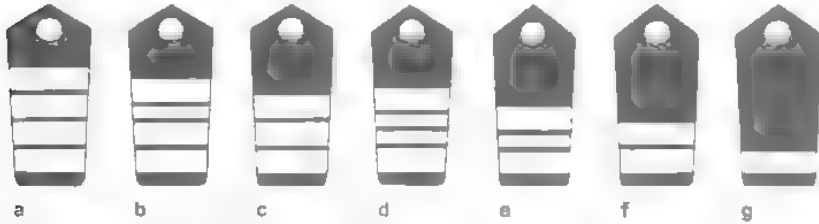
a: *Admirali, Vice-Admiral (rank not currently held)* **b:** *Vits'e admirali, Rear Admiral (rank not currently held)*
c: *Kontr-admirali, Commodore (rank not currently held)* **d:** *1 (Priveili) rangis kapitani, Captain (Commander, Navy)*
e: *2 (Meore) rangis kapitani, Commander* **f:** *3 (Mesame) rangis kapitani, Lieutenant Commander* **g:** *Kapitani-leytenanti, Lieutenant*
h: *Up'rosi leytenanti, (Senior) Sub Lieutenant* **i:** *Leytenanti, Sub Lieutenant* **j:** *Michmani-leytenanti, Acting Sub Lieutenant*

Germany (Deutsche Marine)



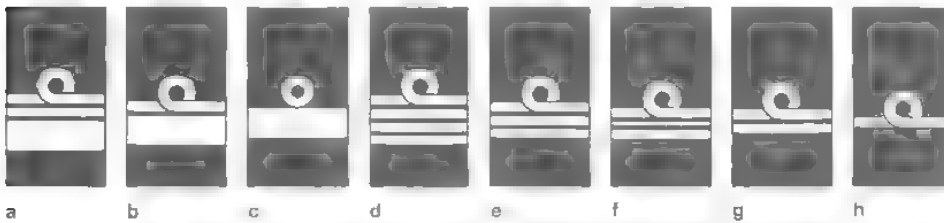
Gold wire stars and gold braid rings on very dark blue cloth cuffs. Rank titles are in German.
a: Admiral, Admiral (*rank not currently held*) **b:** Vizeadmiral, Vice Admiral (*Naval Inspector*) **c:** Konteradmiral, Rear Admiral
d: Flottillenadmiral, Commodore **e:** Kapitän zur See, Captain **f:** Fregattenkapitän, Commander **g:** Korvettenkapitän, Lieutenant Commander
h: Stabskapitänleutnant, (Senior) Lieutenant **i:** Kapitänleutnant, Lieutenant **j:** Oberleutnant zur See, Sub Lieutenant
k: Leutnant zur See, Acting Sub Lieutenant **l:** Oberfähnrich zur See, Midshipman

Germany Coast Guard (Küstenwache - Bundespolizeiamt See)



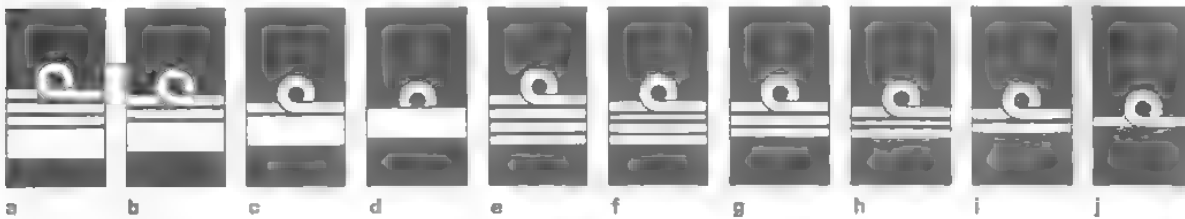
Gold braid rings on dark blue cloth shoulder-straps. Rank titles are in German.
a: Polizeidirektor, Captain (*Director, Coast Guard*) **b:** Polizeioberst, Commander **c:** Polizeirat, Lieutenant Commander
d: 1. (Erster) Polizeihauptkommissar, (Senior) Lieutenant **e:** Polizeihauptkommissar, Lieutenant **f:** Polizeioberkommissar, Sub Lieutenant
g: Polizeikommissar, Acting Sub Lieutenant

Ghana



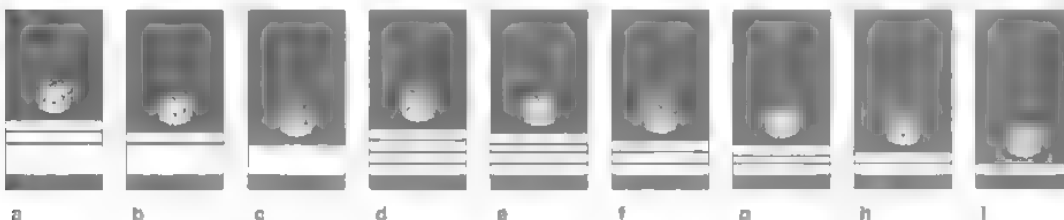
Gold braid rings with 'curl' on very dark blue cloth cuffs. British Royal Navy rank titles are used.
a: Vice Admiral (*rank not currently held*) **b:** Rear Admiral (*Chief of Naval Staff*) **c:** Commodore **d:** Captain **e:** Commander **f:** Lieutenant Commander
g: Lieutenant **h:** Sub Lieutenant

Greece (Hellenic Navy) (Elliniko Polemiko Nautiko)

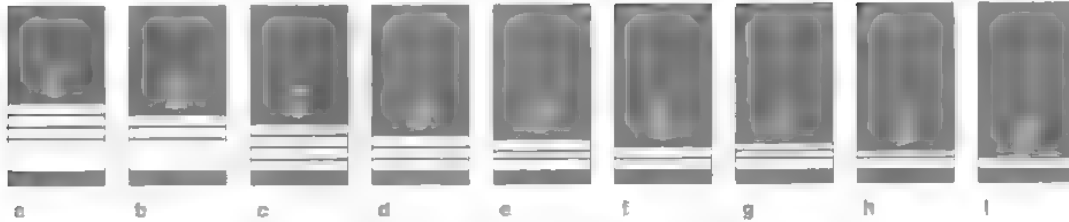


Gold braid rings with 'curl' on very dark blue cloth cuffs. Rank titles are in romanised Greek.
a: Navarchos, Admiral (*Honorary Chief of Naval Staff*) **b:** Antinavarchos, Vice Admiral (*Chief of Naval Staff*) **c:** Iponavarchos, Rear Admiral
d: Archiploiarchos, Commodore **e:** Ploiarchos, Captain **f:** Antiploiarchos, Commander **g:** Plotarchis, Lieutenant Commander
h: Ipoploiarchos, Lieutenant **i:** Antipoploiarchos, Sub Lieutenant **j:** Simaioforos, Acting Sub Lieutenant

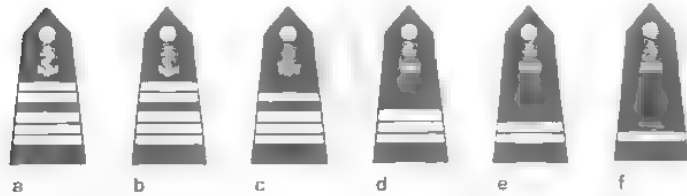
Greece (Hellenic Coast Guard) (Limenikon Soma)



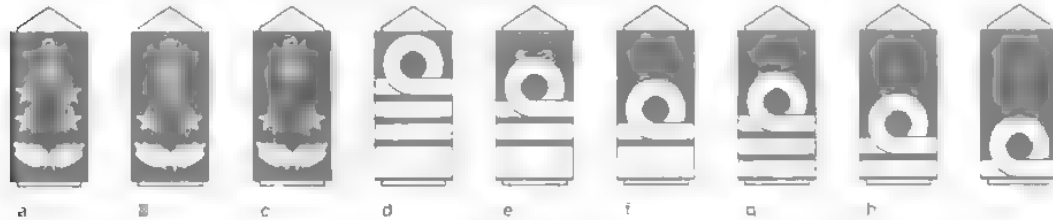
Gold wire crossed anchors and gold braid rings on very dark blue cloth cuffs. Hellenic Navy rank titles are used and written in romanised Greek.
a: Antinavarchos, Vice Admiral (*Commandant, Coast Guard*) **b:** Iponavarchos, Rear Admiral **c:** Archiploiarchos, Commodore **d:** Ploiarchos, Captain
e: Antiploiarchos, Commander **f:** Plotarchis, Lieutenant Commander **g:** Ipoploiarchos, Lieutenant **h:** Antipoploiarchos, Sub Lieutenant
i: Simaioforos, Acting Sub Lieutenant

Guatemala (Fuerza de Mar de Guatemala)

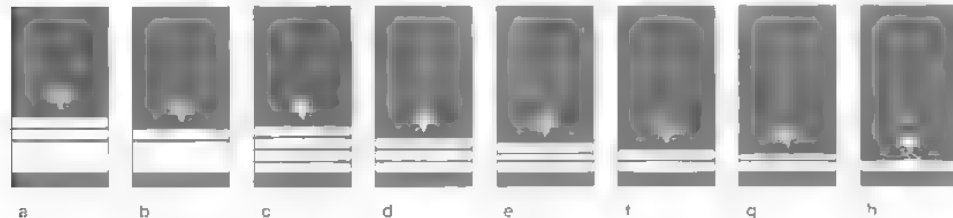
Gold wire Quetzal bird and anchor and gold braid rings on black cloth cuffs. Rank titles are in Spanish
a: *Almirante*, Vice Admiral (rank not currently held) **b:** *Vicealmirante*, Rear Admiral (rank not currently held)
c: *Capitán de Navio*, Captain (Commanding Officer, Navy) **d:** *Capitán de Fragata*, Commander **e:** *Capitán de Corbeta*, Lieutenant Commander
f: *Teniente de Navio*, (Senior) Lieutenant **g:** *Teniente de Fragata*, Lieutenant **h:** *Alférez de Navio*, Sub Lieutenant
i: *Alférez de Fragata*, Acting Sub Lieutenant

Guinea (Marine de Guinée)

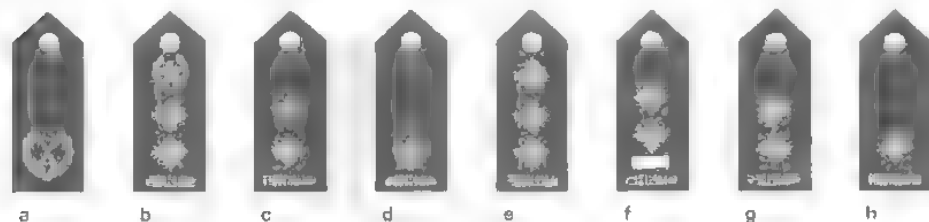
Gold wire anchors and gold braid rings on very dark blue cloth shoulder-straps; **a** Commander (**b**) has silver braid second and fourth rings, brass buttons. Rank titles are in French
a: *Capitaine de vaisseau*, Captain (Chief of Naval Staff) **b:** *Capitaine de frégate*, Commander **c:** *Capitaine de corvette*, Lieutenant Commander
d: *Lieutenant de vaisseau*, Lieutenant **e:** *Enseigne de vaisseau 1ère (première) classe*, Sub Lieutenant
f: *Enseigne de vaisseau de 2e (deuxième) classe*, Acting Sub Lieutenant

Guinea-Bissau (Marinha de Guerra de Guiné-Bissau)

Gold anchors, stars, wreaths and rings on dark blue cloth shoulder-loops on white cloth shoulder-straps; white bone buttons. Rank titles are in Portuguese.
a: *Almirante*, Admiral (rank not currently held) **b:** *Vice Almirante*, Vice Admiral (rank not currently held)
c: *Contra-Almirante*, Rear Admiral (Commander, Navy) **d:** *Capitão-de-Mar-e-Guerra*, Captain **e:** *Capitão-de-Fragata*, Commander
f: *Capitão-tenente*, Lieutenant Commander **g:** *Primeiro-tenente*, Lieutenant **h:** *Segundo-tenente*, Sub Lieutenant **i:** *Subtenente*, Acting Sub Lieutenant

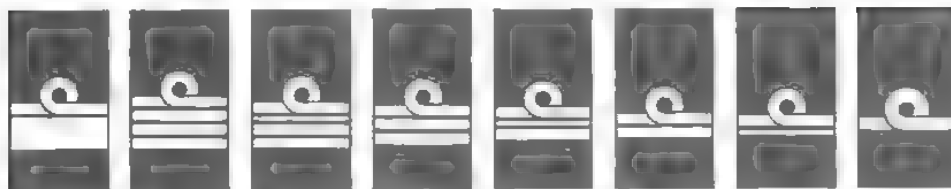
Honduras (Fuerza Naval de Honduras)

Gold wire stars and gold braid rings on very dark blue cuffs. Rank titles are in Spanish.
a: *Vicealmirante*, Admiral **b:** *Contraalmirante*, Rear Admiral **c:** *Capitán de Navio*, Captain (Commanding Officer, Navy)
d: *Capitán de Fragata*, Commander **e:** *Capitán de Corbeta*, Lieutenant Commander **f:** *Teniente de Navio*, Lieutenant
g: *Teniente de Fragata*, Sub Lieutenant **h:** *Alférez de Fragata*, Acting Sub Lieutenant

Hong Kong (Marine Police Region)

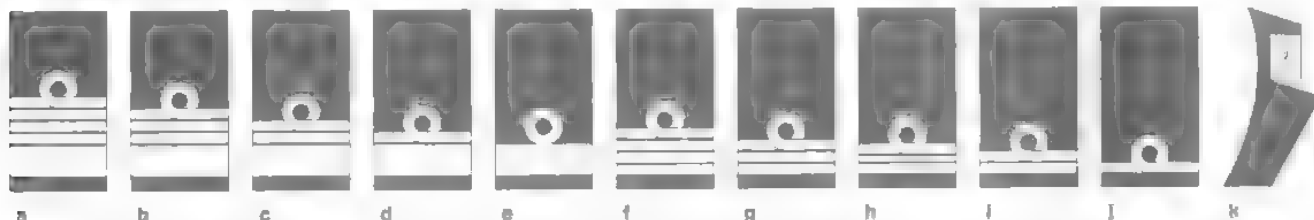
Silver-plated metal crossed tipstaves, wreaths, orchid-tree flowers in wreaths, Bath stars, bar, HKP shoulder-titles and buttons on dark blue cloth shoulder-straps. British Police Service rank titles are used.
a: *Assistant Commissioner*, Commodore (C-in-C Marine Region) **b:** *Chief Superintendent*, Captain **c:** *Senior Superintendent*, Commander
d: *Superintendent*, Lieutenant Commander **e:** *Chief Inspector*, Lieutenant **f:** *Senior Inspector*, (Senior) Sub Lieutenant **g:** *Inspector*, Sub Lieutenant
h: *Probationary Inspector*, Acting Sub Lieutenant

Iceland Coast Guard (Landhelgisgæslan)



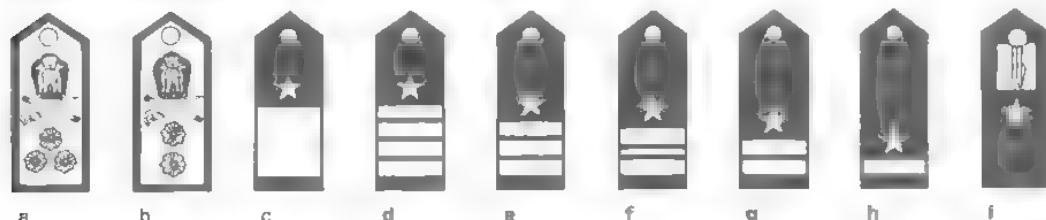
Gold braid rings with 'curl' on black cloth shoulder-straps. Rank titles are in Icelandic
a: *Forstjóri Landhelgisgæslunnar*, Rear Admiral (*Director-General, Coast Guard*) **b:** *Yfirmatur Gæslufrankvæmda*, Captain
c: *Skipherra* (24 years seniority), Commander **d:** *Skipherra*, Lieutenant Commander **e:** *Yfirstyrimalur*, Lieutenant **f:** 1. *Styrimalur*, Sub Lieutenant
g: 2. *Styrimalur* (2 years seniority), (Senior) Acting Sub Lieutenant **h:** 2. *Styrimalur*, Acting Sub Lieutenant

India (Bharatiya Nau Sena)



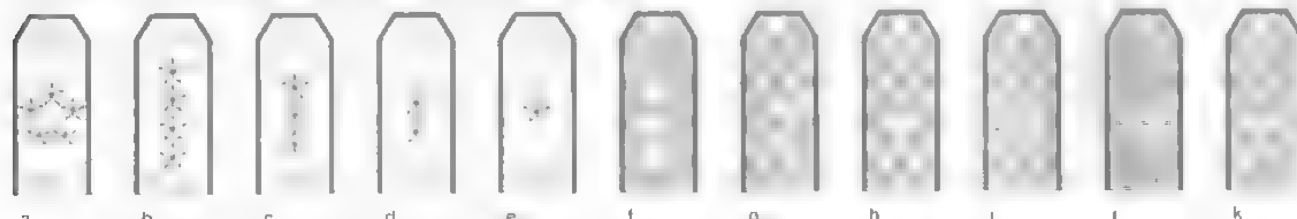
Gold braid rings with 'curl' on very dark blue cloth cuffs, brass button and white cord on white cloth collar-patch (k). Royal Navy rank titles are used
a: Admiral of the Fleet (*honorary rank not currently held*) **b:** Admiral (*Chief of Naval Staff*) **c:** Vice Admiral **d:** Rear Admiral **e:** Commodore **f:** Captain
g: Commander **h:** Lieutenant Commander **i:** Lieutenant **j:** Sub Lieutenant **k:** Midshipman

India Coast Guard (Bharatiya Thatrakshak)



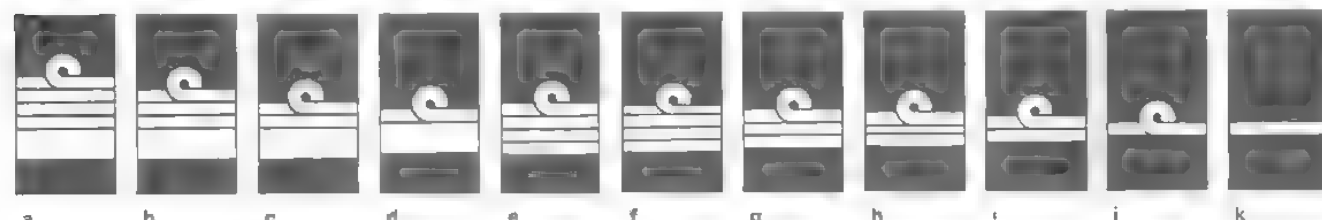
Gold wire Emblems of Ashoka on red cloth backing above silver wire crossed swords and sumitars and stars, all on gold braid shoulder straps piped in dark blue cloth (a-h) gold wire stars and gold braid rings on very dark blue cloth shoulder straps (i). Brass button and white cord on white cloth collar patch (i). Brass buttons. Rank titles are in English
a: *Director General, Vice Admiral (Director General, Coast Guard)* **b:** *Inspector General, Rear Admiral*
c: *Deputy Inspector General (3 years seniority), Commodore* **d:** *Deputy Inspector General, Captain* **e:** *Commandant, Commander*
f: *Deputy Commandant, Lieutenant Commander* **g:** *Assistant Commandant, Lieutenant*
h: *Assistant Commandant (under training after completion of Phase III afloat training), Sub Lieutenant*
i: *Assistant Commandant (under training after completion of Phase II afloat training), Midshipman*

Indonesia (Tentara Nasional Indonesia - Tentara Laut)



Gold wire stars, flowers, bars, Navy badge and Armed Forces title on gold braid (a-e) or brown braid shoulder-straps piped in red for officers in command positions. Gold buttons. Rank titles are in Indonesian. Indonesia maintains a Coast Guard.
a: *Laksamana Besar*, Admiral of the Fleet (*wartime rank not currently held*) **b:** *Laksamana*, Admiral (*Chief of Navy Staff*)
c: *Laksamana Madya*, Vice Admiral **d:** *Laksamana Muda*, Rear Admiral **e:** *Laksamana Pertama*, Commodore **f:** *Kolonel*, Captain
g: *Letnan Kolonel*, Commander **h:** *Mayor*, Lieutenant Commander **i:** *Kapten*, Lieutenant **j:** *Letnan Satu*, Sub Lieutenant
k: *Letnan Dua*, Acting Sub Lieutenant

Iran



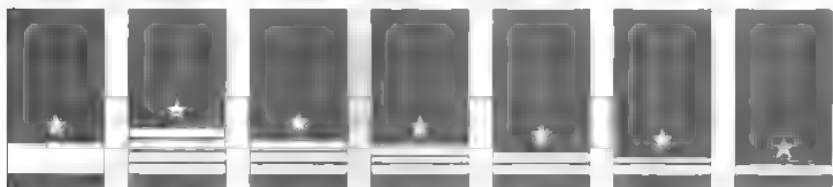
Gold braid rings with 'curl' on navy blue cloth cuffs. Rank titles are in romanised Farsi
a: *Darybod*, Admiral (*rank not currently held*) **b:** *Darysaktar*, Vice Admiral (*rank not currently held*) **c:** *Daryban*, Rear Admiral (*Commander-in-Chief*)
d: *Darydar*, Commodore **e:** *Nakhoda Yekom*, Captain **f:** *Nakhoda Dovom*, Commander **g:** *Nakhoda Sevom*, Lieutenant Commander
h: *Navsarvan*, Lieutenant **i:** *Navban Yekom*, Sub Lieutenant **j:** *Navban Dovom*, Acting Sub Lieutenant **k:** *Navban Sevom*, Midshipman

Iraq



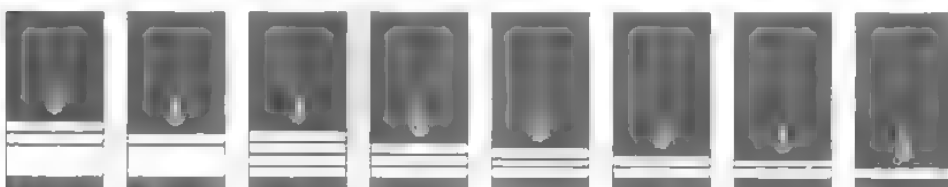
Gold braid rings with 'curl' on very dark blue cloth cuffs. Arabic Iraqi Army rank titles are used and written here in romanised script
a: *Liwa'*, Rear Admiral (Commander, Navy) **b:** *'Amid*, Commodore **c:** *'Aqid*, Captain **d:** *Muqaddam*, Commander **e:** *Ra'id*, Lieutenant Commander
f: *Naqib*, Lieutenant **g:** *Mulazim Awwal*, Sub Lieutenant

Ireland (An Seirbhís Chabhlaigh na hÉireann)



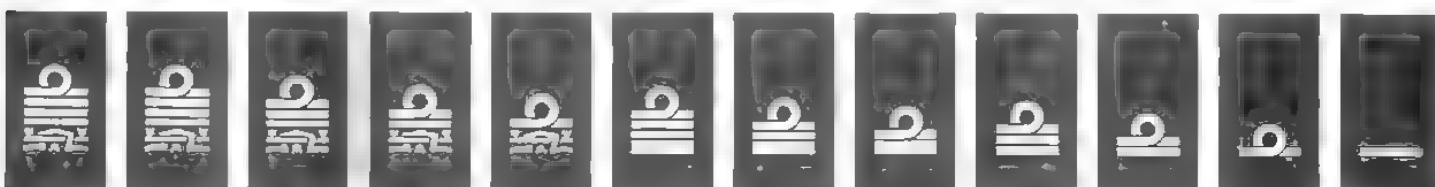
Gold wire stars and gold braid rings on very dark blue cuffs. Rank titles are in Irish/English.
a: *Ceannasaí/Commodore*, Commodore (Flag Officer Commanding Naval Service) **b:** *Captáen/Captain*, Captain **c:** *Ceannasaí/Commander*, Commander
d: *Lefteanant-Ceannasaí/Lieutenant Commander*, Lieutenant Commander **e:** *Lefteanant/Lieutenant*, Lieutenant
f: *Fo-Lefteanant/Sub Lieutenant*, Sub Lieutenant **g:** *Meirgire/Ensign*, Acting Sub Lieutenant

Israel (Heyl Hayam)



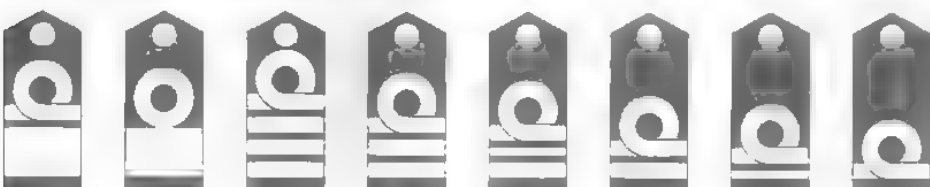
Gold wire anchor and leaf on very dark blue cloth cuffs. Israeli Army rank titles are used and the Hebrew is written here in romanised script.
a: *Aluf*, Vice Admiral (Commander of the Navy) **b:** *Tal aluf*, Rear Admiral **c:** *Aluf mishné*, Captain **d:** *Sgan aluf*, Commander
e: *Rav seran*, Lieutenant Commander **f:** *Séran*, Lieutenant **g:** *Segen*, Sub Lieutenant **h:** *Segen mishné*, Acting Sub Lieutenant

Italy (Marina Militare)



Gold braid bars with 'curl' and 'Greca' design on very dark blue cloth cuffs; upper and lower edges of top bar (but not the 'curl') edged in red cloth (b). Rank titles are in Italian. The Italian Coast Guard (Capitanerie di Porto Guardia Costiera) forms part of the Navy. Personnel wear naval uniforms and insignia with the Commandant holding the rank of Vice-Admiral (Ammiraglio di Squadra).
a: *Ammiraglio*, Admiral (Chief of Defence Staff) **b:** *Ammiraglio di Squadra con incarichi Speciali*, (Senior) Vice-Admiral (Chief of Naval Staff)
c: *Ammiraglio di Squadra*, Vice-Admiral **d:** *Ammiraglio di Divisione*, Rear Admiral **e:** *Contrammiraglio*, Commodore **f:** *Capitano di Vascello*, Captain
g: *Capitano di Fregata*, Commander **h:** *Capitano di Corvetta*, Lieutenant Commander **i:** *Tenente di Vascello*, Lieutenant
j: *Sottotenente di Vascello*, Sub Lieutenant **k:** *Guardiamarina*, Acting Sub Lieutenant **l:** *Aspirante Guardiamarina*, Midshipman

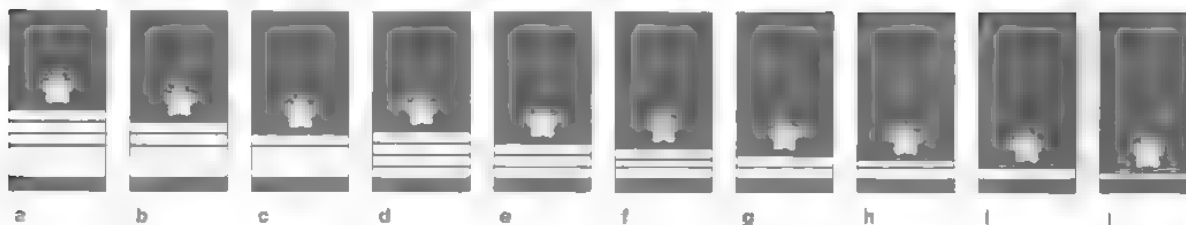
Jamaica (Defence Force Coast Guard)



Gold braid rings with 'curl' on very dark blue cloth shoulder-straps. Rank titles are in English.
a: *Rear Admiral*, Rear Admiral (rank not currently held) **b:** *Commodore*, Commodore (rank not currently held) **c:** *Captain*, Captain (Inspector General, JDF)
d: *Commander*, Commander (Commander, Coast Guard) **e:** *Lieutenant Commander*, Lieutenant Commander **f:** *Lieutenant*, Lieutenant
g: *Junior Lieutenant*, Sub Lieutenant **h:** *Sub Lieutenant*, Acting Sub Lieutenant

RANKS AND INSIGNIA OF THE WORLD'S NAVIES

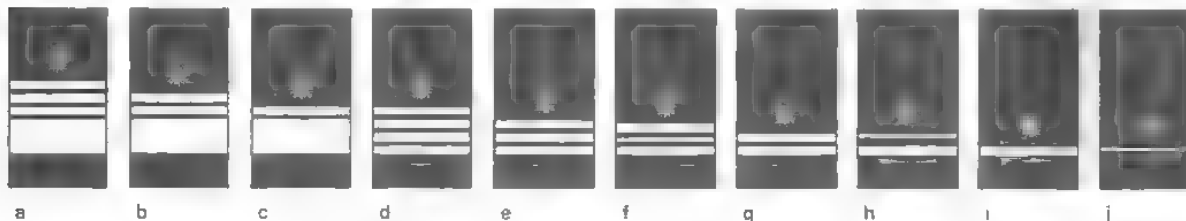
Japan (Maritime Self Defence Force) (Nihon Kaijo Jieitai)



Gold wire cherry blossoms and gold braid rings on very dark blue cloth cuffs. Rank titles are in romanised Japanese.

a: *Kai jō Baku-ryō-cho*, Admiral (*Maritime Chief of Staff*) **b:** *Kai sho*, Vice Admiral **c:** *Kai-sho-ho*, Rear Admiral **d:** 1 (*Ittō*) *Kai-sa*, Captain
e: 2 (*Nito*) *Kai-sa*, Commander **f:** 3 (*Santo*) *Kai-sa*, Lieutenant Commander **g:** 1 (*Itto*) *Kai-i*, Lieutenant **h:** 2 (*Nito*) *Kai-i*, Sub Lieutenant
i: 3 (*Santo*) *Kai-i*, Acting Sub Lieutenant **j:** *Jun Kai-i*, Warrant Officer

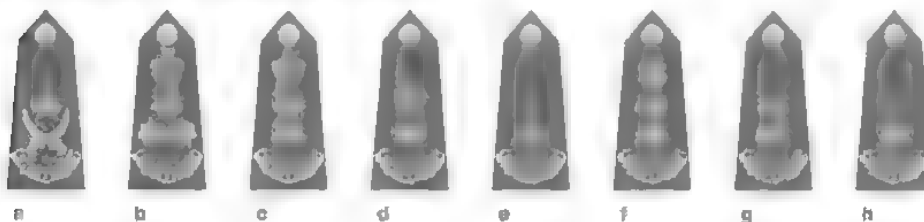
Japan (Coast Guard) (Kaijo Ho'an-cho)



Gold wire compass devices and gold braid rings on very dark blue cloth cuffs. Japanese Navy rank titles are used and written in romanised Japanese

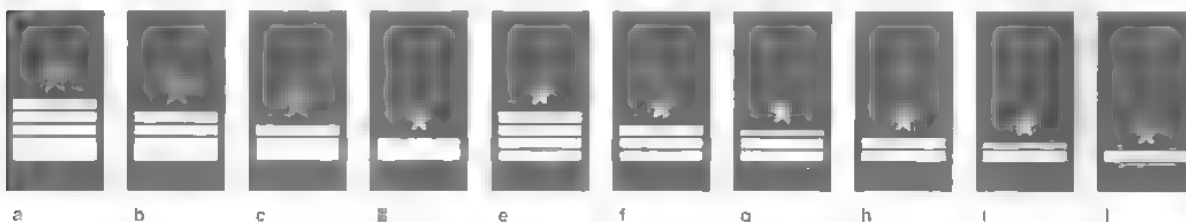
a: *Ryō-chō*, Admiral (*Commandant, Coast Guard*) **b:** *Kai sho*, Vice Admiral **c:** *Kai-sho-ho*, Rear Admiral **d:** 1 (*Ittō*) *Kai-sa*, Captain
e: 2 (*Nito*) *Kai sa*, Commander **f:** 3 (*Santo*) *Kai-sa*, Lieutenant Commander **g:** 1 (*Itto*) *Kai-i*, Lieutenant **h:** 2 (*Nito*) *Kai-i*, Sub Lieutenant
i: 3 (*Santo*) *Kai-i*, Acting Sub Lieutenant **j:** *Jun Kai-i* Warrant Officer

Jordan (Royal Jordan Naval Force)



Brass crowns, stars and titles on dark blue cloth shoulder- straps, brass buttons. Jordanian Army rank titles are used and written here in romanised Arabic
a: *Liwa'*, Rear Admiral (*Commander, RJNF*) **b:** *'Amid*, Commodore **c:** *'Aqid*, Captain **d:** *Muqaddam*, Commander **e:** *Ra'id*, Lieutenant Commander
f: *Naqib*, Lieutenant **g:** *Mulazim Awwal*, Sub Lieutenant **h:** *Mulazim*, Acting Sub Lieutenant

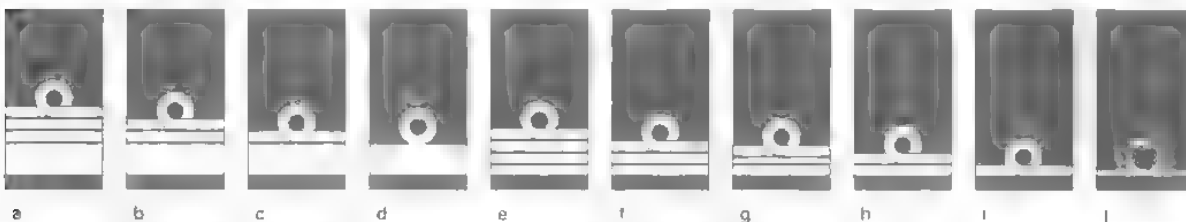
Kazakhstan



Black cloth stars edged in gold wire with a gold wire anchor, gold stars and gold braid bars on black cloth cuffs. Rank titles are in romanised Russian

a: *Admiral*, Admiral (*rank not currently held*) **b:** *Vitse-admiral*, Vice Admiral (*rank not currently held*)
c: *Kontr-admiral*, Navy Rear Admiral (*Commander-in-Chief, Navy*) **d:** *Kapitan 1 (pervogo) ranga*, Captain **e:** *Kapitan 2 (vtorogo) ranga*, Commander
f: *Kapitan 3 (tret'yego) ranga*, Lieutenant Commander **g:** *Kapitan-leytenant*, Lieutenant **h:** *Starshiy leytenant*, (Senior) Sub Lieutenant
i: *Leytenant*, Sub Lieutenant **j:** *Mladshiy leytenant*, Acting Sub Lieutenant

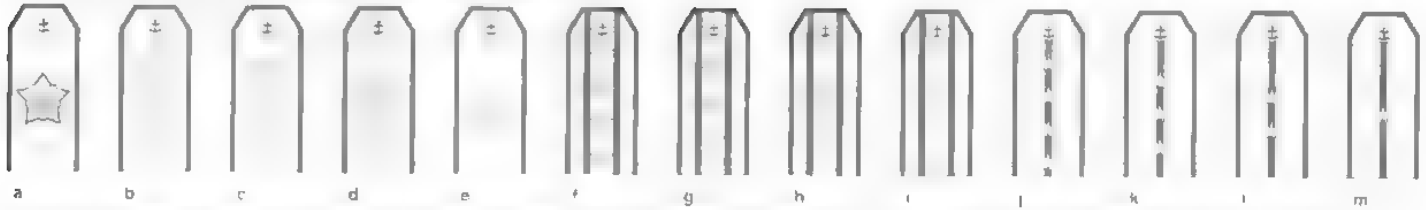
Kenya



Gold braid rings with 'curl' on very dark blue cloth cuffs. Kenyan Army rank titles are used and written in English

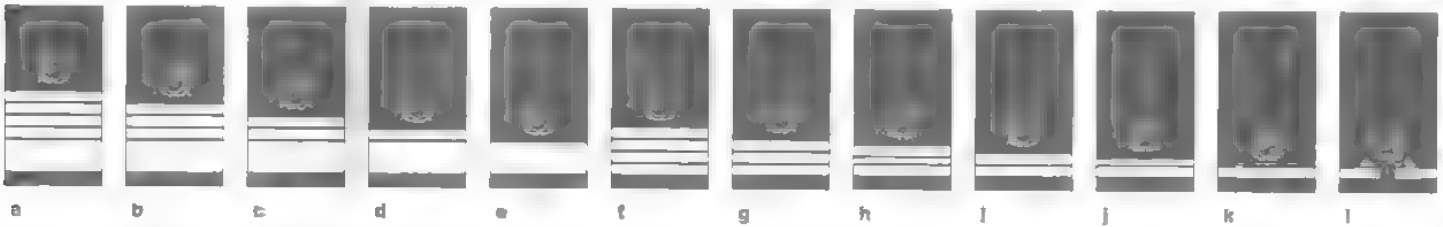
a: *General*, Admiral (*rank not currently held*) **b:** *Lieutenant General*, Vice Admiral (*rank not currently held*)
c: *Major General*, Rear Admiral (*Commander, Navy*) **d:** *Brigadier*, Commodore **e:** *Colonel*, Captain **f:** *Lieutenant Colonel*, Commander
g: *Major*, Lieutenant Commander **h:** *Captain Lieutenant* **i:** *Lieutenant*, Sub Lieutenant **j:** *2nd (Second) Lieutenant*, Acting Sub Lieutenant

Korea, North (People's Democratic Republic)



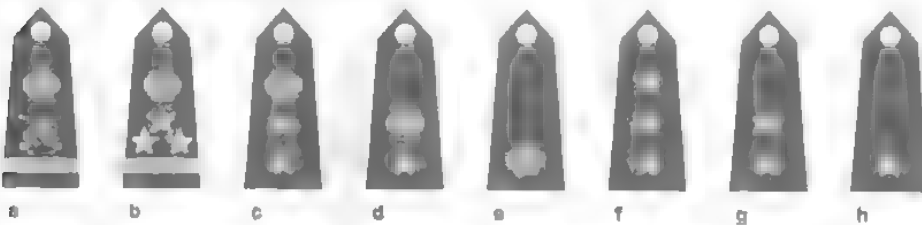
A large silver metal star with a coloured enamel boss and black underlay (a) silver metal stars on gold braided shoulder straps with black edging and centre stripes; brass buttons. North Korean Army rank titles are used and written here in romanised Korean.
a: *Cha-su*, Admiral of the Fleet **b:** *Tae-jang*, Admiral **c:** *Sang-jang*, Vice Admiral **d:** *Chung-jang*, Rear Admiral **e:** *So-jang*, Commodore
f: *Tae-chwa*, (Senior) Captain **g:** *Sang-chwa*, Captain **h:** *Chung-chwa*, Commander **i:** *So-chwa*, Lieutenant Commander **j:** *Tae-wi*, (Senior) Lieutenant
k: *Sang-wi*, Lieutenant **l:** *Chung-wi*, Sub Lieutenant **m:** *So-wi*, Acting Sub Lieutenant

Korea (Republic of Korea Navy) (Dee-han-min-guk Hae-gun)



Gold wire Yin Yang device on crossed anchors and gold braided rings on very dark blue cloth cuffs. Republic of Korea Army rank titles are used and written here in romanised Korean. The Republic of Korea Coast Guard (Haeyang gyeongcha cheong) forms part of the Armed Forces and is commanded by a Director. Personnel wear blue police uniforms and insignia.
a: *Won-su*, Admiral of the Fleet (*wartime rank not currently held*) **b:** *Tae-jang*, Admiral (*Chief of Naval Operations*) **c:** *Chung-jang*, Vice Admiral
d: *So-jang*, Rear Admiral **e:** *Chun-jang*, Commodore **f:** *Tae-ryong*, Captain **g:** *Chung-ryong*, Commander **h:** *So-ryong*, Lieutenant Commander
i: *Tae-wi*, Lieutenant **j:** *Chung-wi*, Sub Lieutenant **k:** *So-wi*, Acting Sub Lieutenant **l:** *Jun-wi*, Warrant Officer

Kuwait (Kuwaiti Naval Force)



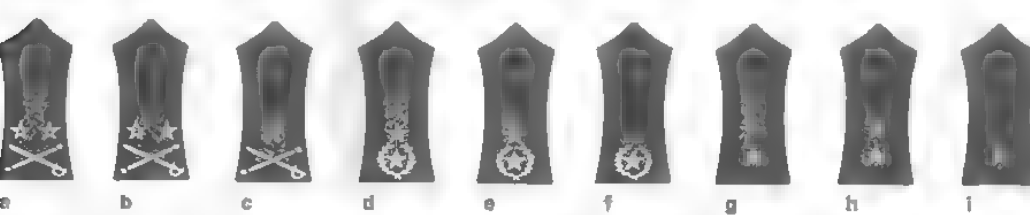
Gold stars, crowns and swords and red 'staff' rings on very dark blue cloth shoulder straps, brass buttons. Kuwait Army rank titles are used and written here in romanised Arabic.
a: *Liwa'*, Rear Admiral (*Chief of KNF*) **b:** *'Amid*, Commodore **c:** *'Aqid*, Captain **d:** *Muqaddam*, Commander **e:** *Ra'id*, Lieutenant Commander
f: *Naqib*, Lieutenant **g:** *Mulazim Awwal*, Sub Lieutenant **h:** *Mulazim*, Acting Sub Lieutenant

Latvia (Latvijas Jūras Spēki)



Gold braided rings with 'curl' on very dark blue cloth cuffs. Rank titles are in Latvian.
a: *Viceadmirālis*, Vice Admiral (*rank not currently held*) **b:** *Kontradmirālis*, Rear Admiral (*rank not currently held*)
c: *Flotiles admirālis*, Commodore (*rank not currently held*) **d:** *Juras kapteinis*, Captain (*Commander-in-Chief, Naval Forces*)
e: *Komandkapteinis*, Commander **f:** *Komandleitnants*, Lieutenant Commander **g:** *Kapteinleitnants*, Lieutenant **h:** *Virslieņants*, Sub Lieutenant
i: *Leitnants*, Acting Sub Lieutenant

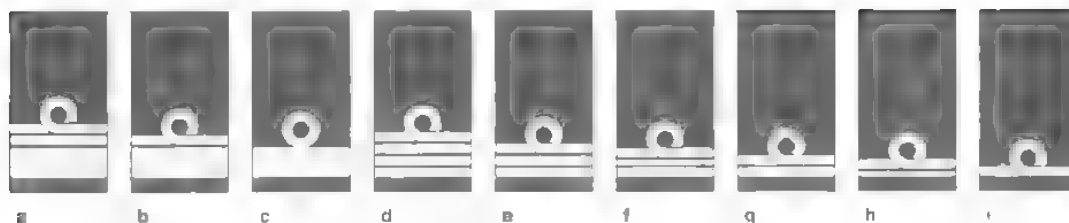
Lebanon (Al-Quwa'at al-bahriya al-Lubna'a)



Gold stars, crossed swords and batons and wreaths on dark blue cloth shoulder-straps. Arabic Lebanese Army rank titles are used and written here in romanised script.
a: *'Imad*, Vice Admiral (*rank not currently held*) **b:** *Liwa'*, Rear Admiral (*Commander, Navy*) **c:** *'Amid*, Commodore **d:** *'Aqid*, Captain
e: *Muqaddam*, Commander **f:** *Ra'id*, Lieutenant Commander **g:** *Ra'is*, Lieutenant **h:** *Mulazim Awwal*, Sub Lieutenant
i: *Mulazim*, Acting Sub Lieutenant

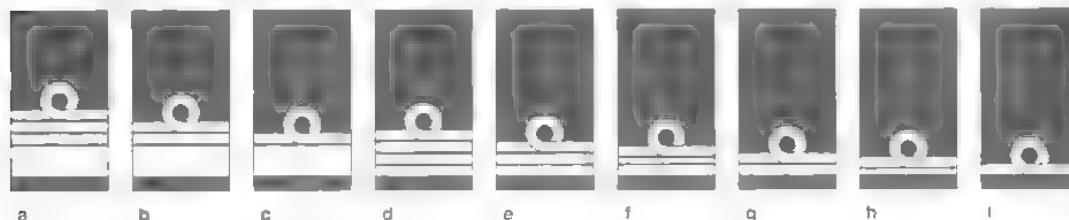
RANKS AND INSIGNIA OF THE WORLD'S NAVIES

Libya



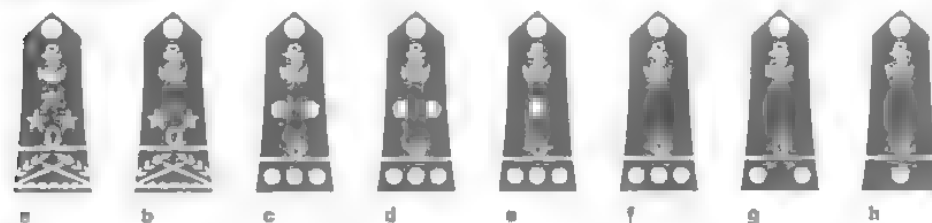
Gold braid rings with 'curl' on very dark blue cloth cuffs. Arabic Libyan Army rank titles are used and written here in romanised script
a: *Fariq*, Vice Admiral (rank not currently held) **b:** *Liwa'*, Rear Admiral (Chief of Naval Staff) **c:** *'Amid*, Commodore **d:** *'Aqid*, Captain
e: *Muqaddam*, Commander **f:** *Ra'id*, Lieutenant Commander **g:** *Naqib*, Lieutenant **h:** *Mulazim Awwal*, Sub Lieutenant
i: *Mulazim*, Acting Sub Lieutenant

Lithuania (Karinės jūrų pajėgos)



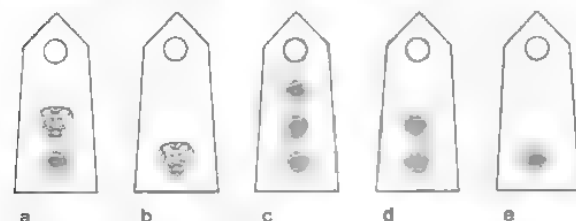
Gold braid rings with 'curl' on dark blue cloth cuffs. Rank titles are in Lithuanian.
a: *Viceadmirolas*, Vice Admiral (rank not currently held) **b:** *Kontradmirolas*, Rear Admiral (rank not currently held)
c: *Flotilės admiralas*, Commodore (rank not currently held) **d:** *Jūru kapitonas*, Captain (Commander, Naval Force) **e:** *Komandoras*, Commander
f: *Komandoras leitenantas*, Lieutenant Commander **g:** *Kapitonas leitenantas*, Lieutenant **h:** *Vyrasnyis leitenantas*, Sub Lieutenant
i: *Leitenantas*, Acting Sub Lieutenant

Madagascar



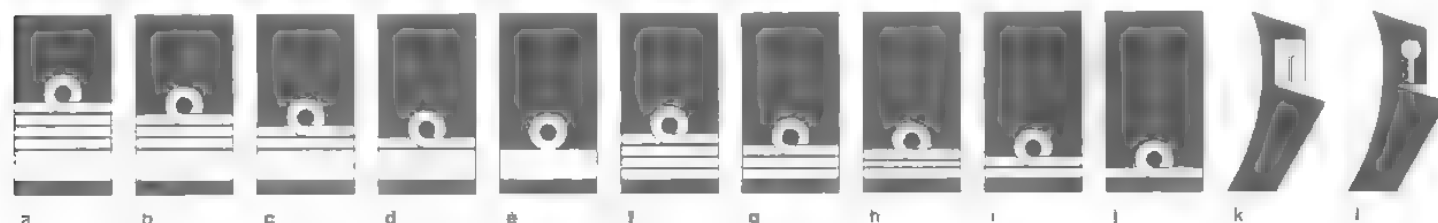
Gold anchors, stars, braids and discs on very dark blue cloth shoulder-strap; **a** Commander (**d**) has two silver discs immediately below the anchor; brass buttons. Rank titles are in French
a: *Vice-amiral*, Rear Admiral **b:** *Contre-amiral*, Commodore (Chief of Staff, Navy) **c:** *Capitaine de vaisseau*, Captain **d:** *Capitaine de frégate*, Commander
e: *Capitaine de corvette*, Lieutenant Commander **f:** *Lieutenant de vaisseau*, Lieutenant **g:** *Enseigne de vaisseau de 1ère (première) classe*, Sub Lieutenant
h: *Enseigne de vaisseau de 2e (deuxième) classe*, Acting Sub Lieutenant

Malawi (Army Naval Detachment)

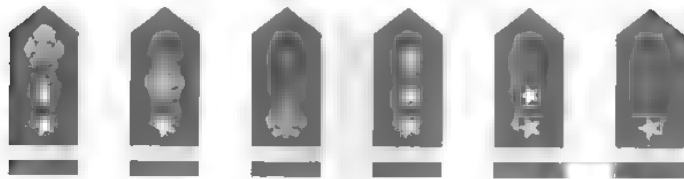


Red metal lion's heads and discs on very dark blue cloth backing on khaki cloth shoulder-strap; brown buttons. Malawi Army rank titles are used and written in English.
a: *Lieutenant Colonel, Commander (Commanding Officer, Naval Detachment)* **b:** *Major*, Lieutenant Commander **c:** *Captain*, Lieutenant
d: *Lieutenant*, Sub Lieutenant **e:** *Second Lieutenant*, Acting Sub Lieutenant

Malaysia - Royal Malaysian Navy (Tentera Laut Diraja Malaysia)



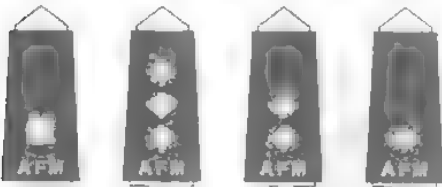
Gold braid rings with 'curl' on very dark blue cloth cuffs, brass buttons and white cords and white cloth collar-patch (l-m). Rank titles are in Malay. The Malaysian Coast Guard - the Malaysia Maritime Enforcement Agency (*Ageni Pengkuatkuasaan Maritim Malaysia*) wears naval uniforms and insignia with a gold MMEA badge worn above gold braid rings without the 'curl'. The Director-General is an Admiral, RMN
a: *Laksamana Armada Laut*, Admiral of the Fleet (King, Malaysia, Sultan Mizan Zainal Abidin)
b: *Laksamana*, Admiral (Chief of Armed Forces and Chief of Navy) **c:** *Laksamana Madya*, Vice Admiral **d:** *Laksamana Muda*, Rear Admiral
e: *Laksamana Pertama*, Commodore **f:** *Kapten*, Captain **g:** *Komander*, Commander **h:** *Leftenan Komander*, Lieutenant Commander
i: *Leftenan*, Lieutenant **j:** *Leftenan Madya*, Sub Lieutenant & *Leftenan Muda*, Acting Sub Lieutenant **k:** *Pegawai Kadet Kanan*, Midshipman
l: *Kadet*, Naval Cadet

Maldives (National Defence Force Coast Guard)

a b c d e f

Gold coats of arms, stars and rings on black cloth shoulder straps with a white inner piping and gold outer piping. Army rank titles are used and written in English.

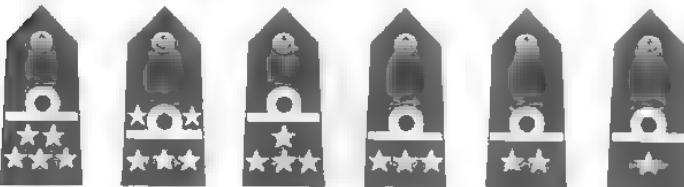
a: Colonel, Commander (*Director-General, Coast Guard*) b: Lieutenant Colonel, Commander c: Major, Lieutenant Commander d: Captain, Lieutenant e: First Lieutenant, Sub Lieutenant f: Lieutenant, Acting Sub Lieutenant

Malta (Maritime Squadron, Armed Forces of Malta)

a b c d

White thread tower, stars and titles on dark blue shoulder-loops on white cotton shoulder-strings; white bone buttons. British Army rank titles are used.

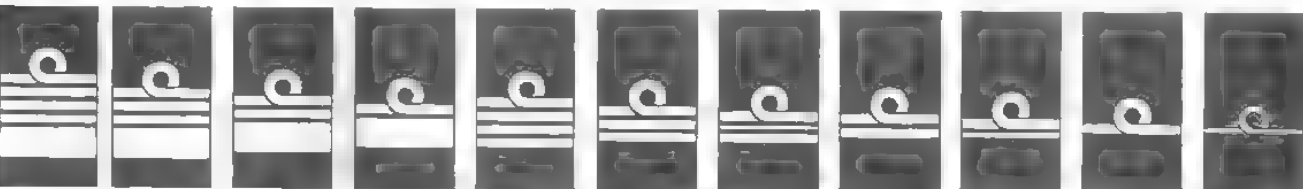
a: Major, Lieutenant Commander (*Commanding Officer, Maritime Squadron*) b: Captain, Lieutenant c: Lieutenant, Sub Lieutenant d: 2nd (Second) Lieutenant, Acting Sub Lieutenant

Mauritania (Marine Mauritanienne)

a b c d e f

Gold metal stars and gold braid rings on very dark blue cloth shoulder straps, a Commander (b) has two silver metal stars above the braid ring. Brass buttons. Arabic Mauritanian Army rank titles are used and written here in romanised script.

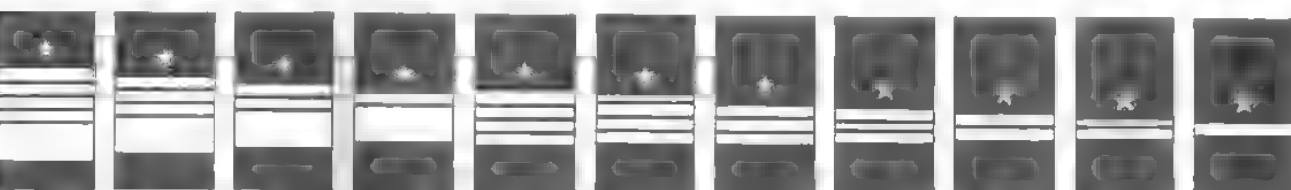
a: 'Aqid, Captain (*Chief of Naval Staff*) b: Muqaddam, Commander c: Ra'id, Lieutenant Commander d: Naqib, Lieutenant e: Mulazim Awwal, Sub Lieutenant f: Mulazim Thani, Acting Sub Lieutenant

Mexico (Armada de México)

a b c d e f g h i j k

Gold braid rings with 'curl' on very dark blue cloth cuffs. Rank titles are in Spanish.

a: Almirante, Secretario de Marina, (Senior) Admiral (*Secretary of the Navy*) b: Almirante, Admira! (*Commander of the Navy*) c: Vicealmirante, Rear Admiral d: Contraalmirante, Commodore e: Capitan de Navío, Captain f: Capitán de Fragata, Commander g: Capitán de Corbeta, Lieutenant Commander h: Teniente de Navío, (Senior) Lieutenant i: Teniente de Fragata, Lieutenant j: Teniente de Corbeta, Sub Lieutenant k: Guardiamarina, Acting Sub Lieutenant

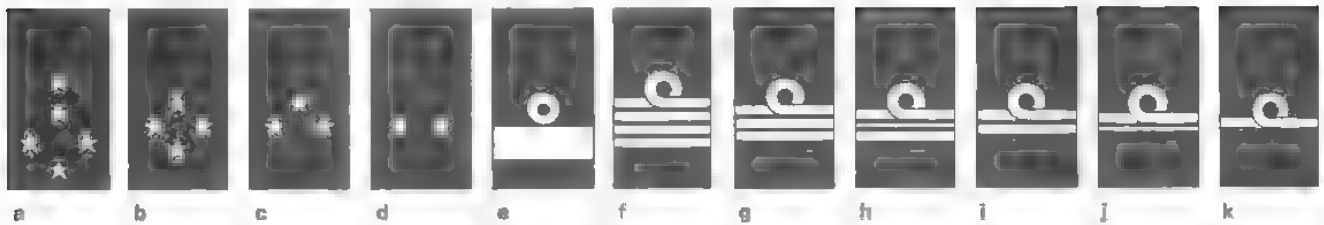
Montenegro (Ratna Mornarica)

a b c d e f g h i j k

New rank insignia was prescribed in 2007 but former Serbian and Montenegrin Navy rank insignia are still being worn. Gold wire stars and gold braid rings on very dark blue cloth cuffs. Rank titles are in Serbian.

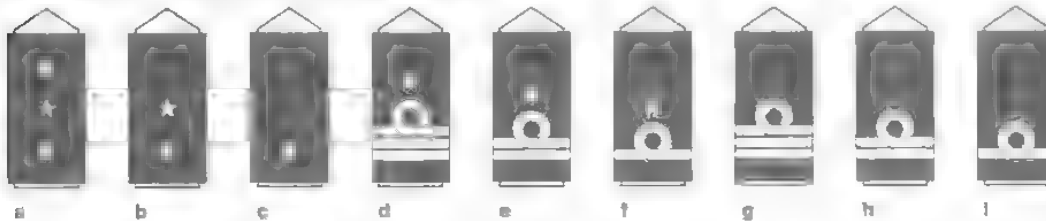
a: Admiral flote, Admiral (*rank not currently held*) b: Admiral, Vice Admiral (*rank not currently held*) c: Viceadmiral, Rear Admiral (*Chief of Defence Staff*) d: Kontraadmiral, Commodore (*rank not currently held*) e: Kapetan bojnog broda, Captain (*Commander, Navy*) f: Kapetan fregate, Commander g: Kapetan korvete, Lieutenant Commander h: Poručnik bojnog broda, (Senior) Lieutenant i: Poručnik fregate, Lieutenant j: Poručnik korvete, Sub Lieutenant k: Potporučnik, Acting Sub Lieutenant

Morocco (Marine Royale Marocaine)



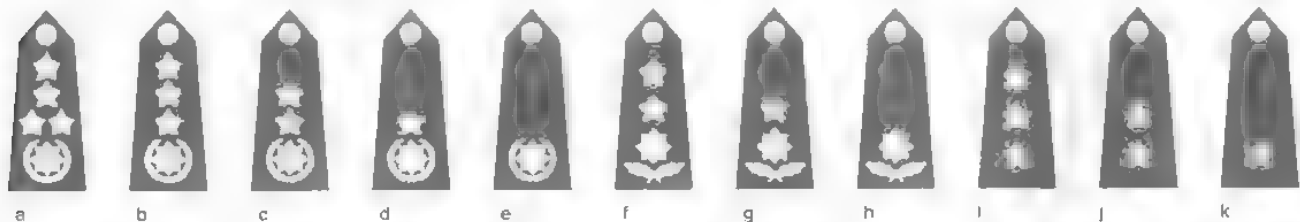
Silver metal stars and gold braid rings with 'curl' on very dark blue cloth cuffs; a Commander (f) has silver braid second and fourth rings, a Midshipman (k) a gold braid ring with two mid-blue 'breaks'. Rank titles are in French.
a: *Amiral*, Admiral (rank not currently held) **b:** *Amiral d'escadre*, Vice Admiral (rank not currently held)
c: *Vice-amiral*, Rear Admiral (rank not currently held) **d:** *Contre-amiral*, Commodore (Inspector, Navy) **e:** *Capitaine de vaisseau major*, (Senior) Captain
f: *Capitaine de vaisseau*, Captain **g:** *Capitaine de frégate*, Commander **h:** *Capitaine de corvette*, Lieutenant Commander
i: *Lieutenant de vaisseau*, Lieutenant **j:** *Enseigne de vaisseau de 1ère (première) classe*, Sub Lieutenant
k: *Enseigne de vaisseau de 2e (deuxième) classe*, Acting Sub Lieutenant

Mozambique (Marinha Moçambique)



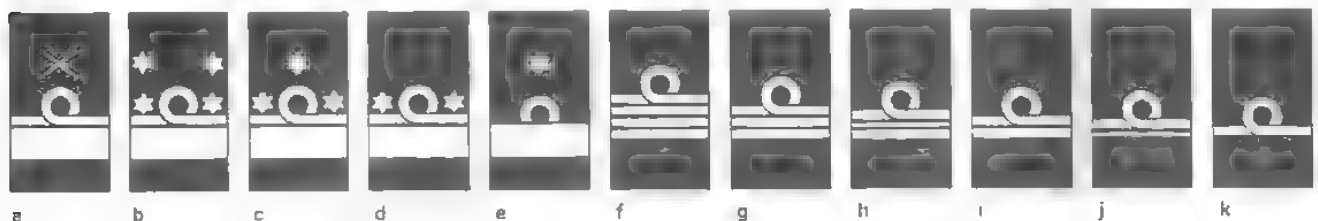
Gold metal stars and gold braid rings on very dark blue cloth shoulder-loops on white cotton shoulder-straps; white bone buttons. Rank titles are in Portuguese.
a: *Almirante*, Admiral (rank not currently held) **b:** *Vice-almirante*, Vice Admiral (rank not currently held) **c:** *Contra-almirante*, Rear Admiral (C-in-C Navy)
d: *Capitão-de-mar-e-guerra*, Captain **e:** *Capitão-de-fragata*, Commander **f:** *Capitão-tenente*, Lieutenant Commander **g:** *1o (Primeiro) tenente*, Lieutenant
h: *2o (Segundo) tenente*, Sub Lieutenant **i:** *Guarda-mancha*, Midshipman

Myanmar (Tatmadaw Yay)



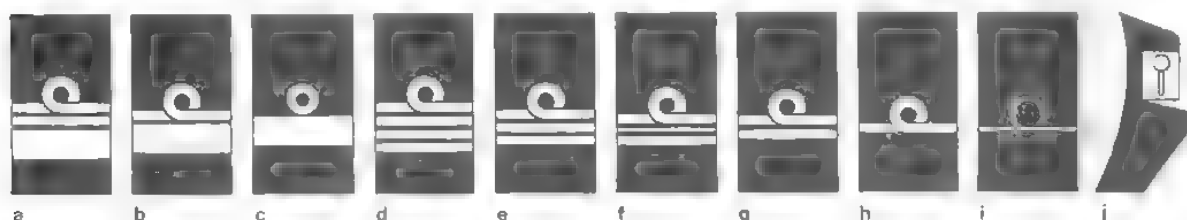
Large and small gold metal stars, wreaths and branches on very dark blue cloth shoulder-straps. Myanmar Army rank titles are used and written here in romanised Burmese
a: *Bogyokhmugyi*, (Sen.or) Admiral (rank not currently held) **b:** *Dutiya Bogyokhmugyi*, Admiral (rank not currently held)
c: *Dutiya Bogyokyi*, Vice Admiral (Commander-in-Chief, Navy) **d:** *Bogyoke*, Rear Admiral **e:** *Bohmugyoke*, Commodore **f:** *Bohmugyi*, Captain
g: *Dutiya Bohmugyi*, Commander **h:** *Bohmu*, Lieutenant Commander **i:** *Bogyi*, Lieutenant **j:** *Bo*, Sub Lieutenant **k:** *Dutiya Bo*, Acting Sub Lieutenant

Netherlands (Koninklijke Marine)



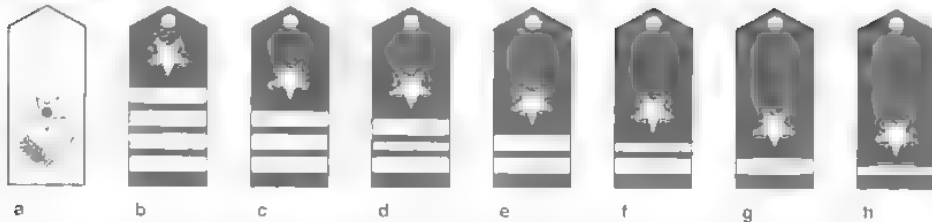
Silver wire batons and stars and gold braid rings with 'curl' on very dark blue cloth cuffs. Rank titles are in Dutch
a: *Admiraal*, Admiral of the Fleet (rank not currently held) **b:** *Luitenant-admiraal*, Admiral (rank not currently held) **c:** *Vice-Admiraal*, Vice Admiral
d: *Schout bij-nacht*, Rear Admiral **e:** *Commandeur*, Commodore **f:** *Kapitein-ter-zee*, Captain **g:** *Kapitein-luitenant-ter-zee*, Commander
h: *Luitenant ter zee 1e (eerste) klasse*, Lieutenant Commander **i:** *Luitenant-ter-zee 2e (tweede) klasse oudste categorie*, Lieutenant
j: *Luitenant-ter-zee 2e (tweede) klasse*, Sub Lieutenant **k:** *Luitenant-ter-zee 3e (derde) klasse*, Acting Sub Lieutenant

New Zealand



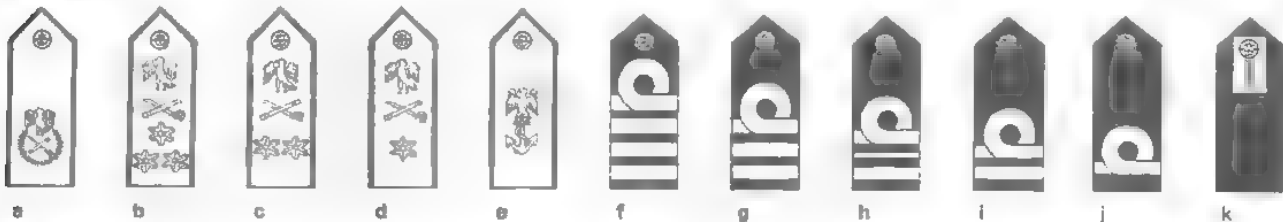
Gold braid rings with 'curl' on very dark blue cloth cuffs, brass button and white cord on white cloth collar patch (j). Rank titles are in English
a: *Vice Admiral*, Vice Admiral (rank not currently held) **b:** *Rear Admiral*, Rear Admiral (Chief of Navy) **c:** *Commodore*, Commodore **d:** *Captain*, Captain
e: *Commander*, Commander **f:** *Lieutenant Commander*, Lieutenant Commander **g:** *Lieutenant*, Lieutenant **h:** *Sub Lieutenant*, Sub Lieutenant
i: *Ensign*, Acting Sub Lieutenant **j:** *Midshipman*, Midshipman

Nicaragua (Fuerza Naval de Nicaragua)



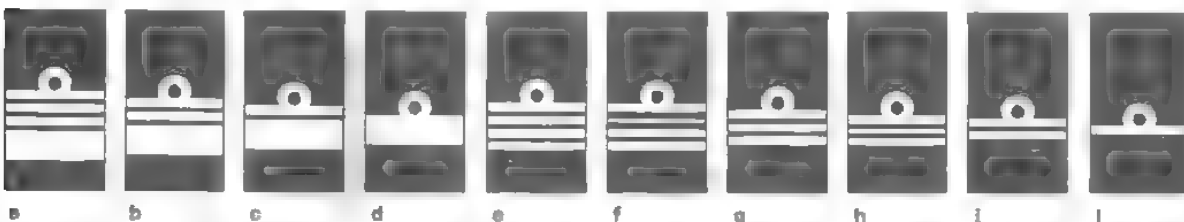
Gold metal buttons, gold wire stars and gold braid rings on very dark blue cloth shoulder-straps. A Rear Admiral (a) has a silver braid star with a red boss and a silver braid crossed palm branch and machete on a gold braid shoulder-strap. Rank titles are in Spanish.
a: *Contraalmirante*, Rear Admiral **b:** *Capitán de Navío*, Captain **c:** *Capitán de Fragata*, Commander **d:** *Capitán de Corbeta*, Lieutenant Commander
e: *Teniente de Navío*, Lieutenant **f:** *Teniente de Fragata*, Sub Lieutenant **g:** *Teniente de Corbeta*, Acting Sub Lieutenant **h:** *Alférez*, Midshipman

Nigeria



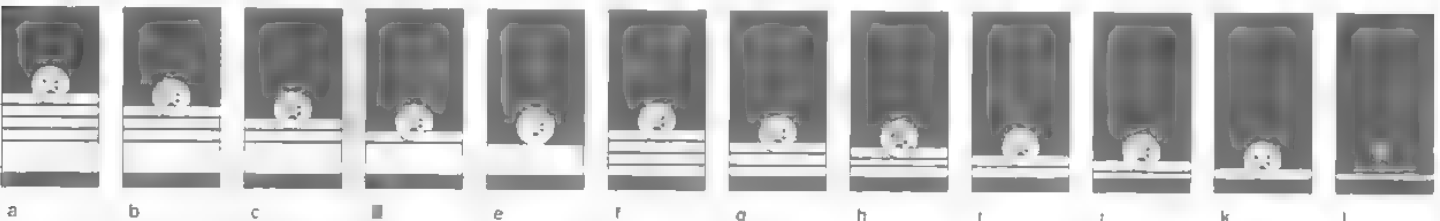
Silver wire eagles, batons, swords, wreaths and anchor on gold braid shoulder straps edged in very dark blue cloth (a-e); gold braid rings with 'curl' on very dark blue cloth shoulder-straps (f-j); brass button and white cord on white cloth collar-patch (k); brass buttons. Royal Navy rank titles are used.
a: Admiral of the Fleet (*rank not currently held*) **b:** Admiral (*rank not currently held*) **c:** Vice Admiral (*Chief of Naval Staff*) **d:** Rear Admiral
e: Commodore **f:** Captain **g:** Commander **h:** Lieutenant Commander **i:** Lieutenant **j:** Sub Lieutenant **k:** Midshipman

Norway (Sjøforsvaret)



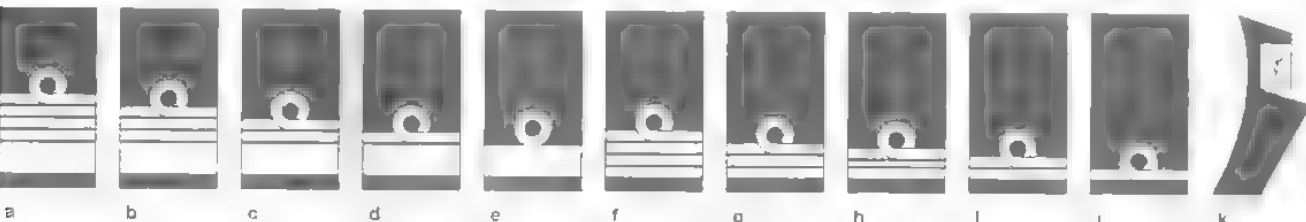
Gold braid rings with 'curl' on very dark blue cloth cuffs. Rank titles are in Norwegian.
a: Admiral, Admiral (*rank not currently held*) **b:** *Viseadmiral*, Vice Admiral (*Commander, National Joint HQ*)
c: *Kontreadmiral*, Rear Admiral (*Inspector-General, Navy*) **d:** *Flaggkommandør*, Commodore **e:** *Kommandør*, Captain
f: *Kommandørkaptein*, Commander **g:** *Orlogskaptein*, Lieutenant Commander **h:** *Kapteinløytnant*, Lieutenant **i:** *Løytnant*, Sub Lieutenant
j: *Fenrik*, Acting Sub Lieutenant

Oman (Royal Navy of Oman)



Gold wire dagger and crossed swords and gold braid rings with 'curl' on very dark blue cloth cuffs; a Midshipman (l) has a thin white ring. Arabic Oman Army rank titles are used and written here in romanised script. The Royal Oman Police Coast Guard is formed part of the Royal Oman Police wearing ROP uniforms and insignia.
a: *Mushir*, Admiral of the Fleet (*Sultan Qabus ibn Sa'id*) **b:** *Fariq Awwal*, Admiral (*rank not currently held*) **c:** *Fariq*, Vice Admiral (*rank not currently held*)
d: *Liwa'*, Rear Admiral (*commander RNO*) **e:** *'Amid*, Commodore **f:** *'Aqid*, Captain **g:** *Muqaddam*, Commander **h:** *Ra'id*, Lieutenant Commander
i: *Naqib*, Lieutenant **j:** *Mulazim Awwal*, Sub Lieutenant **k:** *Mulazim Thani*, Acting Sub Lieutenant **l:** *Dabit Murashshah*, Midshipman

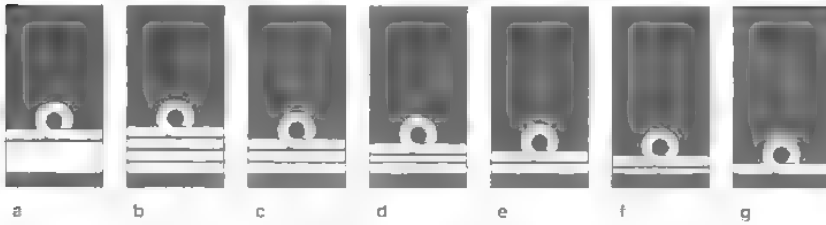
Pakistan



Gold braid rings with 'curl' on very dark blue cloth cuffs; brass button and white cord on white cloth collar-patch (k). Royal Navy rank titles are used. The Pakistan Coast Guard is organised as a Pakistan Army reinforced brigade. Personnel wear Army uniforms and insignia with a seconded Army Brigadier as Director-General.
a: Admiral of the Fleet (*rank not currently held*) **b:** Admiral (*Chief of the Naval Staff*) **c:** Vice Admiral **d:** Rear Admiral **e:** Commodore **f:** Captain
g: Commander **h:** Lieutenant Commander **i:** Lieutenant **j:** Sub Lieutenant **k:** Midshipman

RANKS AND INSIGNIA OF THE WORLD'S NAVIES

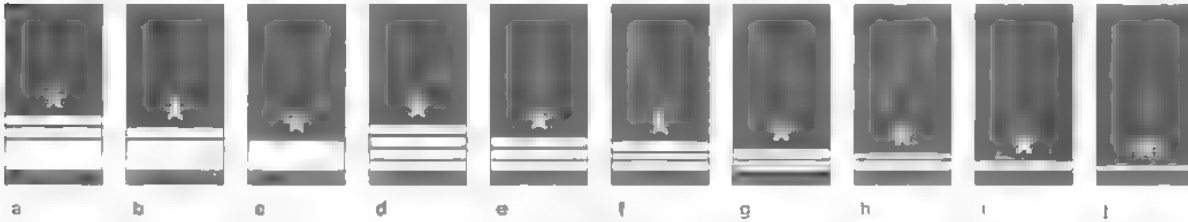
Panama (Coast Guard) (Servicio Marítimo Nacional)



Gold braid rings with 'curl' on very dark blue cloth cuffs. Rank titles are in Spanish.

a: Director General, Rear Admiral (Commander, SMN) **b:** Capitán de Navío, Captain **c:** Capitan de Fragata, Commander
d: Capitán de Corbeta, Lieutenant Commander **e:** Teniente de Navío, Lieutenant **f:** Teniente de Fragata, Lieutenant
g: Alférez de Navío, Acting Sub Lieutenant

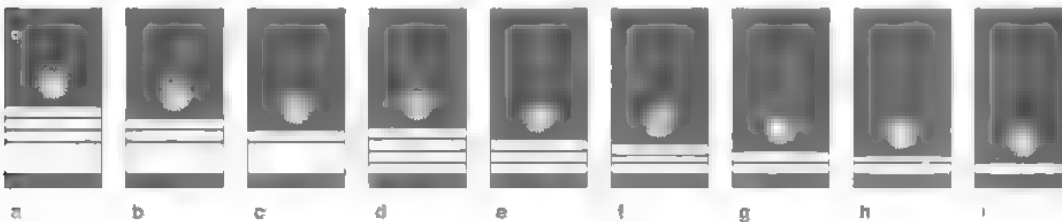
Paraguay (Armada Nacional Paraguaya)



Gold wire stars and gold braid rings on very dark blue cuffs. Rank titles are in Spanish. The Paraguayan Coast Guard (Prefectura General Naval) forms part of the Navy and PGN personnel are led by serving naval officers.

a: Vicealmirante, Vice Admiral (rank not currently held) **b:** Contralmirante, Rear Admiral (Commander of the Navy)
c: Contraalmirante Medio Inferior, Commodore **d:** Capitan de Navío, Captain **e:** Capitán de Fragata, Commander
f: Capitan de Corbeta, Lieutenant Commander **g:** Teniente de Navío, Lieutenant **h:** Teniente de Fragata, (Senior) Sub Lieutenant
i: Teniente de Corbeta, Sub Lieutenant **j:** Guardiamarina, Acting Sub Lieutenant

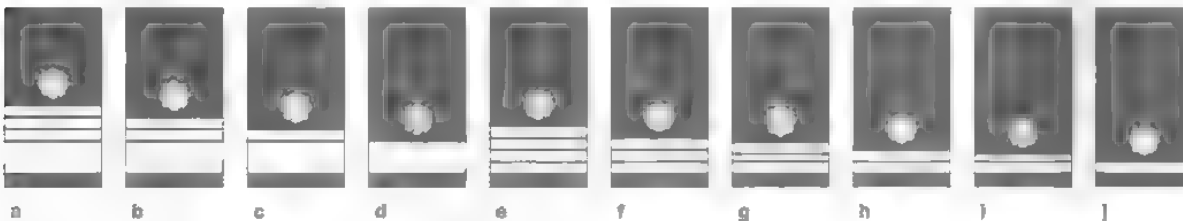
Peru (Marina de Guerra del Perú)



Gold wire suns and gold braid rings on very dark blue cuffs. Rank titles are in Spanish. There is a Peruvian Coast Guard (Dirección General de Capitanías y Guardacostas)

a: Almirante, Admiral (Commandant-General) **b:** Vicealmirante, Vice Admiral **c:** Contralmirante, Rear Admiral **d:** Capitán de Navío, Captain
e: Capitan de Fragata, Commander **f:** Capitan de Corbeta, Lieutenant Commander **g:** Teniente 1º (Primero), Lieutenant
h: Teniente 2º (Segundo), Sub Lieutenant **i:** Alférez de Fragata, Acting Sub Lieutenant

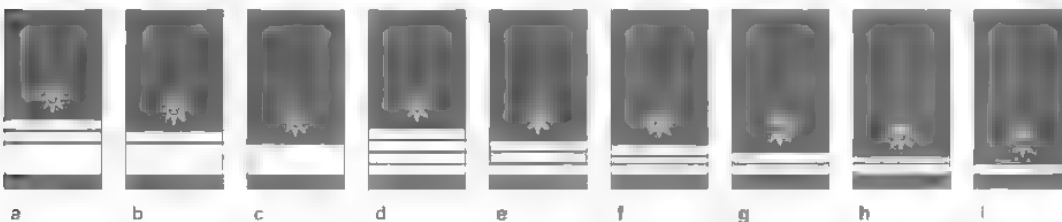
Philippines (Philippine Navy/Hukbong Dagat ng Pilipinas)



Gold wire suns and gold braid rings on very dark blue cuffs. The Navy title is in English/Tagalog, the rank titles in English only.

a: Admiral, Admiral (rank not currently held) **b:** Vice Admiral, Vice Admiral (Flag-Officer-In-Command PN) **c:** Rear Admiral, Rear Admiral
d: Commodore, Commodore **e:** Captain, Captain **f:** Commander, Commander **g:** Lieutenant Commander, Lieutenant Commander
h: Lieutenant, Lieutenant **i:** Lieutenant Junior Grade, Sub Lieutenant **j:** Ensign, Acting Sub Lieutenant

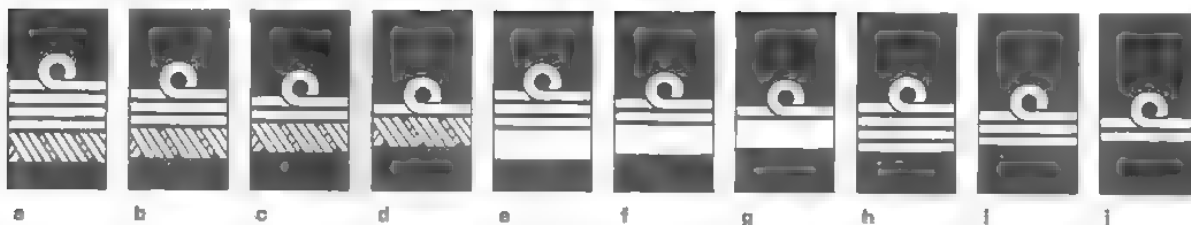
Philippines - Coast Guard/Tanurag Baybayin ng Pilipinas



Gold wire suns with anchors and gold braid rings on very dark blue cuffs. The Coast Guard title is in English/Tagalog, the rank titles in English only

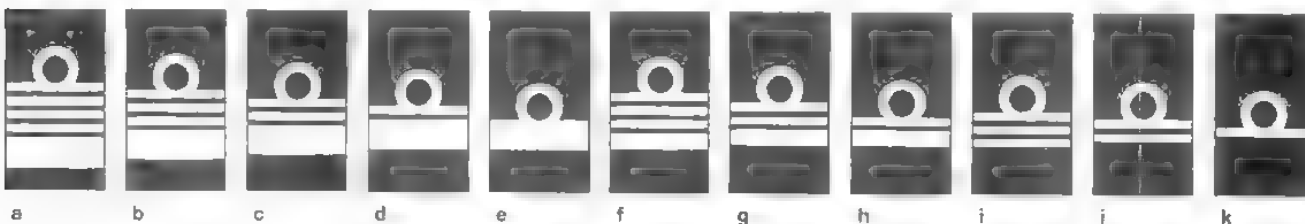
a: Vice Admiral, Vice Admiral (Commandant PCG) **b:** Rear Admiral, Rear Admiral **c:** Commodore, Commodore **d:** Captain, Captain
e: Commander, Commander **f:** Lieutenant Commander, Lieutenant Commander **g:** Lieutenant, Lieutenant **h:** Lieutenant Junior Grade, Sub Lieutenant
i: Ensign, Acting Sub Lieutenant

Poland (Marynarka Wojenna)



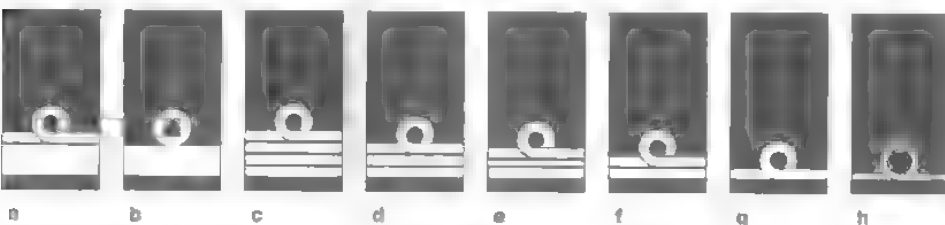
Gold braid rings with 'curl' and traditional Polish generals' embroidery on very dark blue cloth cuffs. Rank titles are in Polish
a: *Admirał*, Admiral (rank not currently held) **b:** *Admirał floty*, Vice Admiral (Commander of the Navy) **c:** *Wiceadmiral*, Rear Admiral
d: *Konradmirał*, Commodore **e:** *Komandor*, Captain **f:** *Komandor porucznik*, Commander **g:** *Komandor podporucznik*, Lieutenant Commander
h: *Kapitan marynarki*, Lieutenant **i:** *Porucznik marynarki*, Sub Lieutenant **j:** *Podporucznik marynarki*, Acting Sub Lieutenant

Portugal (Marinha de Guerra Portuguesa)



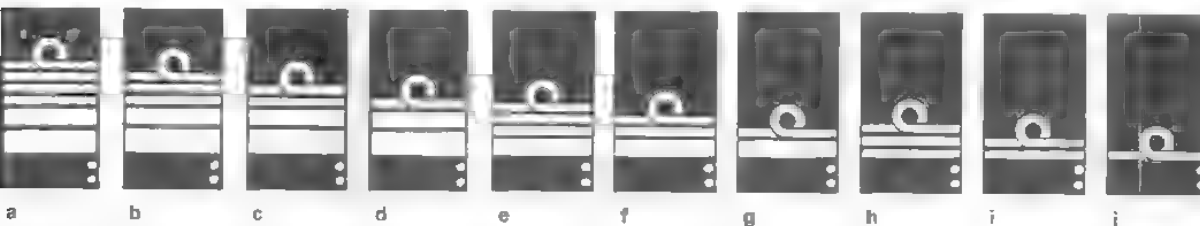
Gold braid rings with 'curl' on very dark blue cloth cuffs. Rank titles are in Portuguese.
a: *Almirante da Armada* (rank not currently held) **b:** *Almirante*, Admiral (Chief of Naval Staff) **c:** *Vice-almirante*, Vice Admiral
d: *Contra-almirante*, Rear Admiral **e:** *Comodoro*, Commodore **f:** *Capitão-de-mar-e-guerra*, Captain **g:** *Capitão-de fragata*, Commander
h: *Capitão-tenente*, Lieutenant Commander **i:** *Primeiro-tenente*, Lieutenant **j:** *Segundo-tenente*, Sub Lieutenant
k: *Subtenente*, Acting Sub Lieutenant & *Guarda-marinha*, Midshipman

Qatar (Qatari Amiri Navy)



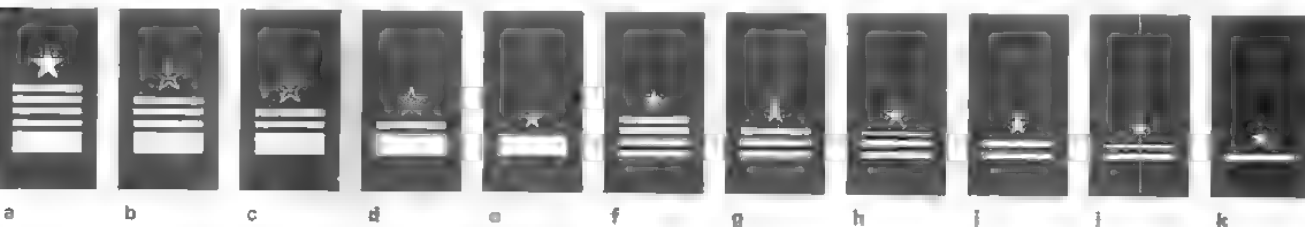
Gold braid rings with 'curl' on very dark blue cloth cuffs. Arabic Qatari Army rank titles are used and written here in romanised script. There is a Qatari Coast Guard, commanded by a Colonel.
a: *Liwā*, Rear Admiral (rank not currently held) **b:** *'Amīd*, Commodore (Chief of Naval Staff) **c:** *'Aqīd*, Captain **d:** *Muqaddam*, Commander
e: *Ra'id*, Lieutenant Commander **f:** *Naqīb*, Lieutenant **g:** *Mulāzīm Awwal*, Sub Lieutenant **h:** *Mulāzīm Thānī*, Acting Sub Lieutenant

Romania (Forțele Navale Române)



Gold braid rings with 'curl' on very dark blue cloth cuffs; brass buttons. Rank titles are in Romanian
a: *Amiral*, Admiral (Chief of Defence Staff) **b:** *Viceamiral*, Vice Admiral (rank not currently held) **c:** *Contraamiral*, Rear Admiral (Chief of Naval Staff)
d: *Amiral de flotilă*, Commodore **e:** *Comandor*, Captain **f:** *Căpitan-comandor*, Commander **g:** *Locotenent comandor*, Lieutenant Commander
h: *Căpitan*, Lieutenant **i:** *Locotenent*, Sub Lieutenant **j:** *Aspirant*, Acting Sub Lieutenant

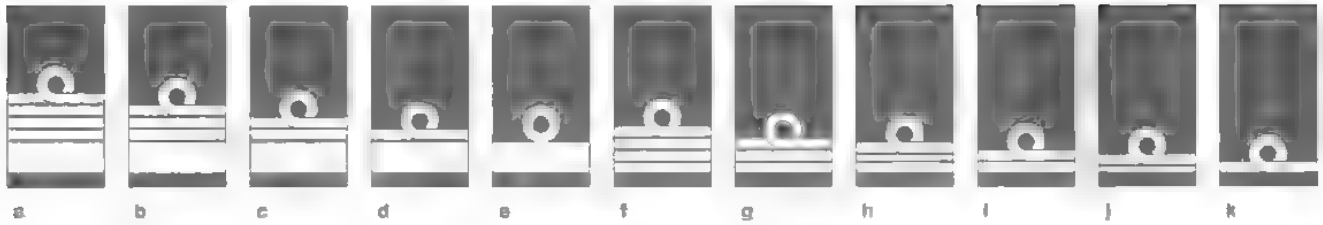
Russian Federation (Rossiskiy Voennomorskiy Flot)



Gold wire large star (a) and small stars, black cloth stars edged in gold wire with a gold wire anchor (b-d) and gold braid bars on black cloth cuffs. Rank insignia is worn simultaneously on gold braid or black shoulder straps. Rank titles are in romanised Russian. The Russian Federal Border Guard, which forms part of the Interior Ministry, includes a Coast Guard wearing naval-style uniforms
a: *Admiral flota*, Admiral of the Fleet (rank not currently held) **b:** *Admiral*, Admiral (Commander-in-Chief, Navy) **c:** *Vitse-admiral*, Vice Admiral
d: *Kontr-admiral*, Rear Admiral **e:** *Kapitan 1 (pervogo) ranga*, Captain **f:** *Kapitan 2 (vtorogo) ranga*, Commander
g: *Kapitan 3 (tret'yego) ranga*, Lieutenant Commander **h:** *Kapitan-leytenant*, Lieutenant **i:** *Stershiy leytenant*, (Senior) Sub Lieutenant
j: *Leytenant*, Sub Lieutenant **k:** *Mladshiy leytenant*, Acting Sub Lieutenant

RANKS AND INSIGNIA OF THE WORLD'S NAVIES

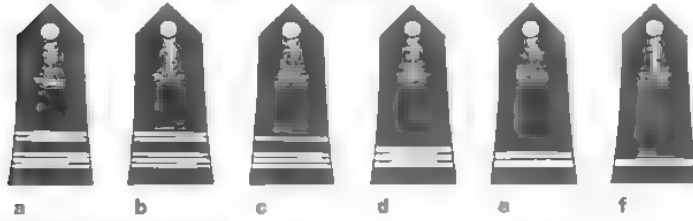
Saudi Arabia (Royal Saudi Naval Forces)



Gold braid rings with 'curl' on very dark blue cloth cuffs. Arabic Saudi Arabian Army rank titles are used and written here in romanised script. There is a Saudi Arabian Coast Guard, commanded by a Lieutenant General

a: *Mushir*, Admiral of the Fleet **b:** *Fariq Awwal*, Admiral (rank not currently held) **c:** *Fariq*, Vice Admiral (Commander, RSNF) **d:** *Liwa'*, Rear Admiral **e:** *'Amid*, Commodore **f:** *'Aqid*, Captain **g:** *Muqaddam*, Commander **h:** *Ra'id*, Lieutenant Commander **i:** *Naqib*, Lieutenant **j:** *Mulazim Awwal*, Sub Lieutenant **k:** *Mulazim*, Acting Sub Lieutenant

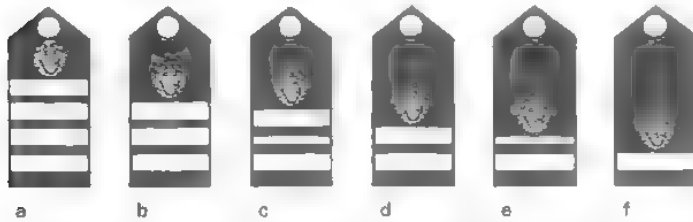
Senegal (Marine Sénégalaise)



Gold wire anchors with stars and gold braid rings on very dark blue cloth shoulder-straps; a Commander (b) has silver second and fourth rings; brass buttons. Rank titles are in French.

a: *Capitaine de vaisseau*, Captain (Chief of Naval Staff) **b:** *Capitaine de frégate*, Commander **c:** *Capitaine de corvette*, Lieutenant Commander **d:** *Lieutenant de vaisseau*, Lieutenant **e:** *Enseigne de vaisseau de 1ère (première) classe*, Sub Lieutenant **f:** *Enseigne de vaisseau de 2e (deuxième) classe*, Acting Sub Lieutenant

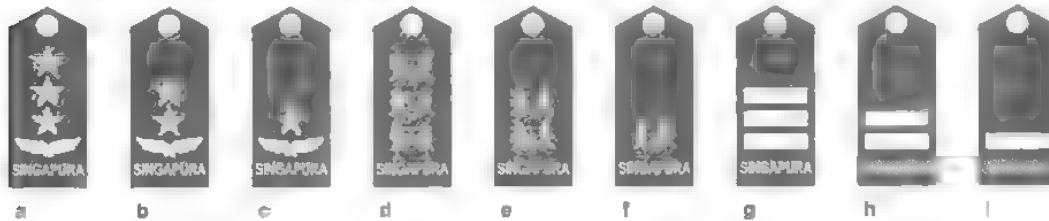
Seychelles (Coast Guard)



Gold wire Seychelles coats of arms and gold braid rings on very dark blue cloth shoulder-straps; brass buttons. Seychelles Army rank titles are used and written in English

a: *Colonel*, Captain (rank not currently held) **b:** *Lieutenant Colonel*, Commander (Commanding Officer, Coast Guard) **c:** *Major*, Lieutenant Commander **d:** *Captain*, Lieutenant **e:** *First Lieutenant*, Sub Lieutenant **f:** *Lieutenant*, Acting Sub Lieutenant

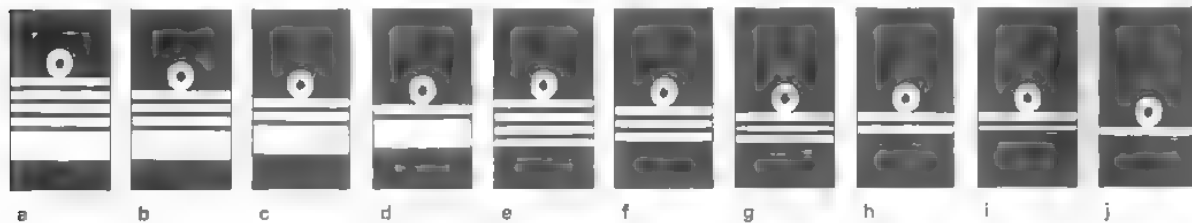
Singapore (Republic of Singapore Navy)



Gold embroidered stars, crossed branches, coats of arms, bars and national titles on very dark blue cloth shoulder-straps; brass buttons. Rank titles are in English. The Singapore Police Coast Guard forms part of the Singapore Police. Personnel wear police uniforms and insignia with Deputy Assistant Commissioner (Commodore) as the highest rank.

a: *Vice Admiral*, Vice Admiral (rank not currently held) **b:** *Rear Admiral (2 stars)*, Rear Admiral (Chief of Navy) **c:** *Rear Admiral (1 star)*, Commodore **d:** *Colonel*, Captain **e:** *Lieutenant Colonel*, Commander **f:** *Major*, Lieutenant Commander **g:** *Captain*, Lieutenant **h:** *Lieutenant*, Sub Lieutenant **i:** *2nd (Second) Lieutenant*, Acting Sub Lieutenant

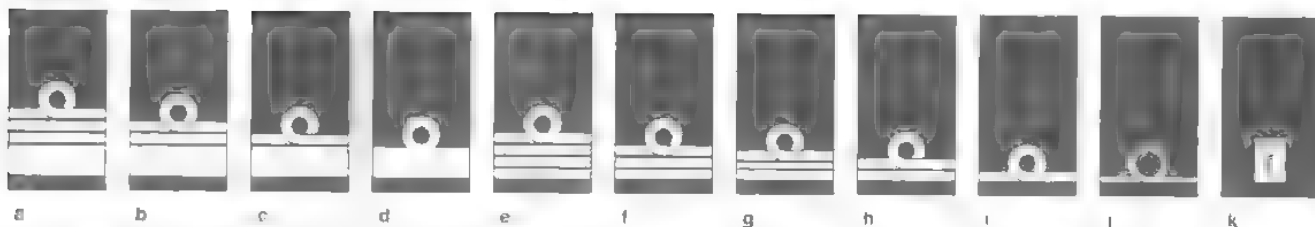
Slovenia (Slovenska Mornarica)



Gold braid rings with 'curl' on very dark blue cloth cuffs. Rank titles are in Slovene

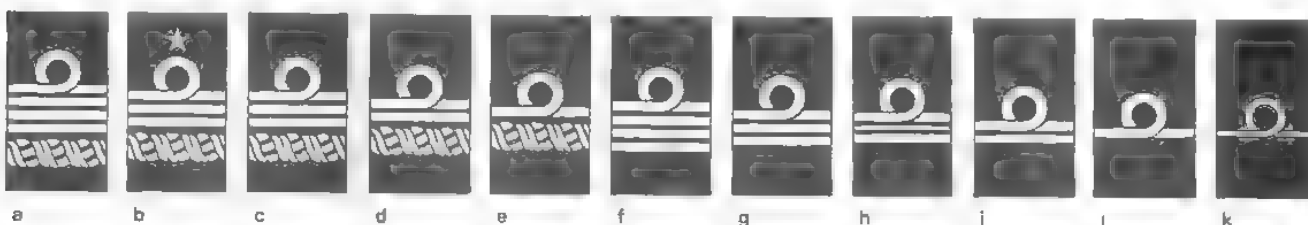
a: *Admiral*, Admiral (rank not currently held) **b:** *Viceadmiral*, Vice Admiral (rank not currently held) **c:** *Kontraadmiral*, Rear Admiral (rank not currently held) **d:** *Kapitan*, Commodore (Commander, Armed Forces Command) **e:** *Kapitan bojne ladje*, Captain **f:** *Kapitan fregate*, Commander (Commander, 430th Naval Detachment) **g:** *Kapitan korvete*, Lieutenant Commander **h:** *Poročnik bojne ladje*, Lieutenant **i:** *Poročnik fregate*, Sub Lieutenant **j:** *Poročnik korvete*, Acting Sub Lieutenant

South Africa



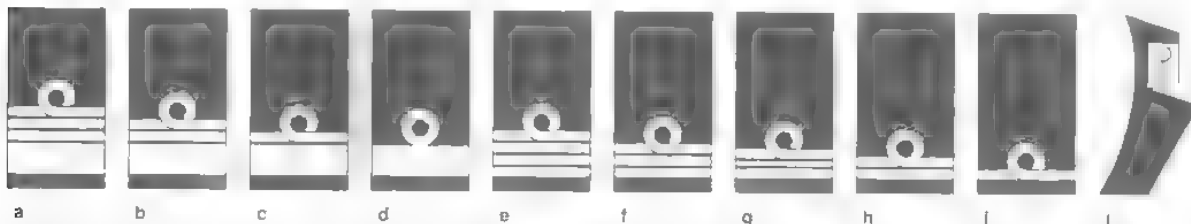
Gold braid rings on black cloth cuffs; brass button on white cord on white cloth cuff-patch (k). Rank titles are in English.
a: Admiral, Admiral (rank not currently held) **b:** Vice Admiral, Vice Admiral (Chief of the Navy) **c:** Rear Admiral, Rear Admiral
d: Rear Admiral (Junior Grade), Commodore **e:** Captain, Captain **f:** Commander, Commander **g:** Lieutenant Commander, Lieutenant Commander
h: Lieutenant, Lieutenant **i:** Sub-Lieutenant, Sub Lieutenant **j:** Ensign, Acting Sub Lieutenant **k:** Midshipman, Midshipman

Spain (Armada Española)



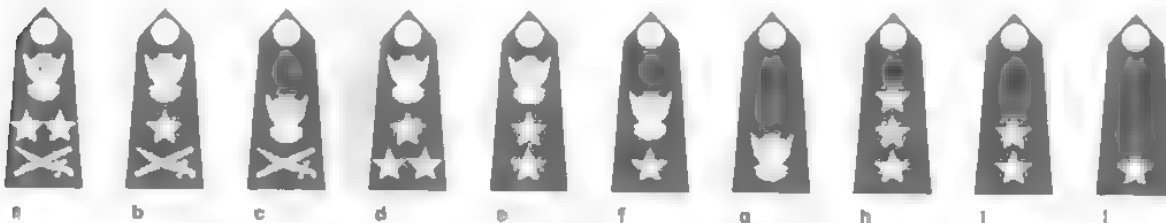
Gold wire star and gold braid rings with 'curl' and traditional Spanish generals' embroidery on very dark blue cloth cuffs. Rank titles are in Spanish.
a: Capitán General, Admiral of the Fleet (King Juan Carlos II) **b:** Almirante General, Admiral (Chief of Naval Staff) **c:** Almirante, Vice Admiral
d: Vicealmirante, Rear Admiral **e:** Contraalmirante, Commodore **f:** Capitán de Navío, Captain **g:** Capitán de Fragata, Commander
h: Capitán de Corbeta, Lieutenant Commander **i:** Teniente de Navío, Lieutenant **j:** Alférez de Navío, Sub Lieutenant
k: Alférez de Fragata, Acting Sub Lieutenant

Sri Lanka



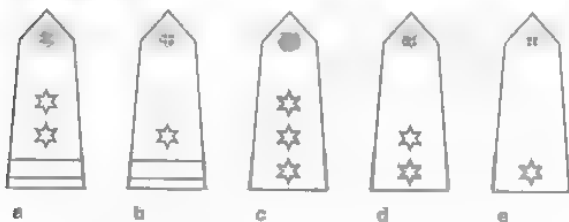
Gold braid rings with 'curl' on very dark blue cloth cuffs; brass button and white cord on white cloth collar-patch (j). Royal Navy rank titles are used.
a: Admiral (rank not currently held) **b:** Vice Admiral (Commander of the Navy) **c:** Rear Admiral **d:** Commodore **e:** Captain **f:** Commander
g: Lieutenant Commander **h:** Lieutenant **i:** Sub Lieutenant **j:** Midshipman

Sudan



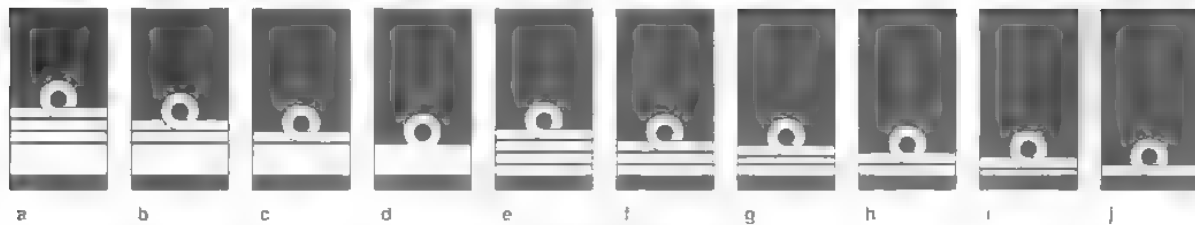
Gold eagles, stars and crossed swords and batons on very dark blue cloth shoulder straps; brass buttons. Arabic Sudan Army rank titles are used and written here in romanised script.
a: Fariq Awwal, Admiral (rank not currently held) **b:** Fariq, Vice Admiral (rank not currently held) **c:** Liwā', Rear Admiral (rank not currently held)
d: 'Amid, Commodore (Commander, Navy) **e:** 'Aqid, Captain **f:** Muqaddam, Commander **g:** Ra'id, Lieutenant Commander **h:** Naqib, Lieutenant
i: Mulazim Awwal, Sub Lieutenant **j:** Mulazim Thani, Acting Sub Lieutenant

Suriname



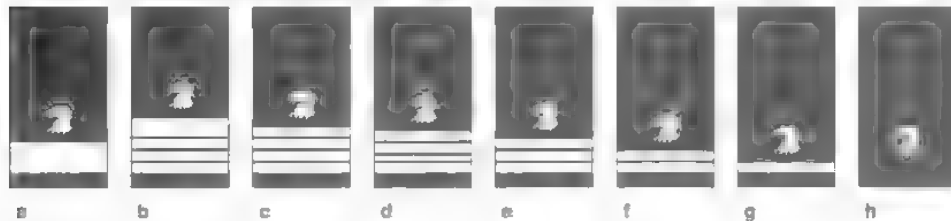
Gold stars and rings on white cotton shoulder-straps; white bone buttons. Rank titles are in Dutch.
a: Kapitein-luitenant-ter-zee, Commander (Commander, Navy) **b:** Luitenant-ter-zee 1e (eerste) klasse, Lieutenant Commander
c: Luitenant-ter-zee 2e (tweede) klasse oudste categoris, Lieutenant **d:** Luitenant-ter-zee 2e (tweede) klasse, Sub Lieutenant
e: Luitenant-ter-zee 3e (derde) klasse, Acting Sub Lieutenant

Sweden (Svenska Marinen)



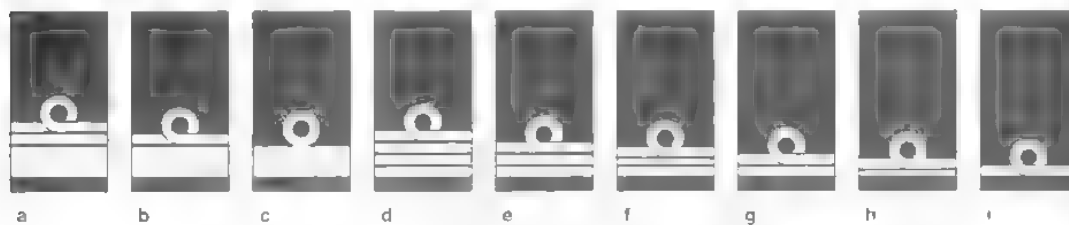
Gold braid rings with 'curl' on very dark blue cloth cuffs. Rank titles are in Swedish.
a: *Amiral, Admiral (King Carl Gustaf XVI)* **b:** *Viceamiral, Vice Admiral (rank not currently held)* **c:** *Konteramiral, Rear Admiral (Naval Inspector)*
d: *Flottiljamiral, Commodore* **e:** *Kommendör, Captain* **f:** *Kommendörkapten, Commander* **g:** *Örlogskapten, Lieutenant Commander*
h: *Kapten, Lieutenant* **i:** *Löjnant, Sub Lieutenant* **j:** *Fänrik, Acting Sub Lieutenant*

Sweden Coast Guard (Kustbevakning)



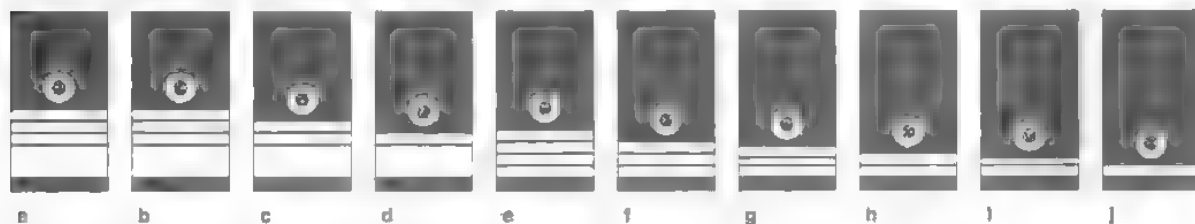
Gold metal eagles' heads and gold braid stripe and rings on very dark blue cloth shoulder loops on light blue cloth shoulder-straps; blue bone buttons. Rank titles are in Swedish
a: *Generaldirektör, Rear Admiral (Director General, Coast Guard)* **b:** *Kustbevakningsdirektör, Commodore* **c:** *Kustbevakningsöverinspektör, Captain*
d: *1. (Förste) Kustbevakningsinspektör, Commander* **e:** *Kustbevakningsinspektör, Lieutenant Commander* **f:** *Kustbevakningassistent, Lieutenant*
g: *Kustuppsyningsman, Sub Lieutenant* **h:** *Kustbevakningsaspirant, Acting Sub Lieutenant*

Syria (Syrian Arab Navy)



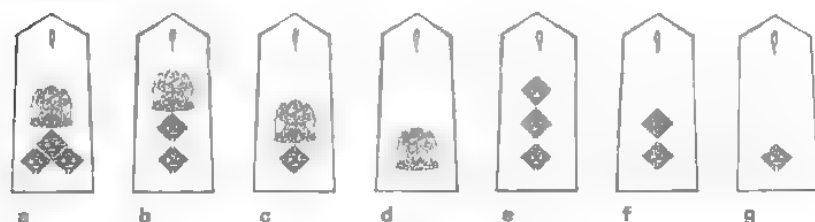
Gold braid rings with 'curl' on very dark blue cloth cuffs. Syrian Army rank titles are used and written here in romanised Arabic
a: *Fariq, Vice Admiral (Commander, SAN)* **b:** *Liwä', Rear Admiral* **c:** *'Amid, Commodore* **d:** *'Aqid, Captain* **e:** *Muqaddam, Commander*
f: *Rä'id, Lieutenant Commander* **g:** *Naqib, Lieutenant* **h:** *Mulazim Awwal, Sub Lieutenant* **i:** *Mulazim, Acting Sub Lieutenant*

Taiwan (Republic of China) (Zhōnghuá Mínguó Hǎijūn)



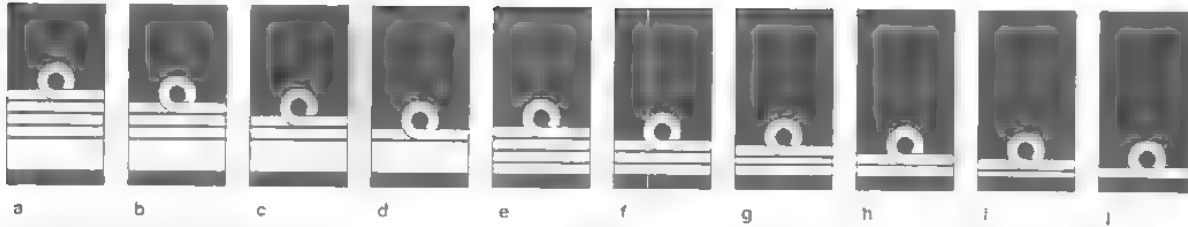
A gold wire cornsheaf on very dark blue cloth cuffs. Rank titles are in romanised Mandarin Chinese written in 'Hanyu Pinyin'. The Taiwanese Coast Guard is designated the 'Republic of China Coast Guard Administration'.
a: *Hǎijūn Yì-chí Shàngjiāng, (Senior) Admiral (4 shoulder strap stars) (Commander in-Chief of the Navy)*
b: *Hǎijūn Èr-chí Shàngjiāng, Admiral (3 shoulder-strap stars)* **c:** *Hǎijūn Zhōngjiāng, Vice Admiral* **d:** *Hǎijūn Shǎojiāng, Rear Admiral*
e: *Hǎijūn Shàngxiǎo, Captain* **f:** *Hǎijūn Zhōngxiǎo, Commander* **g:** *Hǎijūn Shǎoxiǎo, Lieutenant Commander* **h:** *Hǎijūn Shàngwēi, Lieutenant*
i: *Hǎijūn Zhōngwēi, Sub Lieutenant* **j:** *Hǎijūn Shǎowēi, Acting Sub Lieutenant*

Tanzania



Gold wire national coats of arms and stars on light tan cotton shoulder-straps; brown buttons. Tanzanian Army rank titles are used and written in Swahili
a: *Brigedia Jenerali, Commodore (Chief of the Navy)* **b:** *Kanali, Captain* **c:** *Luteni Kanali, Commander* **d:** *Meja, Lieutenant Commander*
e: *Kapteni, Lieutenant* **f:** *Luteni wa Kwanza, Sub Lieutenant* **g:** *Luteni wa Pili, Acting Sub Lieutenant*

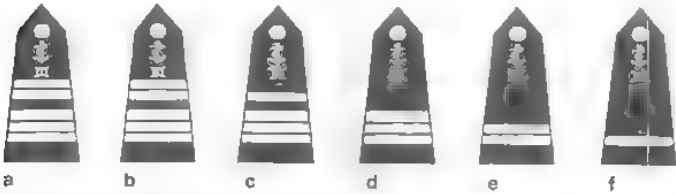
Thailand (Royal Thai Navy)



Gold braid rings with 'curl' on very dark blue cloth cuffs. Rank titles are in romanised Thai.

a: *Chom Phon Rua*, Admiral of the Fleet (*King Bhumibho Adulyadej*) **b:** *Phon Rua Eg*, Admiral (Commander in Chief, Navy) **c:** *Phon Rua Tho*, Vice Admiral
d: *Phon Rua Tri*, Rear Admiral **e:** *Nawa Eg*, Captain **f:** *Nawa Tho*, Commander **g:** *Nawa Tri*, Lieutenant Commander **h:** *Rua Eg*, Lieutenant
i: *Rua Tho*, Sub Lieutenant **j:** *Rua Tri*, Acting Sub Lieutenant

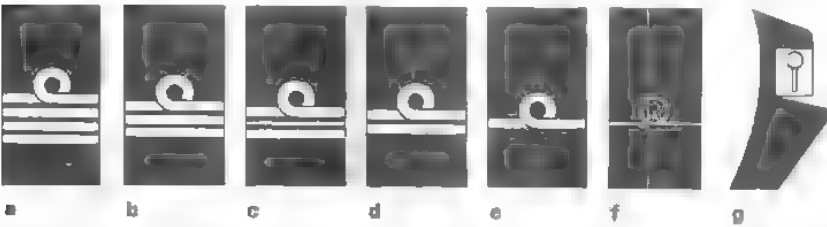
Togo (Marine Togolaise)



Gold wire anchors and monograms and gold braid rings on very dark blue cloth shoulder straps, a Commander (b, has silver second and fourth rings); brass buttons. Rank titles are in French.

a: *Capitaine de vaisseau*, Captain (Commander, Navy) **b:** *Capitaine de frégate*, Commander **c:** *Capitaine de corvette*, Lieutenant Commander
d: *Lieutenant de vaisseau*, Lieutenant **e:** *Enseigne de vaisseau de 1ère (première) classe*, Sub Lieutenant
f: *Enseigne de vaisseau de 2e (deuxième) classe*, Acting Sub Lieutenant

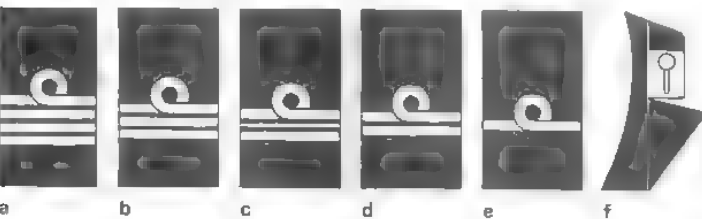
Tonga



Gold braid rings with 'curl' on very dark blue cloth cuffs; brass button and white cord on white cloth collar-patch (g). Rank titles are in English.

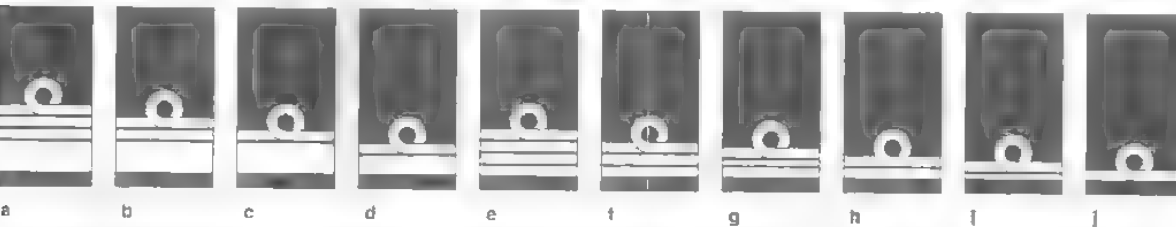
a: *Captain*, Captain (rank not currently held) **b:** *Commander*, Commander (Commander, Navy) **c:** *Lieutenant Commander*, Lieutenant Commander
d: *Lieutenant*, Lieutenant **e:** *Sub Lieutenant*, Sub Lieutenant **f:** *Ensign*, Acting Sub Lieutenant **g:** *Midshipman*, Midshipman

Trinidad and Tobago Coast Guard



Gold braid rings with 'curl' on very dark blue cloth cuffs; brass button and white cord on white cloth collar-patch (f). Royal Naval rank titles are used.
a: *Captain (Commanding Officer, Coast Guard)* **b:** *Commander* **c:** *Lieutenant Commander* **d:** *Lieutenant* **e:** *Sub Lieutenant* **f:** *Midshipman*

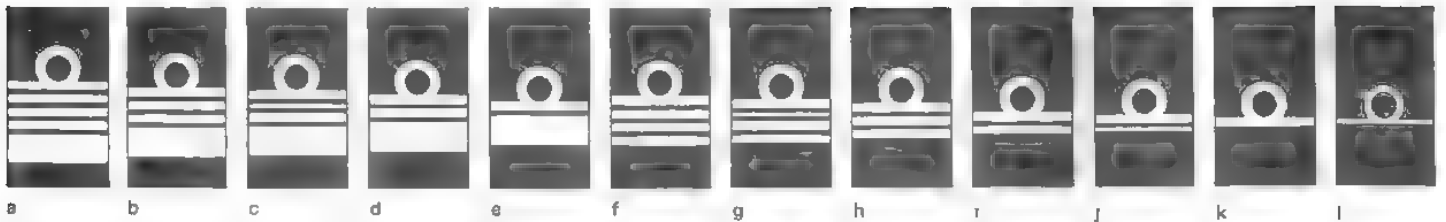
Tunisia



Gold braid rings with 'curl' on very dark blue cloth cuffs. Arabic Tunisian Army rank titles are used and written here in French. There is a Tunisian Coast Guard.

a: *Vice-amiral d'escadre*, Vice Admiral **b:** *Vice-amiral*, Rear Admiral (Chief of Naval Staff) **c:** *Contre-amiral*, Commodore
d: *Capitaine de vaisseau major*, (Senior) Captain **e:** *Capitaine de vaisseau*, Captain **f:** *Capitaine de frégate*, Commander
g: *Capitaine de corvette*, Lieutenant Commander **h:** *Lieutenant de vaisseau*, Lieutenant **i:** *Enseigne de vaisseau de 1ère (première) classe*, Sub Lieutenant
j: *Enseigne de vaisseau de 2e (deuxième) classe*, Acting Sub Lieutenant

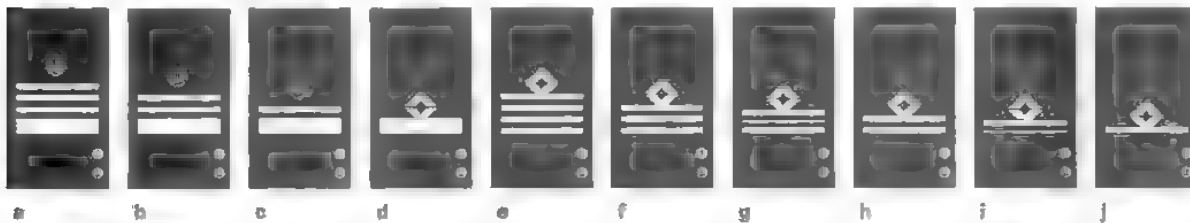
Turkey (Türk Deniz Kuvvetleri)



Gold braid rings with 'curl' on very dark blue cloth shoulder-strap; brass buttons. Rank titles are in Turkish. The Turkish Coast Guard (*Sahil Güvenlik Kılığı*) is manned by seconded naval personnel and is commanded by a Rear Admiral (*Tümamiral*). Personnel wear naval uniforms and insignia with the distinguishing shoulder title 'Sahil Güvenlik'

- a: *Buyük amiral*, Admiral of the Fleet (rank not currently held) b: *Oramiral*, Admiral (C-in-C Navy) c: *Koramiral*, Vice Admiral
- d: *Tümamiral*, Rear Admiral e: *Tuğamiral*, Commodore f: *Albay*, Captain g: *Yarbay*, Commander h: *Binbaşı*, Lieutenant Commander
- i: *Yüzbaşı*, Lieutenant j: *Usteğmen*, Sub Lieutenant k: *Teğmen*, Acting Sub Lieutenant l: *Asteğmen*, (Junior) Acting Sub Lieutenant

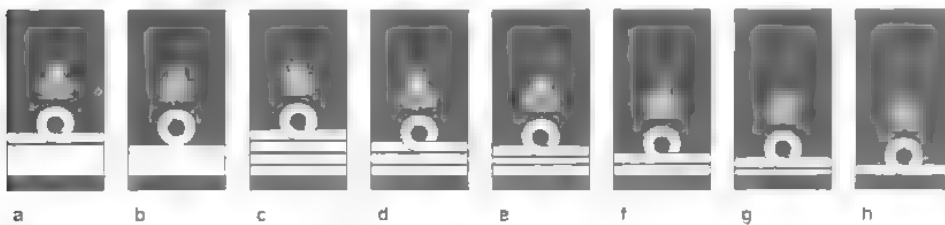
Ukraine (Viys'kogo-Morskoy Sil)



Gold wire tridents and wreaths and gold braid rings with square 'curl' on black cloth cuffs. Rank insignia is worn simultaneously on gold or black braid shoulder-strap. Rank titles are in romanised Ukrainian

- a: *Admiral*, Admiral (C-in-C, Navy) b: *Vitse-admiral*, Vice Admiral c: *Kontr-admiral*, Rear Admiral d: *Kapitan 1 rangy*, Captain
- e: *Kapitan 2 rangy*, Commander f: *Kapitan 3 rangy*, Lieutenant Commander g: *Kapitan-leytenant*, Lieutenant
- h: *Starshiy-leytenant*, (Senior) Sub Lieutenant i: *Leytenant*, Sub Lieutenant j: *Molodshiy leytenant*, Acting Sub Lieutenant

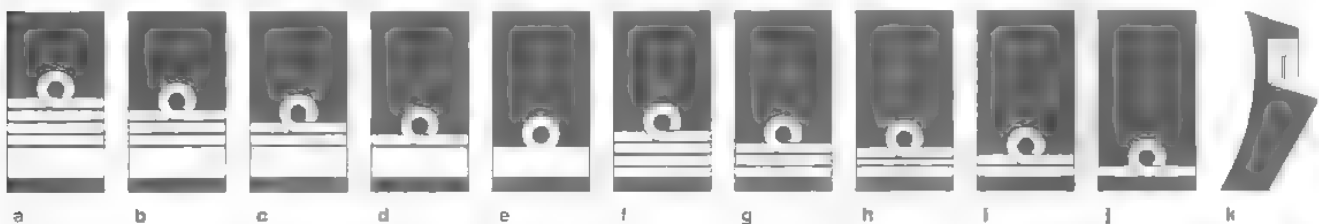
United Arab Emirates



Gold wire cap badge (gold eagle on red cloth, silver anchor, gold wreath) above gold braid rings with 'curl' on very dark blue cloth cuffs. Arabic UAE Army rank titles are used and written here in romanised script. The United Arab Emirates maintains a Coast Guard commanded by a Director-General

- a: *Liwa'*, Rear Admiral (Commander, UAENF) b: *'Amid*, Commodore c: *'Aqid*, Captain d: *Muqaddam*, Commander e: *Ra'id*, Lieutenant Commander
- f: *Naqib*, Lieutenant g: *Mulazim Awwal*, Sub Lieutenant h: *Mulazim*, Acting Sub Lieutenant

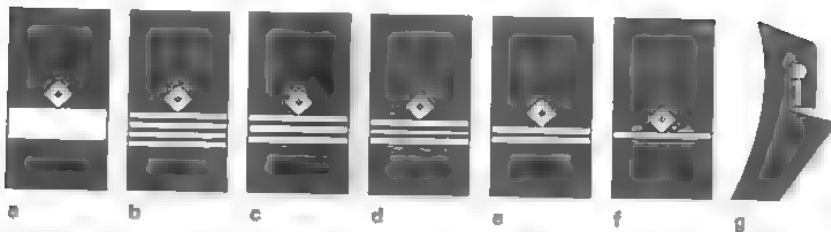
United Kingdom (Royal Navy)



Gold braid rings with 'curl' on very dark blue cloth cuffs; brass button and white cord on white cloth collar-patch (k). Her Majesty's Coast Guard is a government agency. Personnel wear naval-style uniforms and insignia

- a: Admiral of the Fleet (promotions to this rank discontinued March 1995) b: Admiral (First Sea Lord & Chief of the Naval Staff) c: Vice Admiral
- d: Rear Admiral e: Commodore f: Captain g: Commander h: Lieutenant Commander i: Lieutenant j: Sub Lieutenant & Acting Sub Lieutenant
- k: Midshipman

United Kingdom (Royal Fleet Auxiliary Service)



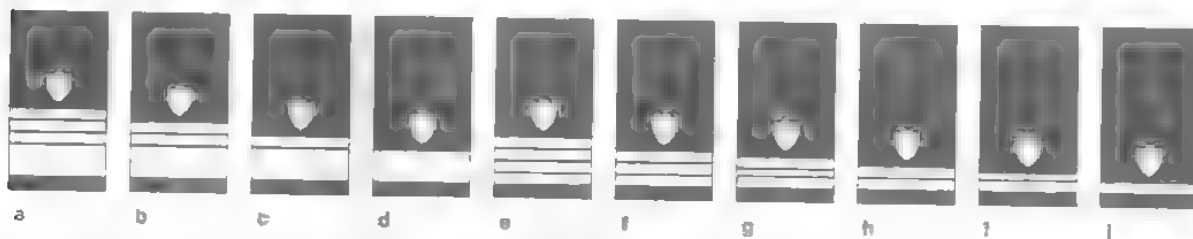
Gold braid rings and diamonds on very dark blue cloth cuffs, brass button and white cord on collar (g). British Merchant Navy rank titles are used.
a: *Commodore, Commodore, Commanding Officer (RFA)* **b:** *Captain, Captain* **c:** *Chief Officer, Commander* **d:** *1st (First) Officer, Lieutenant Commander*
e: *2nd (Second) Officer, Lieutenant* **f:** *3rd (Third) Officer, Sub Lieutenant* **g:** *Deck Cadet, Midshipman*

United States



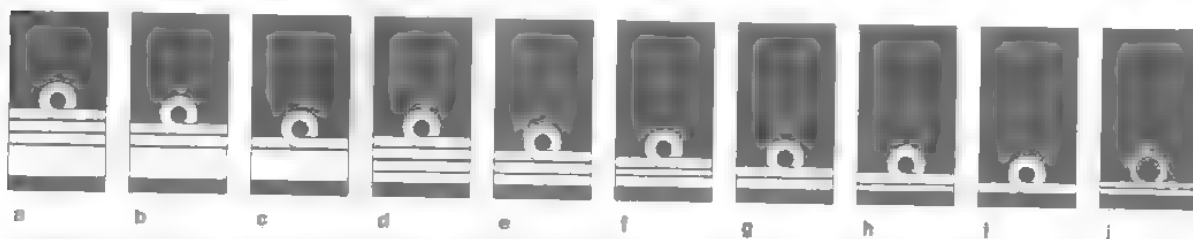
Gold wire stars and gold braid rings on very dark blue cloth cuffs. Rank titles are in English.
a: *Fleet Admiral, Admiral of the Fleet (rank not currently held)* **b:** *Admiral, Admiral (Chief of Naval Operations)* **c:** *Vice Admiral, Vice Admiral*
d: *Rear Admiral (Upper Half), Rear Admiral* **e:** *Rear Admiral (Lower Half), Commodore* **f:** *Captain, Captain* **g:** *Commander, Commander*
h: *Lieutenant Commander, Lieutenant Commander* **i:** *Lieutenant, Lieutenant* **j:** *Lieutenant Junior Grade, Sub Lieutenant*
k: *Ensign, Acting Sub Lieutenant*

United States Coast Guard



Gold wire shields and gold braid rings on very dark blue cloth cuffs. Rank titles are in English.
a: *Admiral, Admiral (Commandant, USCG)* **b:** *Vice Admiral, Vice Admiral* **c:** *Rear Admiral (Upper Half), Rear Admiral*
d: *Rear Admiral (Lower Half), Commodore* **e:** *Captain, Captain* **f:** *Commander, Commander* **g:** *Lieutenant Commander, Lieutenant Commander*
h: *Lieutenant, Lieutenant* **i:** *Lieutenant Junior Grade, Sub Lieutenant* **j:** *Ensign, Acting Sub Lieutenant*

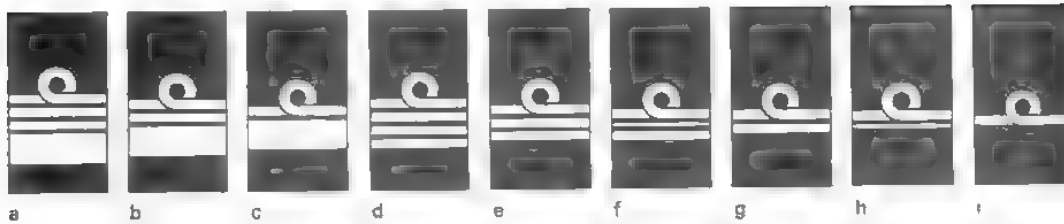
Uruguay (Armada Nacional)



Gold braid rings with curl on very dark blue cloth cuffs. Rank titles are in Spanish. The Uruguayan Coast Guard (*Prefectura Nacional Naval*) forms part of the Navy. Personnel wear naval uniforms and insignia with a Rear Admiral (*Contra Almirante*) as the commanding officer (*Proteja Nacional Naval*).
a: *Almirante, Admiral (Commander in Chief, Navy)* **b:** *Vice Almirante, Vice Admiral* **c:** *Contra Almirante, Rear Admiral* **d:** *Capitán de Navío, Captain*
e: *Capitán de Fragata, Commander* **f:** *Capitán de Corbeta, Lieutenant Commander* **g:** *Teniente de Navío, Lieutenant* **h:** *Alférez de Navío, Sub Lieutenant*
i: *Alférez de Fragata, Acting Sub Lieutenant* **j:** *Guardiamarina, Midshipman*

RANKS AND INSIGNIA OF THE WORLD'S NAVIES

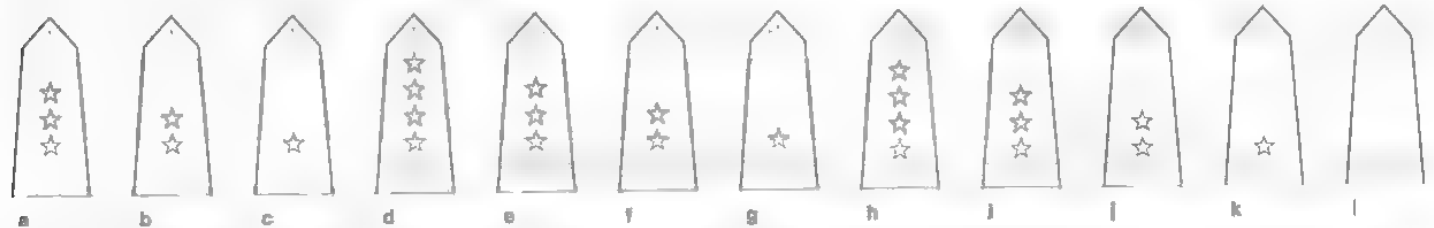
Venezuela (Armada Bolivariana de Venezuela)



Gold braid rings with 'curl' on very dark blue cloth cuffs. Rank titles are in Spanish. The Coast Guard (Comando de Guardacostas) forms part of the Navy. Personnel wear naval uniforms and insignia with a Rear Admiral as the commanding officer.

a: Almirante, Admiral (rank not currently held) **b:** Vicealmirante, Vice Admiral (Commander, Navy) **c:** Contralmirante, Rear Admiral
d: Capitan de Navio, Captain **e:** Capitan de Fragata, Commander **f:** Capitan de Corbeta, Lieutenant Commander **g:** Teniente de Navio, Lieutenant
h: Teniente de Fragata, Sub Lieutenant **i:** Alférez de Navio, Acting Sub Lieutenant

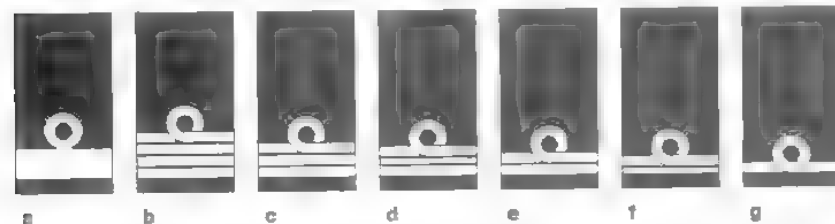
Vietnam (Hai quan Nhan dan Viet Nam)



Gold metal stars and buttons (a-d) silver metal stars, bars and buttons (e-l) on gold braid shoulder straps piped black. Rank titles are in Vietnamese. There is also the Vietnam People's Coast Guard (Canh sat bien) wearing the same rank insignia.

a: Do Doc, Admiral (rank not currently held) **b:** Pho Do Doc, vice Admiral (Commander, VPA) **c:** Chuan Do Doc, Rear Admiral **d:** Da Ta, Commodore
e: Thuong Ta, Captain **f:** Trung Ta, Commander **g:** Thieu Ta, Lieutenant Commander **h:** Da Uy, (Senior) Lieutenant **i:** Thuong Uy, Lieutenant
j: Trung Uy, Sub Lieutenant **k:** Thieu Uy, Acting Sub Lieutenant **l:** Chuan Uy, Midshipman

Yemen



Gold braid rings with 'curl' on very dark blue cloth cuffs. Arabic Yemen Army rank titles are used and written here in romanised script.

a: 'Amid, Commodore (Commander, Navy) **b:** 'Aqid, Captain **c:** Muqaddam, Commander **d:** Ra'id, Lieutenant Commander **e:** Naqib, Lieutenant
f: Mulazim Awwal, Sub Lieutenant **g:** Mulazim Thani, Acting Sub Lieutenant

Pennant list of major surface ships

Type abbreviations

Notes: Designations specific to one nationality are followed by Country abbreviations.
 The prefix *W* denotes a vessel of the Coastguard Service. Suffixes to type indicators are as follows:
F denotes a vessel capable of speeds in excess of 35 kt.
G denotes a vessel with a force guided missile system, including SAM, USM and SUM, usually with a range exceeding 20 miles.
H denotes a vessel equipped with a helicopter, or with a platform for operating one.
J denotes an air cushion or surface effect design.
K denotes a vessel equipped with hydrofoils.
M denotes a Combatant vessel with a close range guided missile system.
N denotes a ship or submarine using nuclear propulsion.

<i>Submarines</i>		PTGK	Attack boat guided missile fitted with hydrofoils	AGB	Icebreaker
AGSS	Submarine, auxiliary, nuclear-powered (US)	SOC	Special operations craft (US)	AGDS	Deep submergence support ship
DSRV	Deep submergence rescue vehicle	<i>Landing Ships</i>		AGE (H)	Research ship (helicopter)
DSV	Deep submergence vehicle	AAAV	Advanced Amphibious Assault Vehicle	AGF (H)	Auxiliary Flag or command ship (helicopter)
SDV	Swimmer delivery vehicle	ACV	Landing craft air cushion (Rus)	AGI (H)	Intelligence collection ship (helicopter)
SNA	Submarine, attack, nuclear-powered (Fra)	AGC	Amphibious command ship (RoC)	AGM (H)	Missile range instrumentation ship (helicopter)
SNLE	Ballistic missile nuclear-powered submarine (Fra)	ASDS	Advanced Swimmer-Seal Delivery System	AGOB	Polar research ship
SS	Submarine, general	EDCG	Landing craft, utility (Brz)	AGOR (H)	Oceanographic research ship (helicopter)
SSA(N)	Submarine, auxiliary, nuclear-powered	LCA	Landing craft, assault	AGOS (H)	Ocean surveillance ship (helicopter)
SSA	Submarine with ASW capability (Jpn)	LCAC	Landing craft air cushion	AGP	Patrol craft tender
SSB	Ballistic missile submarine (CPR)	LCC	Amphibious command ship	AGS (C) (H)	Surveying ship (coastal) (helicopter)
SSBN	Ballistic missile nuclear-powered submarine	LCH	Landing craft, heavy (Aust)	AH	Hospital ship
SSC	Submarine, coastal	LCM	Landing craft, mechanised	AK (L) (R) (H)	Cargo ship (light) (Ro-Ro) (helicopter)
SSGN	Submarine, surface-to-surface missile, nuclear-powered	LCP (L)	Landing craft, personnel (large)	AKE	Armament stores carrier
SSK	Patrol submarine with ASW capability	LCT	Landing craft, tank	AKR	Roll on/roll off sealift ship
SSW	Submarine, midget	LCU	Landing craft, utility	AKS (L) (H)	Stores ship (light) (helicopter)
SSN	Submarine, attack, nuclear powered	LCVP	Landing craft, vehicle/personnel with bow ramp	ANL	Boom defence/cable/netlayer
<i>Aircraft Carriers</i>		LHA	Amphibious assault ship general purpose with flooded well	AO	Replenishment oiler (US)
CV (M)	Aircraft carrier (guided missile system)	LDW	Swimmer delivery vehicle	AOE	Fast combat support ship, primarily for POL replenishment
CVH (G)	Helicopter carrier (guided missile system)	LHD (M)	Amphibious assault ship (multipurpose), can operate VSTOL aircraft and helicopters	AOR (L) (H)	Replenishment oiler (small) (helicopter)
CVN (M)	Aircraft carrier, nuclear powered (guided missile system)	LKA	Amphibious cargo ship with own landing craft	AOT (L)	Transport oiler (small)
PAN	Aircraft carrier, nuclear-powered (Fra)	LLP	Assault ship, personnel	AP (H)	Personnel transport (helicopter)
<i>Cruisers</i>		LPD	Amphibious transport, dock with own LCMs and helicopter deck	APB	Barracks ship
CG	Guided missile cruiser	LPH	Amphibious assault ship, helicopter	APCR	Primary casualty receiving ship
CGH	Guided missile cruiser with helicopter	LSD (H)	Landing ship dock with own landing craft, helicopter	AR (L)	Repair ship (small)
CGN	Guided missile cruiser, nuclear-powered	LSL (H)	Landing ship logistic (Aust, UK, Sin), helicopter	ARC	Submarine cable repair ship
CLM	Guided missile cruiser (Per)	LSM (H)	Landing ship medium with bow doors and/or landing ramp, helicopter	ARS (D) (H)	Salvage ship (heavy lift) (helicopter)
<i>Destroyers</i>		LST (H)	Landing ship tank with bow doors and/or landing ramp, helicopter	AS (L)	Submarine tender (small)
DD	Destroyer	LSV	Landing ship vehicle with bow doors and/or landing ramp	ASE	Research ship (Jpn)
DDG (M)	Guided missile destroyer	RCL	Ramped craft, logistic (UK)	ASR	Submarine rescue ship
DDGH (M)	Guided missile destroyer with helicopter, or helicopter platform	TCD	Landing ship, dock (Fra)	ATA	Auxiliary ocean tug
DDK	Destroyer (Jpn)	UCAC	Utility craft air cushion	ATF	Fleet ocean tug and supply ship
<i>Frigates</i>		<i>Mine Warfare Ships</i>		ATR	Fleet ocean tug (firefighting and rescue)
DE	Destroyer escort (Jpn)	MCAC	Mine clearance air cushion	ATS	Salvage and rescue ship
FF (L) (H)	Frigate (Light) (Helicopter)	MCD	Mine countermeasures vessel, diving support	AVB	Aviation support ship
FFG (M)	Guided missile frigate	MCDV	Maritime coast defence vessel (Can)	AVM	Aviation and missile support
FFGH (M)	Guided missile frigate with helicopter, or helicopter platform	MCMV	Mine countermeasures vessel	AWT (L)	Water tanker (small)
FS (G) (H) (M)	Corvette (guided missile) (helicopter) (missile)	MCS	Mine countermeasures support ship	AX (L) (H)	Training ship (small) (helicopter)
<i>Patrol Forces</i>		MH (I) (C) (O)	Minehunter (inshore) (coastal) (ocean)	AXS	Sail training ship
CF	River gunboat (Per)	MHCD	Minehunter coastal with drone	AXT	Training tender
CM	Corvette (guided missile) (Per)	MHSC	Minehunter/sweeper coastal	HSS	Helicopter support ship
HSIC	High Speed Interception Craft with speeds in excess of 55 kt	ML (I) (C) (A)	Minehunter/sweeper coastal (auxiliary)	HSV	High speed logistic support vessel (catamaran)
PB	Coastal patrol vessel under 45 m without heavy armament	MS (I) (C) (R)	Minesweeper (inshore) (coastal) (river)	TV	Training ship (Jpn)
PB (F) (I) (R)	Patrol boat (fast) (inshore) (river)	MSA (T)	Minesweeper, auxiliary (tug)	<i>Service Craft</i>	
PBO (H)	Offshore patrol vessel between 45 and 60 m (helicopter)	MSB	Minesweeper, boat	ASY	Auxiliary yacht (Jpn)
PC	Vessel 35–55 m primarily for ASW role	MSCD	Coastal minesweeper capable of controlling drones	SAR	Search and rescue vessel
PCK	As for PC but fitted with hydrofoils	MSD	Minesweeper, drone	WFL	Water/fuel lighter (Aust)
PG	Vessel 45–85 m equipped with at least 76 mm (3-in) gun	MSO	Minesweeper, ocean	YAC	Royal yacht
PGG	As for PG but with force guided missile system	SRMH	Single role minehunter (UK)	YAG	Service craft, miscellaneous
PGGJ	As for PGG but air cushion or ground effect design	<i>Auxiliaries</i>		YAGK	Surface effect craft, experimental
PGGK	As for PGG but fitted with hydrofoils	ABU (H)	Buoy tender (helicopter)	YDG	Degaussing vessel
PSO (H)	Offshore patrol vessel over 60 m (helicopter)	AD	Destroyer tender	YDT	Diving tender
PTK	Attack boat torpedo fitted with hydrofoils	ADG	Degaussing/depotting ship	YE	Ammunition lighter
		AE (L)	Ammunition ship capable of underway replenishment (small)	YF	Covered personnel transport under 40 m
		AEM	Missile support ship	YFB (H)	Ferry (helicopter)
		AET (L)	Ammunition transport (small)	YFL	Launch
		AF (L)	Stores ship (small)	YFRT	Range safety vessel
		AFS	Combat stores ship, capable of underway replenishment	YFU	Former LCU used for cargo
		AG (H)	Auxiliary miscellaneous (helicopter)	YGS	Survey launch
				YH	Ambulance boat
				YM	Dredging craft
				YO (G)	Fuel barge (gasolene)
				YD	Harbour patrol craft
				YPB	Floating barracks
				YPC	Oil pollution control vessel
				YPT	Torpedo recovery vessel
				YT (B) (M) (L)	Harbour tug (large) (medium) (small)
				YTR	Harbour fire/rescue craft with several monitors
				YTT	Torpedo trials craft
				YW	Water barge

Pennant numbers of major surface ships in numerical order

Number	Ship's name	Type	Country	Page	Number	Ship's name	Type	Country	Page
001	Guna	LCU	Georgia	279	PLH 02	Tsugaru	PLH/PSOH	Japan	438
001	President H I Remelick	PB	Palau	591	PM 02	Kitakami	PM/PSO	Japan	441
001	San Juan	WPBO	Philippines	614	PS 02	Saroma	PS/PBF	Japan	442
LRG 001	Constancia	PBR	Venezuela	985	PT 02	Sulayman Jun-Kung	PB	Gambia	278
LSM 001	Punta Macoña	PB	Venezuela	985	Q 02	Al Ghanyah	PGGF	Qatar	639
002	Edsa II	WPBO	Philippines	614	S 02	Falken	AXS	Sweden	778
LRG 002	Perseverancia	PBR	Venezuela	985	TNR 02	Nicolas Suarez	YAG	Bolivia	69
LSM 002	Farallon Centinela	PB	Venezuela	985	03	Seaadler	PB	Solomon Islands	733
003	Pampanga	WPBO	Philippines	614	03	Sydney	FFGHM	Australia	30
AF 003	Annougnra	PBR	Cote d'Ivoire	180	A 03	Rio Pisuegra	WPB	Spain	758
LRG 003	Honestidad	PBR	Venezuela	985	A 03	Shepparton	AGSC	Australia	36
LSM 003	Charagato	PB	Venezuela	985	ADR 03	Kino	YM	Mexico	525
004	Batangas	WPBO	Philippines	614	ARE 03	Sori	ATF	Mexico	526
AF 004	Monsekela	PBR	Cote d'Ivoire	180	ATR 03	Tarasco	AK	Mexico	525
LRG 004	Tenacidad	PBR	Venezuela	985	Bi 03	Altair	AGOR	Mexico	523
LSM 004	Bajo Brito	PB	Venezuela	985	CSL 03	Telopea	YE	Australia	39
LRG 005	Integridad	PBR	Venezuela	985	FL 03	Nanryu	FL/YTR	Japan	445
LSM 005	Bajo Araya	PB	Venezuela	985	G 03	Di Bartolo	PB/YXT	Italy	410
LRG 006	Lealtad	PBR	Venezuela	985	HL 03	Meiyo	AGS	Japan	446
LSM 006	Carecare	PB	Venezuela	985	KAL IV 03	Baruna Jaya II	AGS/AGOR	Indonesia	363
LSM 007	Vela de Cobo	PB	Venezuela	985	MS 03	Katsuren	YPC	Japan	447
LSM 008	Cayo Mecereo	PB	Venezuela	985	NGPWB 03	Shoalhaven	YFL/YDT	Australia	40
01	Pohjanmaa	ML	Finland	236	P 03	Commander Tsomakis	PB	Cyprus	187
01	Rabaul	PB	Papua New Guinea	595	P 03	Giovanni Denaro	PB	Italy	410
A 01	Contramaestre Casado	APH	Spain	755	P 03	Gramorgu	PB	Suriname	767
A 01	Paluma	AGSC	Australia	36	P 03	Herceg Novi	PB	Montenegro	530
A 01	Salerna	WPG	Spain	758	P 03	Pejuang	PTG	Brunei	88
ADR 01	Banderas	YM	Mexico	525	P 03	Rudyard Lewis	PB	Barbados	61
AMP 01	Huasteco	APH-AK/AH	Mexico	526	P 03	Yellow Elder	PB	Bahamas	46
ARE 01	Otomí	ATF	Mexico	526	P 03	Zarrar	PGGF	Pakistan	588
ATQ 01	Aguascalientes	YOG/YO	Mexico	526	P 03	Linga	PB	Latvia	479
ATR 01	Maya	AKS	Mexico	525	PL 03	Kudaka	PL/PSOH	Japan	438
ASV 01	Wyatt Earp	YGS	Australia	36	PLH 03	Oosumi	PLH/PSOH	Japan	438
BF 01	Cuauhtemoc	AXS	Mexico	525	PM 03	Bihoro	PM/PSO	Japan	441
Bl 01	Alejandro de Humboldt	AGOR	Mexico	524	PS 03	Inasa	PS/PBF	Japan	442
Bl 01	Manuel Jose Arce	AGP	El Salvador	226	Q 03	Rbigah	PGGF	Qatar	639
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T-ACS 5	Flickertail State	AK	US	961	A 11	Endeavour	AORH	New Zealand	561
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6	25 de Agosto	PBO	Uruguay	975	A 11	Rio Cabriel	WPB	Spain	758
6	Uruguay	PBR	Uruguay	976	ADR 11	Coyuca	YM	Mexico	525
A 6	Sotong	YTM/YTL	Malaysia	502	AGS 11	Sunjin	AGE	Korea, South	472
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CG 6	Cascadura	PB	Trinidad and Tobago	821	C 11	Lieutenant General	PB	Namibia	544
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A 7	Al Neemran	LSTH	Oman	578	P 11	Mont Arreh	PB	Djibouti	200
CG 7	Corozal Point	PB	Trinidad and Tobago	821	P 11	Pirajá	PB	Brazil	80
H 7	Haras 7	PB	Oman	580	PC 11	Constitución	PBG/PG	Venezuela	984
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MCM 7	Patriot	MCM/MHSO	US	948	PS 11	Mizuki	PS/PBF	Japan	442
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R 7	Esperanza	YTM/YTL	Paraguay	598	R 11	Príncipe de Asturias	CV	Spain	742
R 7	Ona	YTB/YTL	Argentina	21	RA 11	General Francisco	ATA	Venezuela	983
TAKE 7	Carl M Brashear	AKEH	US	954		De Miranda			
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B	Uruguay	PBR	Uruguay	976	T-AKR 11	Cape Intrepid	AKR	US	961
A 8	Kepah	YTM/YTL	Malaysia	502	TAKE 11	Washington Chambers	AKEH	US	954
A 8	Saba Al Bahr	LSTH	Oman	578	U 11	Guarda Marinha Jansen	AXL	Brazil	84
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PC 13	Independencia	PB PG	Venezuela	981	M 18	Araçatuba	MSC	Brazil	82
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A 14	Rio Adaja	WPB	Spain	758	L 19	Mahish	LSM/LSMH	India	345
ADR 14	San Andres	YM	Mexico	525	LCC 19	Blue Ridge	LCCH/AGFH	US	939
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CM 14	E Oro	FSGHM	Ecuador	206	M 19	Rio Bernesga	PB	Spain	758
J 14	Nirupak	AGSH	India	346	P 19	Navmachos	PG	Greece	306
KA 14	Astra	WPB	Latvia	481	P 19	Ngunguri	PB	Tanzania	799
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15	Grundsund	YAG	Sweden	779	H 20	Comandante Manhaes	ABU	Brazil	83
15	Uruguay	PBR	Uruguay	976	L 20	Magar	JSTH	India	345
A 15	Cantabria	AORH	Spain	755	LCC 20	Mount Whitney	LCCH/AGFH	US	939
A 15	Nireekshak	ASR	India	348	LPD 20	Green Bay	LPDM	US	942
A 15	Rio Duero	WPB	Spain	758	M 20	Albardao	MSC	Brazil	82
ADR 15	San Ignacio	YM	Mexico	525	M 20	Rio Martin	PB	Spain	758
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CM 15	Los Galapagos	FSGHM	Ecuador	206	P 20	Mamba	PB	Tanzania	799
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F 15	Abu Bakr	FF/FFT	Bangladesh	55	P 20	Pedro Teixeira	PBR	Brazil	78
G 15	Paraguassu	AP	Brazil	85	PC 20	Ayanami	PC PB/YTR	Japan	444
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AM 22	Obuda	MSR	Hungary	322	P 25	Grosa	PB	Spain	750
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CG 22	Chacachacare	PBU	Trinidad and Tobago	822	PK 25	Blue Marlin	PBF	Singapore	731
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Z 22	Sadh	PB	Oman	578	P 27	Inagua	PB	Bahamas	46
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23	Kuha 23	MSI	Finland	236	P 27	Soho	PBO	Ghana	299
23	Maldonado	PBO AG	Uruguay	975	P 27	S meoforos Xenos	PGGF/PGG	Greece	305
23	O'Higgins	SSK	Chile	116	PM 27	Yoshino	PM/PBO	Japan	442
A 23	Antaros	AGS	Spain	753	PN 27	Sipa	AOTI	Montenegro	530
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CG 31	Karr	PB	Trinidad and Tobago	822	K 35	Karlstad	FSGH	Sweden	771
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AM 32	Dunafoldvar	MSR	Hungary	322	PS 37	Artemio Ricarte	FS	Philippines	609
BG 32	Donbas	PCF	Ukraine	856	38	Vivek	WPSOH	India	350
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CG 32	Morrah	PB	Trinidad and Tobago	822	H 38	Cruzeiro Do Sul	AGS	Brazil	84
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K 32	Helsingborg	FSGH	Sweden	771	LG 38	Isla Santa Clara	WPBF	Ecuador	210
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Y 52	Dogunarstan	YTB/YTM/YTL	Turkey	843	CG 61	Montarey	CGHM	US	921
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DDG 53	John Paul Jones	DDGHM	US	924	P 61	Benevento	PBO	Brazil	80
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FL 53	Antioquia	FLGHM	Colombia	170	P 61	Kora	FSGHM	India	338
FM 53	Montero	FFGHM	Peru	601	P 61	Nassau	PB	Bahamas	45
GC 53	Petrel	WPB	Argentina	23	P 61	Polemistis	PG	Greece	306
L 53	Jananah	LCO	UAE	861	PG 61	Agusan	PB	Philippines	615
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DDG 54	Curtis Wilbur	DDGHM	US	924	BG 62	Podiliya	PCF	Ukraine	855
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FL 54	Independiente	FLGHM	Colombia	170	CG 62	Chancellorsville	CGHM	US	921
FM 54	Mariategui	FFGHM	Peru	601	D 62	Mumbai	DDGHM	India	332
GC 54	Salmon	WPB	Argentina	23	DDG 62	Fitzgerald	DDGHM	US	924
PC 54	Nunobiki	PC/YTR	Japan	443	M 62	Evropi	MHSC	Greece	308
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56	Raven	AXI	Canada	104	BRS 63	George Slight Marshall	ABU	Chile	123
CG 56	San Jacinto	CGHM	US	921	CG 63	Cowpens	CGHM	US	921
DDG 56	John S McCain	DDGHM	US	924	DDG 63	Stethem	DDGHM	US	924
FFG 56	Simpson	FFH	US	930	M 63	Bedi	MSO	India	346
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GC 56	Foca	WPB	Argentina	23	OB 63	Cavtat	PCM	Croatia	181
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Y 56	Pendik	YTB/YTM/YTL	Turkey	843	P 63	Doxa	PG	Greece	307
57	Caribou	AXI	Canada	104	P 63	Kulish	FSGHM	India	338
57	Chun Jae	AORH	Korea South	472	PG 63	Rornblon	PB	Philippines	615
57	Lokk	AX	Finland	237	PL 63	Yonakuni	PL/PSO	Japan	439
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PH 58	Whitetip Shark	WPB	Singapore	730	PG 64	Palawan	PB	Philippines	615
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59	Wolf	AXL	Canada	104	TR 64	Quitiquia	AWT	Ecuador	209
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DDG 60	Paul Hamilton	DDGHM	US	924	S 65	Sindhushastra	SSK	India	326
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72	Stalwart	FFGHM	Singapore	725	GC 79	Rio Deseado	WPB	Argentina	22
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73	Collins	SSK	Australia	28	BG 81	Lubny	PGR	Ukraine	856
73	Lakshmi Bai	WPBO	India	351	CLM 81	Almirante Grau	CG/CLM	Peru	600
73	Naantal	PTGM	Finland	235	DBM 81	Cetina	LCT/ML	Croatia	182
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PSG 73	Isaza	PB/AEM	Chile	121	82	Djarv	PBR	Sweden	774
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74	Akka Devi	WPBO	India	351	82	Naghdī	FS	Iran	372
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83	Dristig	PBR	Sweden	774	P 91	Valiant	FSGM	Singapore	726
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PC 84	Okinami	PC/PB	Japan	444	P 93	Vengeance	FSGM	Singapore	726
PM 84	Shirakami	PM/PSO	Japan	441	RF 93	Sejeri	YTL	Colombia	177
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P 310	Saad	PB	Kuwait	477	F 330	Vasco Da Gama	FFGH	Portugal	631
T AKR 310	Watson	AKR	US	959	P 330	Kiliç	PGGF	Turkey	835
U 310	Chernigov	MSO	Ukraine	852	P 330	Ranajaya	PB	Sri Lanka	762
311	Errachiq	PBO	Morocco	534	U 330	Malitopol	MHSC	Ukraine	862
311	Kazanets	FFLM	Russian Federation	675	W 330	Nornen	PBO	Norway	575
311	Prabparapak	PTFG	Thailand	809	331	Chon Buri	PG	Thailand	810
311	Ras Oullis	PB	Algeria	8	331	Requin	PB	Algeria	8
F 311	Rold Amundsen	FFGHM	Norway	568	331	RT 341	MHC	Russian Federation	684
P 311	Ahmadi	PB	Kuwait	477	331	Sri Gaya	AP	Malaysia	500
P 311	Bishkhal	PB	Bangladesh	58	331	Vancouver	FFGHM	Canada	100
P 311	Wearaya	PB	Sri Lanka	762	331	Wailaby	WFL AOTL	Australia	39
T AKR 311	Sialor	AKR	US	959	F 331	Alvares Cabra	FFGH	Portugal	631
J 311	Cherkasy	MSO	Ukraine	852	P 331	Kaikai	PGGF	Turkey	835
312	El Akid	PBO	Morocco	534	P 331	Ranadeera	PB	Sri Lanka	762
312	Hanhak Sattru	PTFG	Thailand	809	U 331	Mariupol	MHSC	Ukraine	862
P 312	Otto Sverdrup	FFGHM	Norway	568	W 331	Farm	PBO	Norway	575
P 312	MTB 2	YAG/YDT	Turkey	839	332	MPK 107	FFLM	Russian Federation	674
P 312	Naif	PB	Kuwait	477	332	Songkhla	PG	Thailand	810
P 312	Padma	PB	Bangladesh	57	332	SriTiga	AP	Malaysia	500
T AKR 312	Dahl	AKR	US	959	332	Ville de Quebec	FFGHM	Canada	100
W 312	Alesund	WPBO	Norway	573	332	Wombat	WFL AOTL	Australia	39
313	El Maher	PBJ	Morocco	534	F 332	Corte Real	FFGH	Portugal	631
313	Suphainn	PTFG	Thailand	809	M 332	Motajica	MSR	Serbia	720
A.Y 313	Marte	AXS	Peru	605	P 332	Mizrak	PGGF	Turkey	835
F 313	Helge Ingstad	FFGHM	Norway	568	P 332	Ranawickrama	PB	Sri Lanka	762
M 313	Admiral Cowan	MHC	Estonia	229	W 332	Heimdal	PBO	Norway	575
P 313	MTB 3	YAG/YDT	Turkey	839	333	Marsoum	PB	Algeria	8
P 313	Surma	PB	Bangladesh	57	333	Phuket	PG	Thailand	810
P 313	Thafir	PB	Kuwait	477	333	Toronto	FFGHM	Canada	100
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P 313 2	Shahid Kord	PTFG	Iran	373	F 333	Bartolomeu Dias	FFGHM	Portugal	630
P 313 3	Shahid Shafiq	PTFG	Iran	373	P 333	Tufan	PGGF	Turkey	835
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P 313 7	Shahid Absalan	PTFG	Iran	373	334	Regina	FFGHM	Canada	100
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P 313 10	Shahid Sahrabi	PTFG	Iran	373	P 334	Meltem	PGGF	Turkey	835
T AKR 313	Red Cloud	AKR	US	959	W 334	Tor	PBO	Norway	575
WLI 313	B Laboll	W.L ABU	US	969	335	Calgary	FFGHM	Canada	100
314	El Majidi	PBO	Morocco	534	M 335	Vencedal	MSR	Serbia	720
F 314	Thor Heverdahl	FFGHM	Norway	568	P 335	Imbat	PGGF	Turkey	835
M 314	Sakala	MHC	Estonia	229	336	Montreal	FFGHM	Canada	100
P 314	Karnaphuli	PC	Bangladesh	57	M 336	Djordap	MSR	Serbia	720
P 314	Marzoug	PB	Kuwait	477	P 336	Zipkin	PGGF	Turkey	835
P 314	MTB 4	YAG/YDT	Turkey	839	337	Fredencton	FFGHM	Canada	100
T AKR 314	Charlton	AKR	US	959	P 337	Atak	PGGF	Turkey	835
W 314	Stalbas	WPBO	Norway	573	338	Winnipeg	FFGHM	Canada	100
315	Al Khyber	SS	Libya	483	P 338	Bora	PGGF	Turkey	835
315	El Bachir	PBO	Morocco	534	339	Charlottetown	FFGHM	Canada	100
C 315	Late	Toiga	Tonga	820	340	RT 210	MHC	Russian Federation	684
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TAOT 1122	Paul Buck	AOT	US	959	WPB 1331	Washington	WPB	US	966
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PI 1127	Adhara	PBF	Mexico	520	WPB 1339	Key Biscayne	WPB	US	966
PI 1128	Alloth	PBF	Mexico	520	WPB 1340	Jefferson Island	WPB	US	966
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PI 1131	Hama	PBF	Mexico	520	WPB 1344	Block Island	WPB	US	966
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1503	Jaemin III	ARSH	Korea, South	474	LCU 2007	Broad Run	LCU ARMY	US	947
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1504	Mahawangsa	AOR, AE/AXH	Malaysia	500	LCU 2009	Calabozo	LCU ARMY	US	947
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Y 1687	Borby	YFL	Germany	294	T AK 3005	SGT Matej Kocak	AKRH	US	961
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LSR 1706	Quiritao	WPB	Chile	125	3008	Tae Pung Yang VIII	A ISH	Korea, South	475
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1801	Keelung	DDGHM	Taiwan	787	L 3009	Cardigan Bay	ISD	UK	893
1801	Penggalang 1	PB	Malaysia	504	T AK 3009	PFC Dewayne T Williams	AKRH	US	961
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1802	Damrong Rachanuphap	PBO	Thailand	817	T AK 3011	1st Lt Jack Lummus	AKRH	US	961
1802	Penggalang 2	PB	Malaysia	504	TAK 3012	SGT William R Burton	AKRH	US	961
1802	Suso	DDGHM	Taiwan	787	T AK 3015	1st Lt Harry L Martin	AK	US	960
1803	Lopburi Rames	PBO	Thailand	817	T AK 3016	LCPL Roy M Wheat	AK	US	960
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3144	Rumbia	PB	Malaysia	503	T-FAKR 5052	Cape Douglas	AKR	US	961
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3222	Meridu	PB	Malaysia	504	T-FAKR 5055	Cape Diamond	AKR	US	961
3223	Danga	PB	Malaysia	504	T-FAKR 5062	Cape Isabel	AKR	US	961
3224	Siengin	PB	Malaysia	504	T-FAKR 5063	Cape May	AK/AKR	US	962
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P 3302	Zurara	PB	UAE	859	T-FAKR 5067	Cape Henry	AKR	US	961
P 3303	Murban	PB	UAE	859	T-FAKR 5068	Cape Horn	AKR	US	961
P 3304	Al Ghulian	PB	UAE	859	T-FAKR 5069	Cape Edmont	AKR	US	961
P 3305	Radoom	PB	UAE	859	T-FAK 5070	Cape Flatery	AK/AKR	US	962
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3501	Ilocos Norte	PB	Philippines	614	T-FAKR 5076	Cape Inscription	AKR	US	961
3601	Perdana	PTTG	Malaysia	499	T-FAKR 5082	Cape Knox	AKR	US	961
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B 8423	Rio Apure II	PB	Venezuela	986	87315	Amberjack	WPB	US	967
B 8424	Rio Negro II	PB	Venezuela	986	87316	Kittiwake	WPB	US	967
B 8425	Rio Meta I	PB	Venezuela	986	87317	Backfin	WPB	US	967
B 8426	Rio Portuguesa II	PB	Venezuela	986	87318	Bulfin	WPB	US	967
B 8427	Rio Sarare	PB	Venezuela	986	87319	Yellowfin	WPB	US	967
B 8428	Rio Urbante	PB	Venezuela	986	87320	Manta	WPB	US	967
B 8429	Rio Sinarucu	PB	Venezuela	986	87321	Coho	WPB	US	967
B 8430	Rio Icabaru	PB	Venezuela	986	87322	Kingfisher	WPB	US	967
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9424	Pat Barton	YGS	UK	889	87342	Shrike	WPB	US	967
9425	Cook	YGS	UK	889	87343	Tern	WPB	US	967
9426	Owen	YGS	UK	889	87344	Heron	WPB	US	967
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WLR 65501	Quachita	WLR	US	970	87360	Blue Shark	WPB	US	967
WLR 65502	Cimarron	WLR	US	970	87361	Sea Horse	WPB	US	967
WLR 65503	Obion	WLR	US	970	87362	Sea Otter	WPB	US	967
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WYTL 65602	Chock	WYTL	US	971	87367	Sea Dragon	WPB	US	967
WYTL 65604	Tackle	WYTL	US	971	87368	Sea Devil	WPB	US	967
WYTL 65607	Bridle	WYTL	US	971	87369	Crocodile	WPB	US	967
WYTL 65608	Pendant	WYTL	US	971	87370	Diamondback	WPB	US	967
WYTL 65609	Shackle	WYTL	US	971	87371	Reef Shark	WPB	US	967
WYTL 65610	Hawser	WYTL	US	971	87372	Alligator	WPB	US	967
WYTL 65611	Line	WYTL	US	971	87373	Sea Dog	WPB	US	967
WYTL 65612	Wire	WYTL	US	971	87374	Sea Fox	WPB	US	967



Albania

FORCE DETAR

Country Overview

After being governed by a communist regime since 1946, democratic elections in the Republic of Albania took place in 1991 although since then there have been periods of instability. Situated in western part of the Balkan Peninsula, the country has an area of 11,100 square miles and is bordered to the north by Montenegro and Serbia, to the east by FYRO Macedonia and to the south by Greece. There is a coastline of 195 n miles with the Adriatic Sea on which Durrës and Vlorë are the principal ports. The capital

and largest city is Tirana. Territorial waters (12 n miles) are claimed but an EEZ has not been claimed. Italy provides strong operational, training and administrative support. Joint Coast Guard and Customs patrols are mounted within territorial waters while other personnel training is conducted in Italy.

Headquarters Appointments

Commander of the Navy:
Captain Gerveni Kristaq

Personnel

2009: 1,156 approximately

Bases

HC: Durrës
Districts: Durrës (1st), Vlorë (2nd)
Bases: Shengyin, Himarë, Saranda, Sazan Island, Porto Palermo, Vlorë.

PATROL FORCES

Notes: (1) Pennant numbers beginning with '1' indicate units from the Durrës district. Those beginning with '2' are from the Vlorë district.
(2) There are six inshore patrol craft of 12-15 m length

1 SHANGHAI II CLASS (FAST ATTACK CRAFT—GUN) (PC)

P 115

Displacement, tons: 113 standard; 134 full load
Dimensions, feet (metres): 127.3 × 17.7 × 5.6 (38.8 × 5.4 × 1.7)
Main machinery: 2 Type L-12V-180 diesels; 2,400 hp(m) (1.76 MW) (forward)
2 Type 12-D-6 diesels; 1,820 hp(m) (1.34 MW) (aft); 4 shafts
Speed, knots: 30
Range, n miles: 700 at 16.5 kt
Complement: 34
Guns: 4 China 37 mm/63 (2 twin); 180 rds/min to 8.5 km (4.6 n miles); weight of shell 1.42 kg
4 USSR 25 mm/60 (2 twin); 270 rds/min to 3 km (1.6 n miles); weight of shell 0.34 kg
Torpedoes: 2—21 in (533 mm) tubes; Yu-1; 9.2 km (5 n miles) at 39 kt; warhead 400 kg
Depth charges: 2 projectors; 8 depth charges in lieu of torpedo tubes.
Mines: Rails can be fitted; probably only 10 mines
Radars: Surface search/fire control: Pot Head; I-band.
Sonars: Hull-mounted set probably fitted.

Comment: Four transferred from China in mid-1974 and two in 1975. One ship escaped to Italy in early 1997, returned in early 1998 and was reported repaired in 2000. Has torpedo tubes on the stern taken from deleted Huchuan class. Seldom seen at sea.



SHANGHAI II (China colours)

6/1992 / 0081445

2 PO 2 (PROJECT 501) CLASS (COASTAL PATROL CRAFT) (PB)

A 120

A 212

Displacement, tons: 66 full load
Dimensions, feet (metres): 70.5 × 11.5 × 3.3 (21.5 × 3.5 × 1)
Main machinery: 1 Type 3-D-12 diesel, 300 hp(m) (220 kW) sustained; 1 shaft
Speed, knots: 12
Complement: 8
Guns: 2—12.7 mm MGs. At least one of the class has a twin 25 mm/60
Radars: Surface search: I-band

Comment: Two survive from a total of 11 transferred from USSR 1957-80. Previous minesweeping gear has been removed and the craft are used for utility roles. All escaped to Italy in early 1997 and returned, two in early 1998 and one in late 1998. Two others were towed back as being beyond repair. One other A 451 was sunk in a collision with an Italian corvette in March 1997. Seldom seen at sea.



PO 2 (old number)

7/1992, Terje Nilsen / 0056447

MINE WARFARE FORCES

1 T 43 (PROJECT 254) CLASS (MINESWEEPER—OCEAN) (MSO)

M 111

Displacement, tons: 500 standard, 580 full load
Dimensions, feet (metres): 190.2 × 27.6 × 6.9
(58 × 8.4 × 2.1)
Main machinery: 2 Kolomna Type 9-D-8 diesels, 2,000 hp(m)
(1.47 MW) sustained, 2 shafts
Speed, knots: 15
Range, n miles: 3,000 at 10 kt, 2,000 at 14 kt
Complement: 65
Guns: 4—37 mm/63 (2 twin); 160 rds/min to 9 km (5 n miles);
weight of shell 0.7 kg.
8—12.7 mm MGs.
Depth charges: 2 projectors.
Mines: 16
Radars: Air/surface search: Ball End; E/F-band.
Navigation: Furuno; I-band.
Sonars: Stag Ear; hull-mounted set probably fitted.

Comment: Transferred from USSR in 1960. All escaped to Italy in early 1997 and were returned in 1998. M 111 refitted in Italy in 2002 and M 112 has been decommissioned



T 43
5/1996, Piet Cornelis
1153014

AUXILIARIES

Notes: In addition there are a Project 368 Poluchat survey and torpedo recovery craft of 20 tons (A 110), an old ex-USSR Sholanda class tender *Marinza* (A 210), a water-barge, two tugs and a floating dock (*Vlorë*).

1 LCT 3 CLASS (REPAIR SHIP) (ARL)

A 223 (ex-MOC 1203)

Displacement, tons: 640 full load
 Dimensions, feet (metres): 192 × 31 × 7 (58.6 × 9.5 × 2.1)
 Main machinery: 2 diesels; 1,000 hp (746 kW); 2 shafts
 Speed, knots: 8
 Complement: 24

Comment: 1943-built LCT converted in Italian use as a repair craft. Refitted in Italy, transferred in 1999 and used for moored technical support. To be decommissioned once improvements to naval base facilities have been made.



LCT 3 (Italian colours) 10/1998, *Diego Quevedo* / 0017507

COAST GUARD (ROJA BREGDETARE)

Notes: (1) A Project 522 'Nyryat 1' diving tender (R 218) was transferred from the Navy in 2003.
 (2) An Italian Coast Guard craft CP 224 transferred in 2008.

2 COASTAL PATROL CRAFT (PB)

R 117 R 217

Displacement, tons: 18 full load
 Dimensions, feet (metres): 45.6 × 13 × 3 (13.9 × 4 × 0.9)
 Main machinery: 2 diesels; 1,300 hp (942 kW); 2 waterjets
 Speed, knots: 34. Range, n miles: 200 at 30 kt
 Complement: 4
 Guns: 2 12.7 mm MGs.
 Radars: Surface search: Raytheon, I-band.

Comment: Transferred from the US on 27 February 1999. Reported operational.



R 217 6/2007, *Massimo Annati* / 1166505

1 + 3 DAMEN STAN PATROL 4207 (PB)

ILIRIA P 131 ORIK LISSUS BUTRINTI

Displacement, tons: 205
 Dimensions, feet (metres): 140.4 × 23.3 × 8.3 (42.8 × 7.1 × 2.52)
 Main machinery: 2 Caterpillar 3516B DI-TA; 5,600 hp (4.17 MW); 2 cp props
 Speed, knots: 26
 Complement: To be announced
 Guns: To be announced.

Comment: Contract signed with Damen Shipyards, Gorinchem on 13 November 2007 for the acquisition of four Stan Patrol 4207 offshore patrol vessels. The first vessel was built in Holland whilst the remaining three are to be built at Pashallman Shipyard near Vlorë. The contract also includes refurbishment of the shipyard, training and maintenance services. Details are based on those in UK Customs service and in Jamaica.



ILIRIA 7/2007, *A A de Krulff* / 1335320

8 V 4000 (FAST PATROL CRAFT) (PBF)

Displacement, tons: 27.3 full load
 Dimensions, feet (metres): 54.1 × 14.8 × 2.6 (16.5 × 4.5 × 0.8)
 Main machinery: 2 Isotta Fraschini ID 36 SS 16V diesels, 2,450 hp (1.8 MW); sustained
 Speed, knots: 48. Range, n miles: 420 at 35 kt
 Complement: 5
 Radars: Surface search: GEM DX 132; I-band

Comment: Eight Drago craft transferred from the Italian Guardia di Finanza in 2006.



V 4000 CRAFT 8/2006, *Guardia di Finanza* / 1184418

3 SEA SPECTRE MK III (PB)

R 118 R 215 R 216

Displacement, tons: 41 full load
 Dimensions, feet (metres): 65 × 18 × 5.9 (19.8 × 5.5 × 1.8)
 Main machinery: 3 Detroit 8V-71 diesels; 690 hp (515 kW) sustained; 3 shafts
 Speed, knots: 28. Range, n miles: 450 at 25 kt
 Complement: 9
 Guns: 2—25 mm. 2—12.7 mm MGs.
 Radars: Surface search: Raytheon, I-band.

Comment: Transferred from the US on 27 February 1999



R 215 6/2006*, *1335319*

4 TYPE 227 INSHORE PATROL CRAFT (PBR)

R 123 (ex-CP 229) R 124 (ex-CP 235) R 225 (ex-CP 234) R 226 (ex-CP 236)

Displacement, tons: 16 full load
 Dimensions, feet (metres): 44.0 × 15.7 × 4.3 (13.4 × 4.8 × 1.3)
 Main machinery: 2 AIFO 8281-SRM diesels; 1,770 hp (1.32 MW); 2 shafts
 Speed, knots: 24. Range, n miles: 400 at 24 kt
 Complement: 5
 Radars: Surface search: I band

Comment: Wooden construction. Built in Italy 1966-69. Transferred from Italian Coast Guard to Albanian Coast Guard in 2002

7 TYPE 2010 INSHORE PATROL CRAFT (PBR)

R 125 (ex-CP 2008) R 127 (ex-CP 2021) R 224 (ex-CP 2010) R 228 (ex-CP 2023)
 R 126 (ex-CP 2020) R 128 (ex-CP 2034) R 227 (ex-CP 2007)

Displacement, tons: 15 full load
 Dimensions, feet (metres): 41.0 × 11.8 × 3.6 (12.5 × 3.6 × 1.1)
 Main machinery: 2 AIFO diesels; 1,072 hp (800 kW); 2 shafts
 Speed, knots: 24. Range, n miles: 533 at 20 kt
 Complement: 5
 Radars: Surface search: I-band

Comment: Former harbour launches built in Italy in the 1970s. GRP construction. One transferred from Italian Coast Guard to Albanian Coast Guard in 2002 and a further six in 2004

1 TYPE 303 COASTAL PATROL CRAFT (PB)

R 122 (ex-CP 303)

Displacement, tons: 20 full load
 Dimensions, feet (metres): 44.0 × 12.5 × 3.6 (13.4 × 3.8 × 1.1)
 Main machinery: 2 GM6V53 diesels; 730 hp (544 kW); 2 shafts
 Speed, knots: 19. Range, n miles: 350 at 13 kt
 Complement: 5
 Radars: Surface search: I-band

Comment: Built in US in 1965. Transferred from Italian Coast Guard to Albanian Coast Guard in 2002.

1 TYPE 246 CLASS (INSHORE PATROL CRAFT) (PBR)

— (ex CP 249)

Displacement, tons: 22 full load
 Dimensions, feet (metres): 49.2 × 15.9 × 5.4 (15.0 × 4.85 × 1.65)
 Main machinery: 2 Isotta Fraschini ID 35 SS6V diesels; 1,350 hp (1.0 MW); 2 shafts
 Speed, knots: 27
 Complement: 7
 Radars: Surface search: I-band

Comment: Built in Italy in 1980 Transferred from the Italian Coast Guard in 2008.



Algeria

MARINE DE LA REPUBLIQUE ALGERIENNE

Country Overview

Formerly a French colony, the People's Democratic Republic of Algeria gained independence in 1962. Situated in north Africa, it has an area of 919,595 square miles and is bordered to the east by Tunisia and Libya, to the south by Niger, Mali, and Mauritania and to the west by Morocco. It has a 540 n mile coastline with the Mediterranean. The capital, largest city and principal port is Algiers. Territorial seas (12 n miles) and Fishery zones (32/52 n miles) have been claimed but an EEZ has not been claimed.

Headquarters Appointments

Commander of the Navy:
Lieutenant General Melek Necib
Inspector General of the Navy:
Major General Abdelmadjid Taright

Personnel

(a) 2009: 7,500 (500 officers) (Navy) (Includes at least 600 naval infantry); 500 (Coast Guard)
(b) Voluntary service

Bases

Algiers (1st Region), Mers-el-Kebir (2nd Region), Jijel (3rd Region), Annaba (CG HQ)

Coast Defence

Four batteries of truck-mounted SS-C-3 Styx twin launchers. Permanent sites at Algiers, Mers-el-Kebir and Jijel linked by radar

SUBMARINES

Notes: One decommissioned Romeo class is used for training.

2 + 2 KILO CLASS (PROJECT 877EKM/636) (SSK)

Name	No	Builders	Laid down	Launched	Commissioned
RAIS HADJ MUBAREK	012	Admiralty Yard, Leningrad	1985	1986	Oct 1987
EL HADJ SLIMANE	013	Admiralty Yard, Leningrad	1985	1987	Jan 1988
-	-	Admiralty Yard, Leningrad	2007	2009	2010
-	-	Admiralty Yard, Leningrad	2009	2011	2012

Displacement, tons: 2,325 surfaced; 3,076 dived
Dimensions, feet (metres): 238.2 × 32.5 × 21.7
(72.6 × 9.9 × 6.6)

Main machinery: Diesel-electric; 2 diesels; 3,650 hp(m) (2.68 MW); 2 generators; 1 motor; 5,900 hp(m) (4.34 MW); 1 shaft; 2 auxiliary MT-168 motors, 204 hp(m) (150 kW); 1 economic speed motor; 130 hp(m) (95 kW)

Speed, knots: 17 dived; 10 surfaced; 9 snorting
Range, n miles: 6,000 at 7 kt snorting; 400 at 3 kt dived
Complement: 52 (13 officers)

Torpedoes: 6–21 in (533 mm) tubes. Combination of Russian TEST-71ME; anti-submarine active/passive homing to 15 km (8.2 n miles) at 40 kt; warhead 205 kg

and 53–55; anti-surface ship passive wake homing to 19 km (10.3 n miles) at 45 kt; warhead 300 kg. Total of 18 weapons.

Mines: 24 in lieu of torpedoes.

Countermasures: ESM. Brick Pulp; radar warning.

Weapons control: MVU 110TFCS

Radars: Surface search: SnoopTray; I-band.

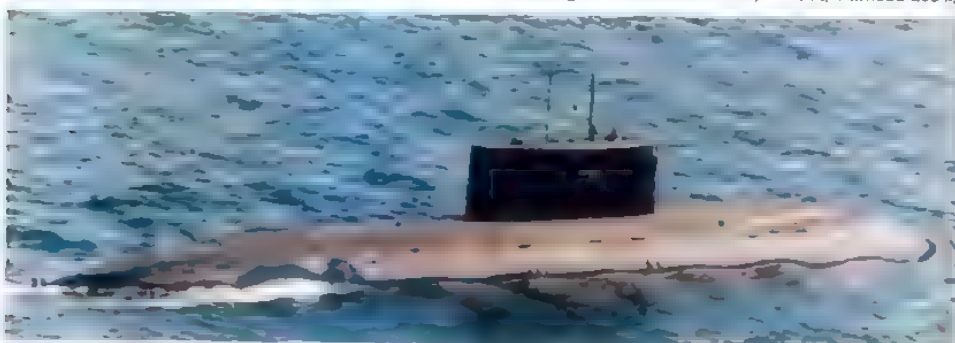
Sonars: MGK 400 Shark Teeth/Shark Fin; hull-mounted; passive/active search and attack; medium frequency. MG 519 Mouse Roar; active attack; high frequency.

Programmes: The Project 877EKM were new construction hulls which replaced the Romeo class. A contract for the construction of two Project 636 boats was signed with Admiralty Shipyards in mid-2006 and construction of the first is reported to have begun in 2007.

Modernisation: Following refits in 1993–96, both submarines undergoing further two-year refits at Admiralty Yard, St Petersburg. Work on the first boat, which is reported to have included upgrade of the sonar system, began in November 2005 and completed in 2008. Refit of the second boat is expected.

Structure: Diving depth, 790 ft (240 m). 9,700 kWh batteries. Pressure hull 169.9 ft (51.8 m). May be fitted with SA-N-5/B portable SAM launcher.

Operational: During the refit period until 2009, only one boat will be operational. Both based at Mers El Kebir



RAIS HADJ MUBAREK

3/1996, 0056450

FRIGATES

Notes: Acquisition of four new frigates is under consideration. A decision is expected in 2009.

3 MOURAD RAIS (KONI) CLASS (PROJECT 1159.2) (FFLM)

Name	No	Builders	Commissioned
MOURAD RAIS	901	Zelenodolsk Shipyard	20 Dec 1980
RAIS KELLICH	902	Zelenodolsk Shipyard	24 Mar 1982
RAIS KORFOU	903	Zelenodolsk Shipyard	3 Jan 1985

Displacement, tons: 1,440 standard; 1,900 full load
Dimensions, feet (metres): 316.3 × 41.3 × 11.5
(96.4 × 12.8 × 3.5)

Main machinery: CODAG; 1 SGW, Nikolayev, M88 gas turbine (centre shaft); 18,000 hp(m) (13.25 MW), sustained; 2 Russki B-88 diesels; 15,820 hp(m) (11.63 MW) sustained; 3 shafts

Speed, knots: 27 gas; 22 diesel

Range, n miles: 1,800 at 14 kt

Complement: 130

Missiles: SAM: SA-N-4 Gecko twin launcher (1); semi-active radar homing to 15 km (8 n miles) at 2.5 Mach; height envelope 9–3,048 m (29.5–10,000 ft); warhead 50 kg, 20 missiles. Some anti-surface capability.

Guns: 4–3 in (76 mm)/59 AK 726 (2 twin) (1); 90 rds/min to 15 km (8.5 n miles); weight of shell 5.9 kg.

4–30 mm/65 (2 twin) (2); 500 rds/min to 5 km (2.7 n miles), weight of shell 0.54 kg.

A/S mortars: 2–12-barrelled RBU 6000 (1); range 6,000 m; warhead 31 kg.

Torpedoes: 4–533 mm (2 twin) (in 903 only) (1).

Depth charges: 2 racks.

Mines: Rails; capacity 22.

Countermasures: Decoys: 2 PK 16 chaff launchers (901, 902); 2 PJ 46 decoy launchers (903).

ESM. Watch Dog. Cross Loop D/E NRJ-6A (903).

Weapons control: 3P-60 UE

Radars: Air/surface search: Pozitiv-ME1.2 (903) (1); I-band. Strut Curve; E/F-band (901 and 902).

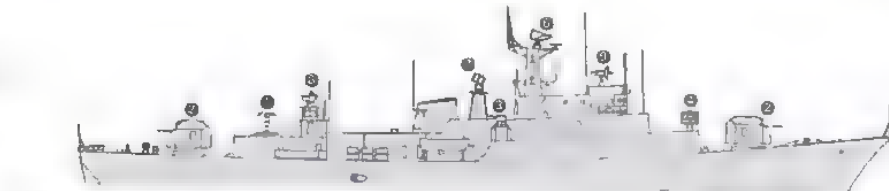
Navigation: Don 2; I band.

Fire Control: Drum tilt (1); H-I-band (for search/acquisition/FC).

Pop Group (1); F/H-I-band (for missile control).

Hawk screech (901 and 902) (1); I-band.

IFF: High Pole B. 2 Square Head.



MOURAD RAIS

(Scale 1 : 900), Ian Sturton / 0567433



RAIS KORFOU

(Scale 1 : 900), Ian Sturton / 0104159

Sonars: Hercules (MG 322) hull-mounted; active search and attack; medium frequency.

Programmes: New construction ships built in USSR with hull numbers 5, 7 and 10 in sequence. Others of the class built for Cuba, Yugoslavia, East Germany and Libya. Interest was shown in ex-GDR ships in 1991 but sale was rejected by the German government.

Modernisation: New generators fitted 1992–94. *Rais Korfoou* in refit at Kronstadt from 1997 to November 2000.

The refit included replacement of Strut Curve radar, removal of Hawk screech fire-control radar, fitting of torpedo tubes and a new electronic suite. Refit of *Mourad Rais* began in late 2007 and of *Rais Kellich* in late 2008.

Structure: The deckhouse aft in Type II Konis houses air conditioning machinery.

Operational: All have been used for Training cruises. All based at Mers El Kebir.



RAIS KORFOU

4/2005, Rafael Cabrera / 1167851



RAIS KELLICH

11/2008, Michael Nitz / 1335441

CORVETTES

3 + (1) DJEBEL CHENOUA (C 58) CLASS (PROJECT 802) (FSG)

Name	No	Builders	Launched	Commissioned
DJEBEL CHENOUA	351	ECRN, Mers-el-Kebir	3 Feb 1985	Nov 1988
EL CHIHAB	352	ECRN, Mers-el-Kebir	Feb 1990	June 1995
AL KIRCH	353	ECRN, Mers-el-Kebir	July 2000	2002

Displacement, tons: 496 standard, 540 full load
Dimensions, feet (metres): 191.6 x 27.9 x 8.5 (58.4 x 8.5 x 2.6)
Main machinery: 3 MTU 20V 538TB92 diesels; 12,800 hp(m) (9.4 MW); 3 shafts
Speed, knots: 31
Complement: 52 (8 officers)

Missiles: SSM: 4 China C 802 (CSS-N-8 Saccade) (2 twin), active radar homing to 120 km (66 n miles) at 0.9 Mach; warhead 165 kg

Guns: 1 Russian 3 in (76 mm)/59 AK 176; 120 rds/min to 15 km (8 n miles); weight of shell 5.9 kg.
 1—30 mm/65 AK 630; 6 barrels per mounting; 3,000 rds/min combined to 2 km.

Countermeasures: Decoys: 2 chaff launchers.
Electro-optic devices: Optronic director.

Radars: Surface search: E/F-band.
Navigation: Racal Decca 1226; I-band.
Fire control: I band

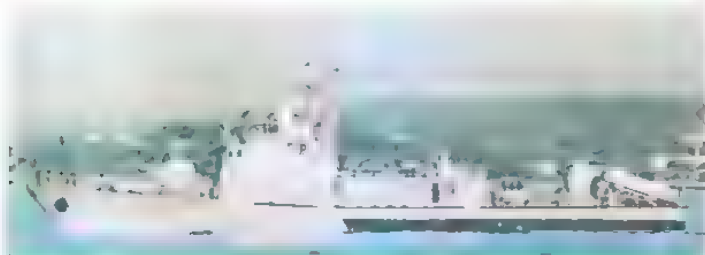
Programmes: Ordered July 1983. Project 802 built with Bulgarian assistance. First one completed trials in 1988. Work on the second of class was suspended in 1992 due to shipyard debt problems but the ship completed in 1995. Main guns were fitted at a later date. Construction of a fourth ship is reported to be under consideration.

Structure: Hull size suggests association with Bazán Cormoran class.



AL KIRCH

6/2005, Marian Ferrette / 1171795



EL CHIHAB

7/2005, B Prézelin / 1129930

3 NANUCHKA II (BURYA) CLASS (PROJECT 1234) (MISSILE CORVETTES) (PTGM)

Name	No	Builders	Commissioned
RAIS HAMIDOU	801	Petrovsky, Leningrad	4 July 1980
SALAH RAIS	802	Petrovsky, Leningrad	9 Feb 1981
RAIS ALI	803	Petrovsky, Leningrad	8 May 1982

Displacement, tons: 660 full load
Dimensions, feet (metres): 194.5 x 38.7 x 8.5 (59.3 x 11.8 x 2.6)
Main machinery: 6 M 504 diesels, 26,112 hp(m) (19.2 MW); 3 shafts
Speed, knots: 33. **Range, n miles:** 2,500 at 12 kt; 900 at 31 kt
Complement: 42 (7 officers)

Missiles: SSM: 16 Zvezda SS-N-25 (in 802) (4 quad) (Kh 35E Uran); active radar homing to 130 km (70.2 n miles) at 0.9 Mach; warhead 145 kg; sea skimmer.
 4 SS-N-2C (in 801 and 803); active radar or IR homing to 46 km (25 n miles) at 0.9 Mach; warhead 513 kg

SAM: SA-N-4 Gecko twin launcher; semi active radar homing to 15 km (8 n miles) at 2.5 Mach; height envelope 9-3,048 m (29.5-10,000 ft), warhead 50 kg; 20 missiles. Some anti-surface capability.

Guns: 2—57 mm/75 AK 725 (twin); 120 rds/min to 12.7 km (6.8 n miles), weight of shell 2.8 kg.
 1—30 mm/65 AK 630 (in 802); 6 barrels per mounting; 3,000 rds/min combined to 2 km.

Countermeasures: Decoys 2 PK 16 16-barrelled chaff launchers (801, 803). 2 PJ 46 decoy launchers (802).

ESM: Bell Top. Cross Loop; D/F (801, 803). NRJ-6A (802).
Radars: Surface search Square Tie (Radome) (801 and 803); I-band Pozitiv-ME1.2 (802); I-band. Navigation. Don 2; I-band.

Fire control: Pop Group; F/H/I-band (SA-N-4). Muff Cob or Drum Tilt (802); G/H-band. Plank Shave; E-band (SS-N-25).
IFF: Two Square Head. High Pole.
Programmes: Delivered as new construction.
Modernisation: Salah Rais refitted at Kronstadt 1997 to November 2000 with refurbished diesels, a replacement SSM system and electronic suite. Refit of Rais Hamidou began in late 2007 and of Rais Ali in late 2008.



SALAH RAIS (SS-N-25 not fitted)

12/2007, Diego Quevedo / 1335235



RAIS ALI

9/2007, Diego Quevedo / 1335234

6 Algeria/Land-based maritime aircraft — Amphibious forces

LAND-BASED MARITIME AIRCRAFT

Numbers/Type: 2 Beechcraft Super King Air 200T.

Operational speed: 282 kt (523 km/h).

Service ceiling: 35,000 ft (10,670 m).

Range: 2,030 n miles (3,756 km).

Role/Weapon systems: Operated by air force for crew training and for close-range EEZ operations. Sensors: Weather radar only. Weapons: Unarmed.

Numbers/Type: 3 Fokker F27-400/600

Operational speed: 250 kt (463 km/h).

Service ceiling: 25,000 ft (7,620 m).

Range: 2,700 n miles (5,000 km).

Role/Weapon systems: Visual reconnaissance duties in support of EEZ, particularly offshore platforms. Sensors: Weather radar and visual means only. Weapons: Limited armament.

Numbers/Type: 28/6 MiG-29SMT/MiG 29UBT Fulcrum

Operational speed: 750 kt (1,400 km/h).

Service ceiling: 57,000 ft (17,400 m).

Range: 1,186 n miles (2,200 km).

Role/Weapon systems: Contract signed in early 2008 for the supply of 28 MiG-29 SMT single-seat all-weather fighters with attack capability and six two-seat MiG-29 UBT. There is an option for a further 20 aircraft. However, following reported refusal to accept the Fianker aircraft, up to 16 Su-30 Mk I fighters may be acquired in lieu. The MiG-29 SMT is an upgraded version of the original airframe with reduced radar signature and improved avionics. Sensors: Saphir-29 radar. Weapons: AAM: R77. ASM: two Kh-31 A/P (AS-17 Krypton). Conventional bombs; four KAB-500KRTV-guided bombs. 30 mm cannon.

Numbers/Type: 6 AugustaWestland AW 101.

Operational speed: 160 kt (296 km/h).

Service ceiling: 15,000 ft (4,572 m).

Range: 550 n miles (1,019 km).

Role/Weapon systems: Contract reported in late 2007 for a total of six utility variants of the EH 101. All are to be configured for SAR duties although the aircraft design facilitates rapid role-change to a troop-carrying configuration. Delivery is expected to start in 2009 and to be completed in 2010. Military lift is 28 troops and up to 4 tonnes underslung. Sensors: Telephonics RDR-1600 SAR Weather Avoidance Radar.

Numbers/Type: 6 AugustaWestland Super Lynx 300.

Operational speed: 120 kt (222 km/h).

Service ceiling: 10,000 ft (3,048 m).

Range: 320 n miles (593 km).

Role/Weapon systems: Contract reported in late 2007 for a total of six unarmed variants of the Super Lynx. Roles include maritime surveillance and SAR. Delivery is expected to start in 2009 and to be completed in 2010.

PATROL FORCES

15 KEBIR CLASS (FAST ATTACK CRAFT—GUN) (PG)

EL YADEKH 341

EL MOURAKEB 342

EL KECHF 343

EL MOUTARID 344

EL RASSED 345

EL DJARI 346

EL SAHER 347

EL MOUKADEM 348

EL TINAJ 349

EL KANASS 350

EL MAHIR 354

-355

EL AZOUM 356

EL DJASUR 357

EL HAMIS 358

Displacement, tons: 166 standard; 200 full load

Dimensions, feet (metres): 123 × 22.6 × 5.8 (37.5 × 6.9 × 1.7)

Main machinery: 2 MTU 12V 538TB92 diesels; 5,110 hp(m) (3.8 MW); 2 shafts (see Structure)

Speed, knots: 27

Range, n miles: 3,300 at 12 kt; 2,600 at 15 kt

Complement: 27 (3 officers)

Guns: 1 OTO Melara 3 in (76 mm)/62 compact (341–342); 85 rds/min to 18 km (9 n miles)

anti-surface; 12 km (6.5 n miles) anti-aircraft; weight of shell 6 kg.

4 USSR 25 mm/60 (2 twin) (remainder); 270 rds/min to 3 km (1.6 n miles); weight of shell 0.34 kg.

2 USSR 14.5 mm (twin) (in first five).

Electro-optic devices: Lawrence Scott optronic director (in 341 and 342).

Radars: Surface search, Racal Decca 1226; I-band

Programmes: Design and first pair ordered from Brooke Marine in June 1981. First left for Algeria without armament in September 1982, second arrived Algiers 12 June 1983. A further seven were then assembled or built at ECRN, Mers-el-Kebir. Of these, 346 commissioned 10 November 1985 and 347–349 delivered by 1993. After a delay two further craft were completed; 350 in late 1997 followed by 354 in 1998. 356–358 have since been added and original plans for a class of 15 look to have been achieved.

Structure: Same hull as Barbados Trident. There are some variations in armament.

Operational: Six of the class have been transferred to the Coast Guard.



EL HAMIS

9/2007, Diego Quevedo / 1335733



EL MOURAKEB

3/2006, M Declerck / 1153230

9 OSA II CLASS (PROJECT 205) (FAST ATTACK CRAFT—MISSILE) (PTGF)

644–652

Displacement, tons: 245 full load

Dimensions, feet (metres): 126.6 × 24.9 × 8.8 (38.6 × 7.6 × 2.7)

Main machinery: 3 Type M 504 diesels; 10,800 hp(m) (794 MW) sustained; 3 shafts

Speed, knots: 37 **Range, n miles:** 500 at 35 kt

Complement: 30

Missiles: SSM: 4 SS-N-2C; active radar or IR homing to 83 km (43 n miles) at 0.9 Mach, warhead 513 kg.

Guns: 4—30 mm/65 (2 twin); 500 rds/min to 5 km (2.7 n miles); weight of shell 0.54 kg.

Radars: Surface search: Square Tte; I-band.

Fire control: Drum Tilt; H/I-band.

IFF: 2 Square Head High Pole B.

Programmes: Osa II transferred 1976–77 (four), fifth in September 1978, sixth in December 1978, next pair in 1979 and one from the Black Sea on 7 December 1981.

Modernisation: Plans to re-engine were reported as starting in late 1992 but there has been no confirmation.

Operational: At least six Osa IIs are active. Based at Mers El Kabir



OSA 651

7/2008, Diego Quevedo / 1336042

AMPHIBIOUS FORCES

2 LANDING SHIPS (LOGISTIC) (LSTH)

Name

KALAAAT BENI HAMMAD

KALAAAT BENI RACHED

No

472

473

Builders

Brooke Marine, Lowestoft

Vesper Thornycroft, Woolston

Commissioned

Apr 1984

Oct 1984

Displacement, tons: 2,450 full load

Dimensions, feet (metres): 306 × 50.9 × 8.1 (93 × 15.6 × 2.5)

Main machinery: 2 MTU 16V 1163TB82 diesels; 8,880 hp(m) (6.5 MW) sustained; 2 shafts

Speed, knots: 16

Range, n miles: 3,000 at 12 kt

Complement: 81

Military lift: 240 troops; 7 MBTs and 380 tons other cargo; 2 ton crane with athwartships travel

Guns: 2 Breda 40 mm/70 (twin); 300 rds/min to 12.5 km (6.8 n miles); weight of shell 0.96 kg.

4 USSR 25 mm/60 (2 twin); 270 rds/min to 3 km (1.6 n miles); weight of shell 0.34 kg.

Countermeasures: Decoys: Wallop Barricade double layer chaff launchers.

ESM: Racal Cutlass; intercept.

ECM: Racal Cygnus; jammer

Electro-optic devices: CSEE Naja optronic.

Radars: Navigation: Racal Decca TM 1226; I-band.

Fire control: Marconi S 800, J-band.

Helicopters: Platform only for one Sea King.

Programmes: First ordered in June 1981, and launched 18 May 1983; second ordered 18 October 1982 and launched 15 May 1984. Similar hulls to Omani *Nasr Al Bahr*.

Structure: These ships have a through tank deck closed by bow and stern ramps. The forward ramp is of two sections measuring length 18 m (when extended) × 5 m breadth, and the single section stern ramp measures 4.3 × 5 m with the addition of 1.1 m finger flaps. Both hatches can support a 60 ton tank and are winch operated. In addition, side access doors are provided on each side forward. The tank deck side bulkheads extend 2.25 m above the upper deck between the forecabin and the forward end of the superstructure, and provide two hatch openings to the tank deck below. Additional 25 mm guns have been fitted either side of the bridge.

Operational: Both are reported active. Based at Jijel.



KALAAAT BENI HAMMAD

8/2004, B Prézalin / 1044061



KALAAAT BENI RACHED

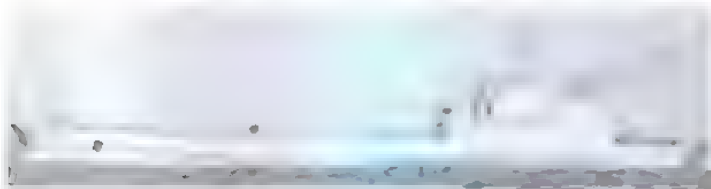
11/2007, Frank Findler / 1336231

1 POLNOCHNY B CLASS (PROJECT 771) (LSM)

471

Displacement, tons: 760 standard, 834 full load
Dimensions, feet (metres): 246.1 × 31.5 × 7.5 (75 × 9.6 × 2.3)
Main machinery: 2 Kolomna Type 40-D diesels; 4,400 hp(m) (3.2 MW) sustained; 2 shafts
Speed, knots: 18. **Range, n miles:** 1,000 at 18 kt
Complement: 42
Military lift: 180 troops, 350 tons including up to 6 tanks
Guns: 2–30 mm/65 (twin) AK 230; 500 rds/min to 5 km (2.7 n miles); weight of shell 0.54 kg.
 2–140 mm 18-tubed rocket launchers.
Radars: Navigation: Don 2; I-band
Fire control: Drum Tilt; H/I-band
IFF: Square Head. High Pole B.

Comment: Class built in Poland 1968–70. Transferred from USSR in August 1976. Tank deck covers 237 m². Operational and employed on training tasks. Based at Jijel.



POLNOCHNY 471

1990, van Ginderen Collection / 050595A

MINE WARFARE FORCES

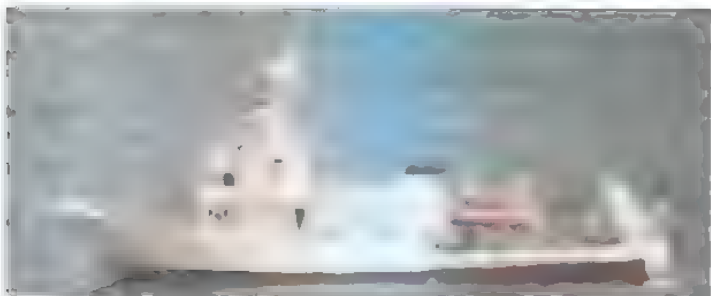
Notes: (1) The Coast Guard support ship *El Mourafek* may have a minelaying capability.
 (2) Two MCMV are expected to be out to tender in due course.

SURVEY SHIPS**1 SURVEY SHIP (AGS)**

EL IDRISSE BH 204 (ex-A 673)

Displacement, tons: 540 full load
Complement: 28 (6 officers)

Comment: Built by Matsukara, Japan and delivered 17 April 1980. Based at Algiers.



EL IDRISSE

9/1990 / 0056453

2 SURVEY CRAFT (YFS)

RASTARA ALIDADE

Comment: *Ras Tara* is of 16 tons displacement, built in 1980 and has a crew of four. *Alidade* is of 20 tons, built in 1983 and has a crew of eight.

AUXILIARIES**1 POLUCHAT I CLASS (PROJECT 638) (YPT)**

A 641

Displacement, tons: 70 standard; 100 full load
Dimensions, feet (metres): 87.1 × 19 × 4.8 (29.6 × 5.6 × 1.6)
Main machinery: 2 Type M 50F diesels; 2,200 hp(m) (1.6 MW) sustained; 2 shafts
Speed, knots: 20. **Range, n miles:** 1,500 at 10 kt
Complement: 15

Comment: Transferred from USSR in early 1970s. Has been used for SAR. Based at Mers El Kebir.



POLUCHAT

1989 / 0506183

1 DAXIN CLASS (AXH)

Name	No	Builders	Launched	Commissioned
SOUMMAM	937	Hudong Shipyard, Shanghai	Mar 2005	2006

Displacement, tons: 5,470 full load
Dimensions, feet (metres): 426.5 × 52.5 × 15.7 (130.0 × 16.0 × 4.8)
Main machinery: 2 6PC2 5L diesels; 7,800 hp(m) (5.73 MW); 2 shafts
Speed, knots: 15
Range, n miles: 5,000 at 15 kt
Complement: 170 plus 30 instructors plus 200 Midshipmen

Guns: 1–57 mm. 4–37 mm (2 twin). 2–30 mm/65 AK 830; 6 barrels per mounting, 3,000 rds/min combined to 2 km.
Countermeasures: Decoys: 2 PJ 46 decoy launchers.
 ESM/ECM NRJ-6A

Radars: Air/surface search: Eye Shield; E-band.
 Surface search: China Type 758; I-band
 Navigation: Racal Decca 1290; I-band
Fire control: Round Ball, I-band
Sonars: Echo Type 5; hull-mounted; active; high frequency.
Helicopters: Platform only.

Comment: Very similar to Chinese training ship of same class. Based at Mers-el-Kebir.



SOUMMAM

7/2008*, Camil Busquets / Vilanova / 1335232

TUGS

Notes: There are a number of harbour tugs of about 265 tons. These include *Kader A 210*, *El Chadid A 211* and *Mazafan 1–4Y 206–209*.



MAZAFAN 4

6/1994 / 0056454

COAST GUARD

Notes: (1) Six Kebir class were transferred from the Navy for Coast Guard duties but may have naval crews
 (2) There are also up to 12 small fishery protection vessels in the GC 301 series.

1 SUPPORT SHIP (WARL)

EL MOURAFEK GC 261

Displacement, tons: 600 full load
Dimensions, feet (metres): 193.6 × 27.6 × 6.9 (59 × 8.4 × 2.1)
Main machinery: 2 diesels; 2,200 hp(m) (1.6 MW); 2 shafts
Speed, knots: 14
Complement: 54
Guns: 2–12.7 mm MGs
Radars: Surface search: I-band

Comment: Delivered by transporter ship from China in April 1990. The design appears to be a derivative of the T43 minesweeper but with a stern gantry. May have a minelaying capability. Based at Algiers.



EL MOURAFEK

6/2007, B Prézellin / 16/941

8 Algeria/Coast guard — Customs

7 EL MOUDERRIB (CHUI-E) CLASS (AXL)

EL MOUDERRIB I-VII GC 251 GC 257

Displacement, tons: 388 full load
Dimensions, feet (metres): 192.8 × 23.6 × 7.2 (58.8 × 7.2 × 2.2)
Main machinery: 3 PCR/Kotomna diesels, 6,600 hp(m) (4.92 MW); 3 shafts
Speed, knots: 24
Range, n miles: 1,400 at 15 kt
Complement: 42 including 25 trainees
Guns: 4 China 14.5 mm (2 twin).
Radars: Surface search: Type 756; I-band

Comment: Two delivered by transporter ship from China in April 1990 and described as training vessels. Two more acquired in January 1991, the last three in July 1991. Hainan class hull with modified propulsion and superstructure similar to some Chinese paramilitary vessels. Used for training when boats are carried aft in place of the second 14.5 mm gun. GC 255 and 257 are reported non operational.



EL MOUDERRIB IV 3/2006, M Declerck / 11644/5

4 BAGLIETTO TYPE 20 (PBF)

EL HAMIL GC 325 EL ASSAD GC 326 MARKHAD GC 327 ETAIR GC 328

Displacement, tons: 44 full load
Dimensions, feet (metres): 66.9 × 17.1 × 5.5 (20.4 × 5.2 × 1.7)
Main machinery: 2 CRM 18DS diesels; 2,660 hp(m) (2 MW); 2 shafts
Speed, knots: 36
Range, n miles: 445 at 20 kt
Complement: 11 (3 officers)
Guns: 1 Oerlikon 20 mm.

Comment: The first pair delivered by Baglietto, Verazza in August 1976 and six further in pairs at two monthly intervals. Fitted with radar and optical fire control. Four others of the class cannibalised for spares.



BAGLIETTO 20 3/2006, M Declerck / 11644/7

6 BAGLIETTO MANGUSTA CLASS (PB)

-323 -324 REQUIN 331 -332 MARSOUIN 333 MURENE 334

Displacement, tons: 91 full load
Dimensions, feet (metres): 98.4 × 19.0 × 7.2 (30.0 × 5.8 × 2.2)
Main machinery: 3 MTU diesels; 4,000 hp (3.0 MW); 3 shafts
Speed, knots: 32.5
Range, n miles: 800 at 24 kt
Complement: 14 (3 officers)
Guns: 2—25 mm (1 twin), 1—12.7 mm MG
Radars: Navigation: I-band.

Comment: One of six patrol craft first delivered to Algeria in early 1977 and thought to have been decommissioned between 1998 and 2001. One patrol craft brought back to service in 2006.



REQUIN 3/2006, M Declerck / 11644/6

4 EL MOUNKID CLASS (SAR)

EL MOUNKID I GC 231 EL MOUNKID III GC 233
 EL MOUNKID II GC 232 EL MOUNKID IV GC 234

Comment: First three delivered by transporter ship from China which arrived in Algiers in April 1990, a fourth followed a year later. Used for SAR.



GC 231-233 1991 / 005645/7

12 JEBEL ANTAR CLASS (PB)

JEBEL ANTAR 301 RAS TENES 305 RAS BOUGARONI 309
 JEBEL HANDO 302 RAS TEKKOUCH 306 RAS TAMENTFOUST 310
 -303 RAS SISLI 307 RAS OULLIS 311
 RAS DJENAD 304 RAS NOUH 308 -312

Displacement, tons: To be announced
Dimensions, feet (metres): 55.8 × 7 × 7 (17.0 × 7 × 7)
Main machinery: 2 diesels; 2 shafts
Speed, knots: 15
Complement: To be announced
Guns: To be announced
Radars: Navigation: I-band.

Comment: Patrol craft reported constructed at Mers-el-Kebir 1982-83

0 + 21 OCEA FPB 98 CLASS (PATROL CRAFT) (PB)

Displacement, tons: 116 full load
Dimensions, feet (metres): 115.5 × 22.3 × 4.0 (35.2 × 6.8 × 1.2)
Main machinery: 2 MTU 12V M70 diesels; 4,600 hp (3.43 MW); 2 Kamowa waterjets
Speed, knots: 32
Range, n miles: 300 at 28 kt
Complement: 11 (3 officers)
Guns: 3—12.7 mm MGs.
Radars: Navigation: Sperry Bridgmaster; I-band.

Comment: The contract with OCEA, reported to have been signed in 2007, for the construction of 21 patrol craft was announced in October 2008. Delivery of the first vessel is expected in late 2008 and the programme is to be completed in 2012. The vessels are to be built at St Nazaire. Details are based on those of similar craft in Kuwait: service and may be different.



FPB 98 CLASS (Kuwaiti colours) 8/2004, B Prézelin / 1133080

CUSTOMS

Notes: The Customs service is a paramilitary organisation employing a number of patrol craft armed with small MGs. These include *Bouzagza*, *Djurdjura*, *Hodna*, *Aures* and *Hoggar*. The first three are P 1200 class 39 ton craft capable of 33 kt. The next pair are P 802 class. They were built by Watercraft, Shoreham and delivered in November 1985.

Angola

MARINHA DE GUERRA



Country Overview

Formerly known as Portuguese West Africa, the Republic of Angola became independent in 1975 but has been ravaged by civil war ever since. With an area of 481,354 square miles it has borders to the south with Namibia, to the east with Zambia and to the north and east with the Democratic Republic of the Congo which separates a small exclave, Cabinda, from the rest of the country. Angola has a coastline with the south Atlantic Ocean of some 864 n miles. The capital, largest city and principal port is Luanda. Territorial seas (12 n miles) and a fisheries zone

(200 n miles) are claimed. A 200 n mile Exclusive Economic Zone (EEZ) has been claimed but the limits have not been published.

Headquarters Appointments

Commander of the Navy: Admiral Augusto da Silva Cunha

Personnel

- (a) 2009: 890
(b) Voluntary service

Bases

Luanda, Lobito, Namibe. (There are other good harbours available on the 1,000 mile coastline.) Naval HQ at Luanda on Ilha de Luanda is in an old fort, as is Namibe.

Naval Aviation

Seven EADS-CASA C 212-300MP and one Fokker F27 maritime patrol aircraft are operated by the Air Force.

PATROL FORCES

2 NAMACURRA CLASS (INSHORE PATROL CRAFT) (PB)

Displacement, tons: 5 full load
Dimensions, feet (metres): 29.5 × 9 × 2.8 (9 × 2.7 × 0.8)
Main machinery: 2 Yamaha outboards; 380 hp (m) (2 / 9 kW)
Speed, knots: 32. **Range, n miles:** 180 at 20 kt
Complement: 4
Guns: 1—12.7 mm MG. 2—7.62 mm MGs
Depth charges: 1 rack.
Radars: Surface search. Furuno; I-band

Comment: Built in South Africa in 1980–81. Can be transported by road. Donated by South Africa in 2006.



NAMACURRA (South Africa colours)

8/2001, van Ginderen Collection / 01137783

Anguilla



Country Overview

British dependency since 1971 following secession from associated state of St Kitts Nevis-Anguilla. With an area of 35 square miles, the island is situated

at the northern end of the Leeward Islands in the Lesser Antilles and bordered by the Caribbean to the west and Atlantic to the east. Territorial seas (3 n miles) and a fishery zone (200 n miles) are claimed.

Headquarters Appointments

Inspector of Marine:
Inspector Elliott Forbes

Personnel

2009: 79

POLICE

1 HALMATIC M160 CLASS (INSHORE PATROL CRAFT) (PB)

DOLPHIN

Displacement, tons: 18 light
Dimensions, feet (metres): 52.5 × 15.4 × 4.6 (16 × 4.7 × 1.4)
Main machinery: 2 MAN V10 diesels; 820 hp (610 kW) sustained; 2 shafts
Speed, knots: 34. **Range, n miles:** 575 at 23 kt
Complement: 8
Guns: 1—12.7 mm MG.
Radars: Surface search: JRC 2254; I-band

Comment: Built by Halmatic and delivered 27 December 1989. Identical craft to Qatar. GRP hull. Rigid inflatable boat launched by gravity davit. Returned to service on 30 August 2004 after refit.



DOLPHIN

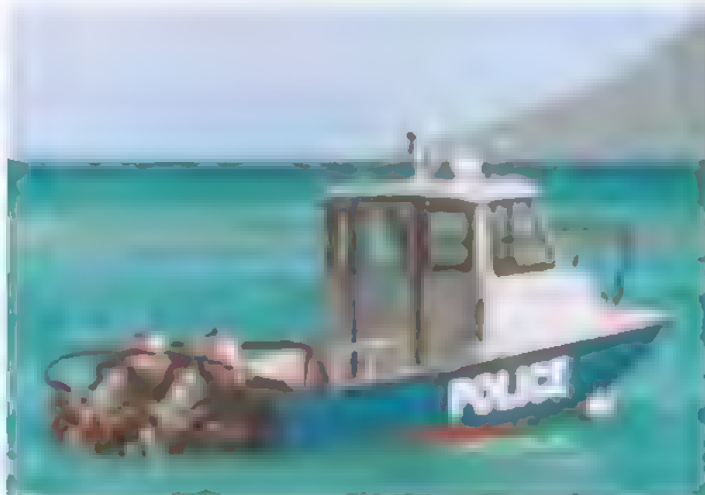
6/2006, Anguilla Police / 1164311

1 BOSTON WHALER (INSHORE PATROL CRAFT) (PB)

LAPWING

Displacement, tons: 2.2 full load
Dimensions, feet (metres): 27 × 10 × 1.5 (8.2 × 3 × 0.5)
Main machinery: 2 Johnson outboards, 300 hp (225 kW)
Speed, knots: 38
Complement: 4

Comment: Delivered in 1990 and re-engined in 2005.



LAPWING

6/2006, Anguilla Police / 1164310

Antigua and Barbuda



Country Overview

Independent since 1981, the British monarch, represented by a governor-general, is head of state. Situated at the southern end of the Leeward Islands in the Lesser Antilles chain, the country comprises Antigua (108 square miles), Barbuda to the north and uninhabited Redonda to the southwest. The capital, largest town, and main port is St John's. An archipelagic state, territorial seas (12 n miles)

and a fishery zone (200 n miles) are claimed. A 200 n mile Exclusive Economic Zone (EEZ) has also been claimed but the limits are not defined. The Antigua Barbuda Defence Force (ABDF) took over the Coast Guard on 1 May 1995.

Headquarters Appointments

Commanding Officer, Coast Guard:
Lieutenant Auden Nicholas

Personnel

2009: 50 (3 officers)

Bases

HQ: Deepwater Harbour, St Johns
Maintenance: Camp Blizzard

COAST GUARD

Notes: (1) In addition there is a Hurricane RIB, CG 081 with a speed of 35 kt and two Boston Whalers, CG 071-2, with speeds of 30 kt. All were acquired in 1988/90. (2) A 920 Zodiac RHIB, CG 091, was donated by the US government in 2003. It is capable of over 40 kt.



CG 091 9/2004, ABDFCG / 0587681



CG 081 9/2004, ABDFCG / 0587681

1 SWIFT 65 ft CLASS (PB)

Name	No	Builders	Commissioned
LIBERTA	P 01	Swiftships, Morgan City	30 Apr 1984

Displacement, tons: 36 full load
Dimensions, feet (metres): 65.5 x 18.4 x 5 (20 x 5.6 x 1.5)
Main machinery: 2 Detroit Diesel 12V-71TA diesels; 840 hp (616 kW) sustained; 2 shafts
Speed, knots: 22
Range, n miles: 250 at 18 kt
Complement: 9
Guns: 1 12.7 mm MG. 2—7.62 mm MGs
Radars: Surface search: Furuno; I-band.

Comment: Ordered in November 1983. Aluminium construction. Funded by US. Refitted in 2001



LIBERTA 5/2003, 0588341

1 DAUNTLESS CLASS (PB)

Name	No	Builders	Commissioned
PALMETTO	P 02	SeaArk Marine, Monticello	7 July 1995

Displacement, tons: 11 full load
Dimensions, feet (metres): 40 x 14 x 4.3 (12.2 x 4.3 x 1.3)
Main machinery: 2 Caterpillar 3208TA diesels; 870 hp (650 kW) sustained; 2 shafts
Speed, knots: 27
Range, n miles: 600 at 18 kt
Complement: 4
Guns: 1—7.62 mm MG
Radars: Surface search: Raytheon R40; I-band.

Comment: Funded by USA. Similar craft delivered to several Caribbean countries in 1994-98.



PALMETTO 9/2004, ABDFCG / 0587689

Argentina

ARMADA ARGENTINA

Country Overview

The Argentine Republic is in southern South America. With an area of 1,068,302 square miles it has borders to the north with Bolivia and Paraguay, to the east with Brazil and Uruguay and to the south and west with Chile. The country includes the Tierra del Fuego territory which comprises the eastern half of the Isla Grande de Tierra del Fuego and a number of adjacent islands to the east, including Isla de los Estados. It also claims sovereignty of the Falkland Islands. The capital, largest city and principal port is Buenos Aires. There are further ports at La Plata, Bahía Blanca, Comodoro Rivadavia and a river port at Rosario. There are some 5,940 n miles of navigable internal waterways. Territorial Seas (12 n miles) are claimed. An EEZ (200 n miles) is claimed but its limits are only partly defined by boundary agreements.

Headquarters Appointments

Chief of Naval General Staff:
 Admiral Jorge Omar Godoy
Deputy Chief of Naval Staff:
 Vice Admiral Benito Italo Rötolo
Director General Personnel:
 Vice Admiral Enrique Salvador Olmedo
Naval Operations Commander:
 Rear Admiral Luis Oscar Manino

Senior Appointments

Commander Fleet
 Rear Admiral Eduardo Raul Castro Rivas
Commander, Marine Infantry
 Rear Admiral Captain Osvaldo Emilio Colombo
Commander Naval Aviation:
 Rear Admiral Carlos Rodolfo Machotanz
Commander, Naval Area Austral
 Rear Admiral Daniel Alberto Enrique Martin
Commander, Submarines:
 Captain Gustavo Ricardo Grunschlager
Commander, Atlantic:
 Rear Admiral Delfor Raul Ferraris
Commander, Naval Area Fluvial:
 Captain Alejandro Arturo Fernandez Lóbbe

Personnel

2009: 18,249 (2,531 officers)

Organisation

Naval Area Austral covers coastal area from latitude 46° to 60 south.
 Naval Area Atlantic covers coastal area from latitude 36° 18' to 46° south.
 Naval Area Fluvial includes the rivers Paraná, Uruguay and Plata
 Naval Area Antarctica is activated when *Almirante Irizar* deploys.

Special Forces

Consists of tactical divers who operate from submarines and other naval units, and amphibious commandos who are trained in parachuting and behind the lines operations. Both groups consist of about 150.

Bases

Buenos Aires (Dársena Norte): Some naval training.
 Rio Santiago (La Plata): Schools.
 Mar del Plata: Submarine base plus Maritime Patrol Division and Hydrographic ships.
 Puerto Belgrano: Main naval base, schools. Fleet Marine Force.
 Ushuaia, Descado, Dársena Sur, Zárate, Caleta Paula; Small naval bases.

Prefix to Ships' Names

ARA (Armada Republica Argentina)

Naval Aviation

Personnel: 2,500
 The Naval Air Command is at Puerto Belgrano.
 1st Naval Air Wing (Punta Indio Naval Air Base): Naval Reconnaissance Group with Beech 200s. Naval Aviation School with Beech T-34 Turbo Mentor.
 2nd Naval Air Wing (Comandante Espora Naval Air Base): ASW Squadron with Grumman S-2T Trackers; 2nd Naval

Helicopter Squadron with Agusta/Sikorsky SH-3H and AS-61D Sea Kings; 2nd Naval Attack Squadron with Super Etendards; 1st Naval Helicopter Squadron with Alouette III and Fennecs.

3rd Naval Air Wing (Almirante Zar Naval Air Base, Trelew); 6th Naval Reconnaissance and Surveillance Squadron with Lockheed P-3C Orions, Beechcraft B 200 and Pilatus PC 6B.
 52 Logistic Support Flight (Almirante Izar Naval Air Base): Fokker F-28s.

Marine Corps

Personnel: 2,800
 2nd Marine Infantry Battalion (Puerto Belgrano)
 3rd Marine Infantry Battalion (Zarate)
 4th Marine Infantry Battalion (Ushuaia)
 5th Marine Infantry Battalion (Training) (Rio Grande)
 Marine Field Artillery Battalion (Puerto Belgrano)
 Command and Logistics Support Battalion (Puerto Belgrano)
 Amphibious Vehicles Battalion (Puerto Belgrano)
 Communications Battalion (Puerto Belgrano)
 Marine A/A Battalion (Puerto Belgrano)
 Amphibious Engineers Company (Puerto Belgrano)
 Amphibious Commandos Group (Puerto Belgrano)
 There are Marine Security Battalions at Naval Bases in Buenos Aires and Puerto Belgrano.
 There are Marine Security Companies at Naval Bases in Mar del Plata, Trelew, Ushuaia, Punta Indio and Zarate

Strength of the Fleet

Type	Active (Reserve)	Building
Patrol Submarines	3	—
Destroyers	4	—
Frigates	8	—
Patrol Ships	5	5
Fast Attack Craft (Gun/Missile)	2	—
Coastal Patrol Craft	6	—
Survey/Oceanographic Ships	4	—
Survey Launches	1	—
Transports/Tankers	8	—
Training Ships	8	—

PENNANT LIST

Submarines		Patrol Forces		Auxiliaries			
S 31	Salta	42	Rosalas	P 84	Concepción del Uruguay	Q 20	Puerto Deseado
S 41	Santa Cruz	43	Spiro	P 65	Punta Mogotes	Q 61	Ciudad de Zárate
S 42	San Juan	44	Parker	P 66	Río Santiago	Q 62	Ciudad de Rosario
		45	Robinson	P 85	Intrepida	Q 63	Punta Alta
		46	Gomez Roca	P 86	Indomita	Q 73	Itati
						Q 74	Fortuna I
						Q 75	Fortuna II
						Q 76	Fortuna III
						R 2	Querandi
						R 3	Tahuelche
						R 5	Mocovi
						R 6	Calchaqui
						R 7	Ona
						R 8	Toba
						R 10	Chulupi
						R 12	Mataco
						R 16	Capayan
						R 18	Chiquilán
						R 19	Morcoyán

SUBMARINES

Notes: (1) Cosmos and Havas underwater chariots in service. Cosmos types are capable of carrying limpet or ground mines.
(2) There are no known plans to replace the current submarine force.

2 SANTA CRUZ (TR 1700) CLASS (SSK)

Name	No	Builders	Laid down	Launched	Commissioned
SANTA CRUZ	S 41	Thyssen Nordseewerke	6 Dec 1980	28 Sep 1982	18 Oct 1984
SAN JUAN	S 42	Thyssen Nordseewerke	18 Mar 1982	20 June 1983	19 Nov 1985

Displacement, tons: 2,116 surfaced; 2,264 dived
Dimensions, feet (metres): 216.5 × 23.9 × 21.3
(66 × 7.3 × 6.5)

Main machinery: Diesel-electric; 4 MTU 16V 6,720 hp diesels; 6,720 hp(m) (4.94 MW) sustained; 4 alternators; 4.4 MW; 1 Siemens Type 1HR4525 + 1HR 4525 4-circuit DC motor; 6.6 MW; 1 shaft

Speed, knots: 15 surfaced; 12 snorking; 26 dived

Range, n miles: 12,000 at 8 kt surfaced; 20 at 25 kt dived; 460 at 6 kt dived

Complement: 29 (5 officers)

Torpedoes: 6—21 in (533 mm) bow tubes. 22 AEG SST 4; wire-guided; active/passive homing to 12/28 km (6.5/15 n miles) at 35/23 kt; warhead 260 kg; automatic reload in 50 seconds or US Mk 37; wire-guided; active/passive homing to 8 km (4.4 n miles) at 24 kt; warhead 150 kg. Swim-out discharge. Mk 48 to replace Mk 37 in due course

Mines: Capable of carrying 34 ground mines.

Countersmeasures: ESM. Kollmorgen Sea Sentry III; radar warning.

Weapons control: Signaal Simbads; can handle 5 targets and 3 torpedoes simultaneously

Radars: Navigation. Thomson-CSF Calypso IV; I-band.

Sonars: Atlas Elektronik CSU 3/4; active/passive search and attack; medium frequency

Thomson Sintra DUUX 5, passive ranging

Programmes: Contract signed 30 November 1977 with Thyssen Nordseewerke for two submarines to be built at Emden. Parts and technical oversight were also to be provided for the construction of four further boats in Argentina by Astilleros Domocoq Garcia, Buenos Aires. Work on units three and four was initiated and S 43 (*Santa Fe*) was reported as 70 per cent complete by 2004. However, although completion of the boat is being

kept under review, funding is likely to prove difficult in the current financial climate. Work on S 44 (*Santiago del Estero*) was reported as 30 per cent complete in 1996 but further work since then has not been reported. Equipment for numbers five and six has been used for spares.

Modernisation: Both completed refits between 1999–2002. Refit included new main motors and sonar upgrade. *Santa Cruz* underwent a two-year mid-life refit at Domocoq Garcia 2005–07. She was followed by *San Juan* on 17 August 2007 and is expected to be completed in 2010. The scope of the upgrade is reported to include new MTU engines, new batteries and replacement of masts

Structure: Diving depth, 270 m (890 ft).

Operational: Maximum endurance is 70 days. Both can be used for Commando insertion operations. They are based at Mar del Plata.



SANTA CRUZ

7/2004, A E Galarce / 1044051



SAN JUAN

5/2004, A E Galarce / 1044065

1 SALTA (TYPE 209/1200) CLASS (SSK)

Name	No	Builders	Laid down	Launched	Commissioned
SALTA	S 31	Howaldtswerke, Kiel	30 Apr 1970	9 Nov 1972	7 Mar 1974
Displacement, tons: 1,140 surfaced, 1,248 dived		wire-guided; active/passive homing to 8 km (4.4 n miles) at 24 kt; warhead 160 kg Swim-out discharge.		design of Ingenieurkontor, Lübeck. Sections were shipped to Argentina for assembly at Tandano, Buenos Aires. Second of class (<i>San Luis</i>) has been used for spares since 1997 and, although re-activation remains a possibility, is likely to be converted into a museum ship.	
Dimensions, feet (metres): 193.4 x 20.5 x 17.9 (59.9 x 6.3 x 5.5)		Mines: Capable of carrying ground mines.		Modernisation. <i>Salta</i> completed a mid-life modernisation at the Domecq Garcia Shipyard in May 1995. New engines, weapons and electrical systems fitted. Installation of new batteries began at Domecq Garcia in 2004 and completed in August 2005.	
Main machinery: Diesel-electric; 4 MTU 12V 493 AZ80 diesels; 2,400 hp(m) (1.76 MW) sustained; 4 alternators; 1.7 MW; 1 motor; 4,600 hp(m) (3.36 MW), 1 shaft		Countermeasures: ESM: Thomson CSF DR 2000; radar warning.		Structure: Diving depth, 250 m (820 ft); Operational. Operational and based at Mar del Plata.	
Speed, knots: 10 surfaced; 22 dived; 11 snorting		Weapons control: Signaal M8 digital, computer-based; up to 3 targets engaged simultaneously.			
Range, n miles: 6,000 at 8 kt surfaced; 230 at 8 kt; 400 at 4 kt dived		Radars: Navigation: Thomson-CSF Calypso II.			
Complement: 31 (6 officers)		Sonars: Atlas Elektronik CSU 3 (AN 526/AN 5039/41), active/passive search and attack; medium frequency. Thomson Sintra DUUX 2C and DUUG 1D; passive ranging.			
Torpedoes: 8—21 in (533 mm) bow tubes. 14 AEG SST 4 Mod 1; wire-guided; active/passive homing to 12/28 km (6.5/15 n miles) at 35/23 kt; warhead 260 kg or US Mk 37;		Programmes: Ordered in 1968. Built in sections by Howaldtswerke Deutsche Werft AG, Kiel from the IK 68			



SALTA

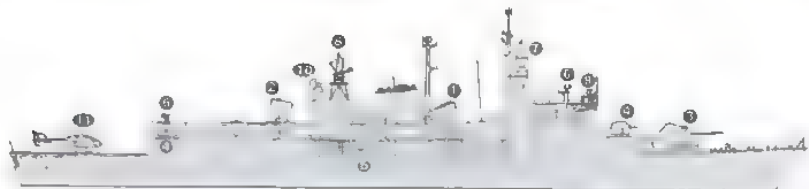
12/2002, A E Galarce / 0529814

DESTROYERS

4 ALMIRANTE BROWN (MEKO 360 H2) CLASS (DDGHM)

Name	No	Builders	Laid down	Launched	Commissioned
ALMIRANTE BROWN	D 10	Blohm + Voss, Hamburg	8 Sep 1980	28 Mar 1981	26 Jan 1983
LA ARGENTINA	D 11	Blohm + Voss, Hamburg	30 Mar 1981	25 Sep 1981	4 May 1983
HEROINA	D 12	Blohm + Voss, Hamburg	24 Aug 1981	17 Feb 1982	31 Oct 1983
SARANDI	D 13	Blohm + Voss, Hamburg	9 Mar 1982	31 Aug 1982	16 Apr 1984

Displacement, tons: 2,900 standard; 3,630 full load
Dimensions, feet (metres): 413.1 x 46 x 19 (screws) (125.9 x 14 x 5.8)
Main machinery: COGOG; 2 RR Olympus TM3B gas turbines; 50,000 hp (37.4 MW) sustained
 2 RR Tyne RM1C gas turbines; 9,900 hp (7.4 MW) sustained; 2 shafts; cp props
Speed, knots: 30; 20.5 cruising
Range, n miles: 4,500 at 18 kt
Complement: 200 (26 officers)



ALMIRANTE BROWN

(Scale 1 : 1,200), Ian Sturton / 0669252

Missiles: SSM: 8 Aerospatiale MM 40 Exocet (2 quad) launchers; inertial cruise; active radar homing to 70 km (40 n miles); warhead 165 kg; sea-skimmer
SAM: Selenia/Elsag Albatros octuple launcher; 24 Aspide; semi-active homing to 13 km (7 n miles) at 2.5 Mach; height envelope 15–5,000 m (49.2–16,405 ft), warhead 30 kg.
Guns: 1 OTO Melara 5 in (127 mm)/54 automatic; 45 rds/min to 23 km (12.42 n miles) anti-surface; 7 km (3.6 n miles) anti-aircraft; weight of shell 0.98 kg; 2 Oerlikon 20 mm.
Torpedoes: 6—324 mm ILAS 3 (2 triple) tubes; Whitehead A 244; anti-submarine; active/passive homing to 7 km (3.8 n miles) at 33 kt; warhead 34 kg (shaped charge); 18 reloads.
Countermeasures: Decoys: CSEE Dagaite double mounting; Graseby G1738 towed torpedo decoy system.

2 Breda 105 mm SCLAR chaff rocket launchers; 20 tubes per launcher; can be trained and elevated, chaff to 5 km (2.7 n miles); illuminants to 12 km (6.6 n miles).
ESM/ECM: Sphinx/Scimitar.
Combat data systems: Signaal SEWACO; Link 10/11. SATCOMs can be fitted
Electro-optic systems: 2 Signaal LIROD radar/optronic systems; each controlling 2 twin 40 mm mounts.
Radars: Air/surface search: Signaal DA08A; F-band; range 204 km (110 n miles) for 2 m² target.
Surface search: Signaal ZW06; I-band.
Navigation: Decca 1226, I-band
Fire control: Signaal STIR; I/J/K-band; range 140 km (76 n miles); Signaal WM25; I/J-band.
Sonars: Atlas Elektronik B0 (DSQS-21BZ), hull-mounted; active search and attack; medium frequency.

Helicopters: AS 555 Fennec or SH-3D Sea King (D 11, D 13)
Programmes: Six were originally ordered in 1978, but later restricted to four when Meko 140 frigates were ordered in 1979. Similar to Nigerian frigate *Aradu*
Modernisation: Block II Exocet MM 40 may be fitted when funds are available. *La Argentina* completed 2 year refit in 2006. Upgrades included extension of the flight deck to facilitate Sea King operations. *Sarandi* is undergoing a similar refit during 2008–10. *Heroina* completed refit in 2008 but did not receive the flight deck extension.
Operational: *Almirante Brown* took part in allied Gulf operations in late 1980. Fennec helicopters delivered in 1996 provide over the horizon targeting for SSMs and have the potential to improve ASW capability. All are active and form 2nd Destroyer Squadron based at Puerto Belgrano. All can be used as Flagships.



LA ARGENTINA

11/2002, Mario R V Carneiro / 0528303



ALMIRANTE BROWN

10/2005, Mario R V Carneiro / 1151089

FRIGATES

3 DRUMMOND (TYPE A 69) CLASS (FFG)

Name	No	Builders	Laid down	Launched	Commissioned
DRUMMOND (ex-Good Hope, ex-Lieutenant de Vaisseau le Hénaff F 789)	31	Lorient Naval Dockyard	12 Mar 1976	5 Mar 1977	Mar 1978
GUERRICO (ex-Transvaal, ex-Commandant l'Herminier F 791)	32	Lorient Naval Dockyard	1 Oct 1976	13 Sep 1977	Oct 1978
GRANVILLE	33	Lorient Naval Dockyard	1 Dec 1978	28 June 1980	22 June 1981

Displacement, tons: 950 standard; 1,170 full load
Dimensions, feet (metres): 262.5 x 33.8 x 9.8, 18 (sonar)
 (80 x 10.3 x 3; 5.5)

Main machinery: 2 SEMT-Pielstick 12 PC2.2 V 400 diesels;
 12,000 hp (im) (8.82 MW) sustained; 2 shafts, LIPS cp
 props

Speed, knots: 23. **Range, n miles:** 4,500 at 15 kt, 3,000 at 18 kt
Complement: 93 (10 officers)

Missiles: SSM: 4 Aerospatiale MM 38 Exocet (2 twin)
 launchers; inertial cruise; active radar homing to 42 km
 (23 n miles); warhead 165 kg; sea-skimmer.

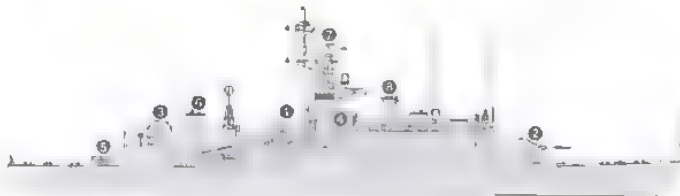
Guns: 1 Creusot-Loire 3.9 in (100 mm)/55 Mod 1953; 80°
 elevation; 60 rds/min to 17 km (9 n miles) anti-surface;
 8 km (4.4 n miles) anti-aircraft; weight of shell 13.5 kg.
 2 Breda 40 mm/70 (twin); 300 rds/min to 12.5 km
 (6.8 n miles); weight of shell 0.96 kg, ready ammunition
 738 (or 444) using AP tracer, impact or proximity fuzing.
 2 Oerlikon 20 mm; 2—12.7 mm MGs.

Torpedoes: 6—324 mm Mk 32 (2 triple) tubes; Whitehead
 A 244; anti-submarine; active/passive homing to 7 km
 (3.8 n miles) at 33 kt; warhead 34 kg.

Countermeasures: Decoys: CSEE Dagale double mounting,
 10 or 6 replaceable containers, trainable, chaff to 12 km
 (6.5 n miles); illuminants to 4 km (2.2 n miles); decoys in
 H- to J-bands or Corvus sextuple launchers for chaff.

ESM DR 2000/DALIA 500; radar warning.

ECM Thomson-CSF Alligator; jammer



GRANVILLE

(Scale 1 : 900), Ian Sturton / 0506262

Combat data systems: MINIACO C 31

Weapons control: Thomson-CSF Vega system, CSEE Panda
 Mk 2 optical director; Naja optronic director (for 40 mm
 guns).

Radars: Air/surface search Thomson-CSF DRBV 51A with
 UPX12 IFF; G-band.

Navigation Decca 1226; I-band.

Fire control Thomson-CSF DRBC 32E; I/J-band (for
 100 mm gun).

Sonars: Thomson Sintra Diodon; hull-mounted; active
 search and attack

Programmes: The first pair was originally built for the
 French Navy and sold to the South African Navy in 1976

while under construction. As a result of a UN embargo
 on arms sales to South Africa this sale was cancelled.
 Purchased by Argentina in Autumn 1978. Both arrived
 in Argentina 2 November 1978 (third ship being ordered
 shortly afterwards) and all have proved very popular
 ships in the Argentine Navy. The transfer of a further
 three of the class from the French Navy is very unlikely.

Modernisation: Drummond has had her armament updated
 to the same standard as the other two, replacing the
 Bofors 40/60. All three ships fitted with MINIACO C 31
 combat data system by 2008.

Operational: Endurance, 15 days. Very economical in fuel
 consumption. Employed on EEZ patrol operations. All
 based at Mar del Plata.



GRANVILLE

12/2002, A E Galarce / 0529818



DRUMMOND

5/2004, A E Galarce / 1044066

6 ESPORA (MEKO 140 A16) CLASS (FFGH)

Name	No	Builders	Laid down	Launched	Commissioned
ESPORA	41	AFNE, Rio Santiago	3 Oct 1980	23 Jan 1982	5 July 1985
ROSALES	42	AFNE, Rio Santiago	1 July 1981	4 Mar 1983	14 Nov 1986
SPIRO	43	AFNE, Rio Santiago	4 Jan 1982	24 June 1983	24 Nov 1987
PARKER	44	AFNE, Rio Santiago	2 Aug 1982	31 Mar 1984	17 Apr 1989
ROBINSON	45	AFNE, Rio Santiago	8 June 1983	15 Feb 1985	28 Aug 2000
GOMEZ ROCA	46	AFNE, Rio Santiago	1 Dec 1983	14 Nov 1986	20 May 2004

Displacement, tons: 1,470 standard; 1,850 full load

Dimensions, feet (metres): 299.1 x 36.4 x 11.2
(97.2 x 11.1 x 3.4)

Main machinery: 2 SEMT-Pielstick 16 PC2 5 V 400 diesels;
20,400 hpm (15 MW) sustained, 2 shafts

Speed, knots: 28

Range, n miles: 4,000 at 18 kt

Complement: 93 (11 officers)

Missiles: SSM: 4 Aerospatiale MM 38 Exocet ● inertial cruise; active radar homing to 42 km (23 n miles); warhead 165 kg; sea-skimmer.

Guns: 1 OTO Melara 3 in (76 mm)/62 compact ●, 85 rds/min to 16 km (8.7 n miles) anti-surface; 12 km (6.5 n miles) anti-aircraft; weight of shell 6 kg; also fires chaff and illuminants.

4 Breda 40 mm/70 (2 twin) ●, 300 rds/min to 12.5 km (6.8 n miles); weight of shell 0.96 kg; ready ammunition 736 (or 444) using AP tracer, impact or proximity fuzing. 2—12.7 mm MGs.

Torpedoes: 6 324 mm ILAS 3 (2 triple) tubes ● Whitehead A 244/S; anti submarine; active/passive homing to 7 km (3.8 n miles); at 33 kt, warhead 34 kg (shaped charge).

Countermeasures: Decoys: CSEE Dagare double mounting; 10 or 6 replaceable containers, trainable; chaff to 12 km (6.5 n miles); illuminants to 4 km (2.2 n miles); decoys in H- to J-bands

ESM: Elettronica RQN-3B; radar warning.

ECM: Elettronica TON-2X, jammer

Combat data systems: Signaal SEWACO

Electro-optic systems: 1 LIROD 8 optronic director ●

Radars: Air/surface search: Signaal DA05 ●, E/F-band;

range 137 km (75 n miles) for 2 m² target

Navigation: Decca TM 1226 (41–45); I-band

Concilium Celestar (46), I-band.

Fire control: Signaal WM28 ●, I/J-band; range 46 km

(26 n miles).

Signaal WM 22/41; I/J-band.

IFF Mk 10.

Sonars: Atlas Elektronik ASO 4; hull-mounted; active search and attack; medium frequency.

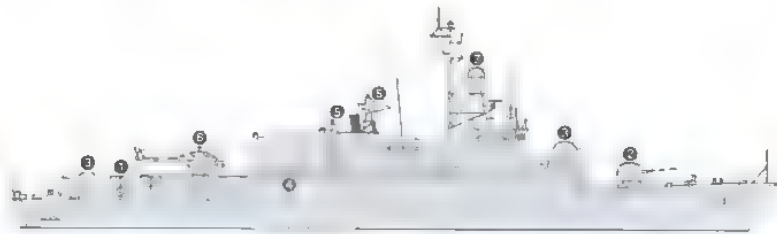
Helicopters: 1 SA 319B Alouette III or AS 555 Fennec ● (in 44–46).

Programmes: A contract was signed with Blohm + Voss on 1 August 1979 for this group of ships which are scaled down Meko 360s. All have been fabricated in AFNE, Rio Santiago. The last pair were to have been scrapped, but on 8 May 1997 a decision was taken to complete them some 14 years after each was first launched. A formal restart ceremony was held on 18 July 1997 and *Robinson* became operational in 2001. *Gomez Roca* became operational in late 2005.

Modernisation: Plans to fit MM 40 Exocet from Meko 360. Flight deck extensions for AS 555 helicopters. *Robinson* and *Gomez Roca* equipped with different EW suite.

Structure: The last three ships were fitted on build with a telescopic hangar. The first three ships may be retrofitted at a later date.

Operational: Mostly used for offshore patrol and fishery protection duties but *Spiro* and *Rosales* sent to the Gulf in 1990–91. Form 2nd Frigate Squadron based at Puerto Belgrano.



PARKER

(Scale 1 : 900), Ian Sturton / 001200/



ROBINSON

5/2008*, Guy Toremans / 1335603



ROSALES

5/2008*, M Declerck / 1335602



ROBINSON

6/2008*, Robert Pabst / 1335602

SHIPBORNE AIRCRAFT

Numbers/Type: 5 Aerospatiale SA 316B Alouette III
Operational speed: 113 kt (210 km/h)
Service ceiling: 10,500 ft (3,200 m)
Range: 290 n miles (540 km)

Role/Weapon systems: ASW Helicopter; used for liaison in peacetime; wartime role includes commando assault and ASW/ASVW. Sensors: Nose-mounted search radar
Weapons: ASW; 2 x Mk 44 torpedoes; ASV; 2 x AS12 missiles



ALOUETTE III 5/2008, Guy Toremans / 1335606

Numbers/Type: 4 Aerospatiale AS 555 SN Fenec
Operational speed: 121 kt (225 km/h)
Service ceiling: 13,125 ft (4,000 m)
Range: 389 n miles (722 km)

Role/Weapon systems: Principal role OTH with potential ASW capability. Delivered in 1996. More are wanted. Sensors: Bendix RDR 1500 radar; Mk 3 MAD. Weapons: ASW; 2 x A 244 torpedoes or 4 depth bombs may be fitted.



FENEC 7/2004, A E Galarca / 1094071

Numbers/Type: 2/1/4 Agusta-Sikorsky ASH-3H/ASH-3D/UH-3D Sea King
Operational speed: 120 kt (222 km/h)
Service ceiling: 12,205 ft (3,720 m)
Range: 630 n miles (1,165 km)

Role/Weapon systems: Seven aircraft: Two ASH-3H armed with Exocet AM-39; one ASH 3D ASW aircraft and four UH-3D utility/transport aircraft acquired from the US Navy in 2008. The latter for Antarctic operations and to replace UH-1H aircraft. Sensors (ASH variants): APS-705 search radar, Bendix AQS 18 sonar. Weapons: up to 4 x A 244 torpedoes or 4 x depth bombs. ASV: 1 AM 39 Exocet ASM (ASH-3H).



SEA KING 8/2002, A E Galarca / 0529876

Numbers/Type: 5 + (6) Dassault Breguet Super Etendard.
Operational speed: Mach 1.
Service ceiling: 44,950 ft (13,700 m)
Range: 920 n miles (1,700 km)

Role/Weapon systems: Strike Fighter with anti-shipping ability. In the past have flown from US or Brazilian aircraft carriers. Five aircraft are operational out of a total of 11. Five replacement Agave radars reportedly received in 2008. This may increase operational availability to eight or nine aircraft. Strike, air defence and ASV roles. Hi-lo-hi combat radius 460 n miles (850 km). Sensors: Thomson-CSF Agave multimode radar, ECM. Weapons: Strike; 2.1 tons of 'iron' bombs ASVW; 1 AM 39 Exocet or 1 x Martin Poscador missiles. Self-defence; 2 x Magic AAMs. Standard; 2 x 30 mm cannon.



SUPER ETENDARD 10/2007, Argentine Navy / 1335605

Numbers/Type: 5 Grumman S-2ET Tracker.
Operational speed: 130 kt (241 km/h)
Service ceiling: 25,000 ft (7,620 m)
Range: 1,350 n miles (2,500 km)

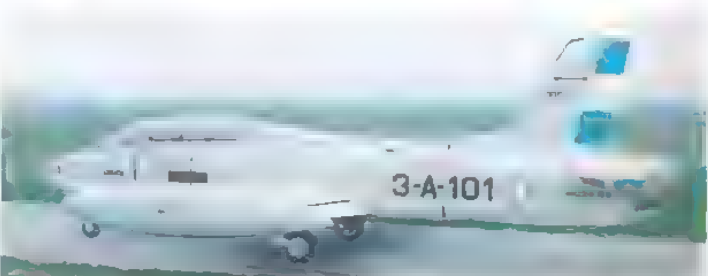
Role/Weapon systems: Used for MR and EEZ patrol. One shipped to Israel in 1989 for Garrett turboprop installation. Prototype for fleet conversion in Argentina when completed in 2000. Sensors: EL/M-2022 search radar up to 32 sonobuoys, AID-28 or AES 210/E ESM, echo-ranging depth charges Weapons: ASW; A 244 torpedoes, bombs and depth charges.



S-2 TRACKER (landing on São Paulo) 5/2002, Walter Lastra/Fuerzas Navales / 0528930

Numbers/Type: 7 Aermacchi MB-326GB.
Operational speed: 468 kt (867 km/h)
Service ceiling: 47,000 ft (14,325 m)
Range: 1,320 n miles (2,448 km)

Role/Weapon systems: Light Attack; supplements anti-shipping/strike; also has training role. Weapons: ASV; 1.8 tons of 'iron' bombs. Strike; 6 x rockets. Recce; undergoing camera pod.



AERMACCHI 326 4/2004 / 0051048

Numbers/Type: 4 Beechcraft B 200M Cormoran.
Operational speed: 260 kt (482 km/h)
Service ceiling: 31,000 ft (9,448 m)
Range: 2,000 n miles (3,705 km)

Role/Weapon systems: Multipurpose converted to Cormoran version for maritime patrol. There are three other unconverted aircraft. Sensors: Search radar. Weapons: Unarmed.



BEECH CORMORAN 5/2004 / 0570789

LAND-BASED MARITIME AIRCRAFT

Notes: (1) In addition there are three Fokker F28 for Logistic Support; one Pilatus PC-6B for reconnaissance and nine Beech T-34 Turbo Mentor training aircraft. The four Lockheed Electra L-188 are no longer in service
 (2) Thirty-six ex-US Navy A4M Skyhawk with radar APG-66 acquired by the Air Force by July 1998. First 18 delivered in crates in 1995-96 and remainder modernised before delivery in 1997-98
 (3) Acquisition of second-hand Mirage 2000 aircraft is reported to be under consideration.
 (4) There are plans to acquire at least six LMAASA AT-63 Pampa training/light attack aircraft to replace the MB-326 fleet

Numbers/Type: 6 Lockheed P-3B Orion.
Operational speed: 410 kt (760 km/h)
Service ceiling: 28,300 ft (8,625 m).
Range: 4,000 m (7,410 km).

Role/Weapon systems: Two acquired in 1997 from US; four more in 1998, and two for spares in 1999. Sensors: APS-115 radar; ESM. Weapons: Three aircraft modified by 2007 under Gran Explorador programme. Upgrades are likely to have included restoration of ASW capabilities, addition of AM-39 Exocet and radar modifications. FLIR may also be added. A fourth aircraft is to be modified in 2009.



ORION 6/2002, Argentine Navy / 0528429

PATROL FORCES

0 + 5 OFFSHORE PATROL VESSELS (PSO)

Displacement, tons: 1,850 full load
Dimensions, feet (metres): 262.5 x 42.6 x 12.5 (80.0 x 13.0 x 3.8)
Main machinery: 2 Wärtsilä 12V26 diesels; 10,950 hp (8.2 MW); 2 shafts; LIPS cp props; 2 bow thrusters
Speed, knots: 21
Range, n miles: 8,600 at 12 kt
Complement: 30 + 30 passengers
Guns: 1—40 mm
Radars: Surface search. To be announced
Navigation: To be announced.
Fire control: To be announced.
Helicopters: Platform for one medium.

Programmes: Project POM (Patrullero Oceánico Multipropósito) is for five offshore patrol vessels. The ships are expected to be to a Fassmer design and generally similar to ships procured under the Chilean Danubio IV programme. Approval for the project was given in mid-2007 and construction is expected to start at Astillero Rio Santiago Shipyard in February 2009. The first ship is to be delivered in 2010 and subsequent units are to follow at about six month intervals.

Structure: Steel construction. The design includes stealth features. Upper-deck layout features a helicopter launching platform, crane, two 7 m RIBs, container storage and a special rescue zone.



OPV 6/2005, Fassmer GmbH / 1118061

3 CHEROKEE CLASS (PATROL SHIPS) (PSO)

Name	No	Builders	Commissioned
COMANDANTE GENERAL IRIGOYEN (ex-Cahuilla)	A 1	Charleston SB and DD Co	10 Mar 1945
FRANCISCO DE GURRUCHAGA (ex-Luisena ATF 156)	A 3	Charleston SB and DD Co	16 June 1945
SUBOFICIAL CASTILLO (ex-Takolma ATF 113)	A 6	United Engineering Co, Alameda	3 Aug 1944

Displacement, tons: 1,235 standard; 1,731 full load
Dimensions, feet (metres): 205 x 38.5 x 17 (62.5 x 11.7 x 5.2)
Main machinery: Diesel-electric, 4 GM 12-278 diesels; 4,400 hp (3.28 MW); 4 generators; 1 motor; 3,000 hp (2.24 MW); 1 shaft
Speed, knots: 16
Range, n miles: 6,500 at 15 kt; 15,000 at 8 kt
Complement: 85
Guns: 4 Bofors 40 mm/60 (2 twin) (A 1); 2 Bofors 40 mm/60 (A 3); 1 Bofors 40 mm/60 (A 6); 2 Oerlikon 20 mm/70 (A 1); 4 Oerlikon 20 mm (A 3, A 6); 2—12.7 mm MGs (A 6).
Radars: Surface search: Racal Decca 626; I-band.
Navigation: Racal Decca 1230; I-band

Comment: Fitted with powerful pumps and other salvage equipment. *Comandante General Irigoyen* transferred by the US at San Diego, California, on 9 July 1961. Classified as a tug until 1966 when she was re-rated as patrol ship. *Francisco De Gurruchaga* transferred on 24 July 1975 by sale. *Suboficial Castillo* on 30 September 1993 by grant aid. *Gurruchaga* fitted with two new diesel engines in 2008. The ships appear to be fitted for but not with armament. All operational and based at Mar del Plata.



SUBOFICIAL CASTILLO 11/2007, A E Galarce / 1335601

1 OLIVIERI CLASS (PATROL SHIP) (PBO)

Name	No	Builders	Commissioned
TENIENTE OLIVIERI (ex-Marsoa 10)	A 2	Quality SB, Louisiana	1981

Displacement, tons: 1,640 full load
Dimensions, feet (metres): 184.8 x 40 x 14 (56.3 x 12.2 x 4.3)
Main machinery: 2 GM/EMD 16-645 E6; 3,230 hp (2.4 MW) sustained, 2 shafts, bow thruster
Speed, knots: 14
Range, n miles: 2,800 at 10 kt
Complement: 15 (4 officers)
Guns: 2—12.7 mm MGs.

Comment: Built by Quality Shipyards, New Orleans, as an oilfield support ship but rated as an Aviso. Acquired from US Maritime Administration 15 November 1987. Capable of carrying 600 tons of stores and 800 tons of liquids. Based at Puerto Belgrano.



TENIENTE OLIVIERI 3/2000 0104168

1 SOTOYOMO CLASS (PATROL SHIP) (PBO)

Name	No	Builders	Commissioned
ALFEREZ SOBRAL (ex-Salish ATA 187)	A 9	Levingstone, Orange	9 Sep 1944

Displacement, tons: 800 full load
Dimensions, feet (metres): 143 x 33.9 x 13 (43.6 x 10.3 x 4)
Main machinery: Diesel-electric; 2 GM 12-278A diesels; 2,200 hp (1.64 MW); 2 generators; 1 motor; 1,500 hp (1.12 MW); 1 shaft
Speed, knots: 12.5
Range, n miles: 16,500 at 8 kt
Complement: 49
Guns: 1 Bofors 40 mm/60. 2 Oerlikon 20 mm.
Radars: Surface search, Decca 1226, I-band

Comment: Former US ocean tug transferred on 10 February 1972. Paid off in 1987 but back in service by 1996. Armament has been reduced.



ALFEREZ SOBRAL 2/2001, Eric Grove / 1127024

18 Argentina/Patrol forces—Amphibious forces

2 INTREPIDA CLASS (TYPE TNC 45) (FAST ATTACK CRAFT—GUN/MISSILE) (PGGF)

Name	No	Builders	Launched	Commissioned
INTREPIDA	P 85	Lürssen, Bremen	2 Dec 1973	20 July 1974
INDOMITA	P 88	Lürssen, Bremen	8 Apr 1974	12 Dec 1974

Displacement, tons: 268 full load
Dimensions, feet (metres), 147.3 × 24.3 × 7.9 (44.9 × 7.4 × 2.4)
Main machinery: 4 MTU MD 16V 538 TR90 diesels; 12,000 hp (in) (8.82 MW); 4 shafts
Speed, knots: 25
Range, n miles: 1,450 at 20 kt
Complement: 39 (5 officers)
Missiles: SSM: 2 Aerospatiale Exocet MM 38 (*Intrepida*); active radar homing to 42 km (23 n miles); warhead 185 kg
Guns: 1 OTO Melara 3 in (76 mm)/62 compact; 85 rds/min to 16 km (9 n miles) anti-surface; 12 km (6.5 n miles) anti-aircraft; weight of shell 6 kg
 1 or 2 Bofors 40 mm/70; 330 rds/min to 12 km (6.5 n miles) anti-surface; 4 km (2.2 n miles) anti-aircraft; weight of shell 0.89 kg
 2—12.7 mm MGs
 2 Oerlikon 81 mm rocket launchers for illuminants
Torpedoes: 2—21 in (533 mm) launchers. AEG SST-4; wire-guided; active/passive homing to 28 km (15 n miles) at 23 kt; warhead 750 kg
Countermeasures: ESM: Racal RDL 1; radar warning.
Weapons control: Signal WM22 optronic for guns/missiles. Signal M11 for torpedo guidance and control.
Radars: Surface search: Decca 626; I-band

Comment: These two vessels were ordered in 1970. Both are painted with a brown/green camouflage. Camouflage netting can also be fitted. Exocet SSM fitted vice the forward of the two Bofors guns in *Intrepida* in 1998. *Indomita* started refit at Domeq Garcia shipyard in January 2008. Upgrades are expected to include new diesel engines, modification of WM22, to include FLIR and laser rangefinder, replacement of surface search radar and unspecified changes to armament. *Intrepida* is likely to start a similar refit in 2009.



INTREPIDA 6/2001, Argentine Navy / 11 40/35



INTREPIDA (with camouflage netting) 3/2001 / 0126381



BARADERO CLASS 12/2000, Eric Grove / 1044073

2 POINT CLASS (PB)

Name	No	Builders	Commissioned
PUNTA MOGOTES (ex-Point Hobart)	P 65 (ex-82377)	J Martinac, Tacoma	13 July 1970
RIO SANTIAGO (ex-Point Carrew)	P 66 (ex-82374)	USCG Yard, Curtis Bay	18 May 1970

Displacement, tons: 67 full load
Dimensions, feet (metres): 83 × 17.2 × 15.8 (25.3 × 5.2 × 1.8)
Main machinery: 2 Caterpillar diesels; 1,600 hp (1.19 MW); 2 shafts
Speed, knots: 22
Range, n miles: 1,200 at 8 kt
Complement: 10
Guns: 2—12.7 mm MGs.
Radars: Surface search: Raytheon SPS 64; I-band.

Comment: *Punta Mogotes* transferred from US Coast Guard on 8 July 1999 and is based at Mar del Plata. *Rio Santiago* transferred 22 August 2000.



RIO SANTIAGO 4/2007, A E Galarce / 1167920

AMPHIBIOUS FORCES

Notes: (1) Marine Corps acquired two Guardian craft in October 1999 and two more in February 2000. Powered by twin 150 hp Johnson outboards. Carry 1—12.7 mm MG and 4 7.62 mm MGs, Raytheon radar
 (2) The first two of a new class of eight indigenously built LCVPs entered service in 2007. Their names are reported to be *Corbeta Uruguay* and *Rompehielos General San Martin*.
 (3) The acquisition of a multirole ship, possibly in co-operation with Brazil is under consideration. The design (possibly LPD) would probably be tailored to both military and humanitarian roles.



GUARDIAN 35 5/2004, A E Galarce / 1044075

4 BARADERO (DABUR) CLASS (COASTAL PATROL CRAFT) (PB)

Name	No	Builders	Commissioned
BARADERO	P 61	Israel Aircraft Industries	1978
BARRANQUERAS	P 62	Israel Aircraft Industries	1978
CLORINDA	P 63	Israel Aircraft Industries	1978
CONCEPCIÓN DEL URUGUAY	P 64	Israel Aircraft Industries	1978

Displacement, tons: 33.7 standard; 39 full load
Dimensions, feet (metres), 64.9 × 18 × 5.8 (19.8 × 5.5 × 1.8)
Main machinery: 2 GM 12V-71TA diesels, 840 hp (627 kW) sustained; 2 shafts
Speed, knots: 19
Range, n miles: 450 at 13 kt
Complement: 9
Guns: 2 Oerlikon 20 mm 4—12.7 mm MGs.
Depth charges: 2 portable rails.
Radars: Navigation, I-band.

Comment: Of all-aluminium construction. Employed in 1991 and 1992 as part of the UN Central American peacekeeping force. Based at Ushuaia.

1 HERCULES (TYPE 42) CLASS (LCC)

Name	No	Builders	Laid down	Launched	Commissioned
HERCULES	B 52 (ex-D 1, ex-28)	Vickers, Barrow	16 June 1971	24 Oct 1972	12 July 1976

Displacement, tons: 3,150 standard; 4,100 full load
Dimensions, feet (metres): 412 × 47 × 19 (screws)
 (125.6 × 14.3 × 5.8)
Flight deck, feet (metres): 85.3 × 42.66 (26 × 13)
Main machinery: COGOG; 2 RR Olympus TM3B gas turbines; 50,000 hp (37.3 MW) sustained
 2 RR Tyne RM1A gas-turbines; 9,900 hp (7.4 MW) sustained; 2 shafts; cp props
Speed, knots: 29, 18 (Tynes) **Range, n miles:** 4,000 at 18 kt
Complement: 180 plus (238 marines)

HERCULES

(Scale 1 : 1,200), Ian Sturton / Os/RAD



Missiles: SAM: British Aerospace Sea Dart Mk 30 twin launcher ●; semi-active radar homing to 40 km (21.5 n miles) at 2 Mach; height envelope 100–18,300 m (328–60,042 ft); 22 missiles; limited anti-ship capability
Guns: 1 Vickers 4.5 in (115 mm)/55 Mk 8 automatic ●; 25 rds/min to 22 km (12 n miles); weight of shell 21 kg; also fires chaff and illuminants
 2 Oerlikon 20 mm Mk 7 ●, 4–12.7 mm MGs
Countermeasures: Decoys: Graseby towed torpedo decoy. Knebworth Corvus 8-tubed trainable launchers for chaff
ESM: Racal RDL 257; radar intercept
ECM: Racal RCM 2; jammer
Combat data systems: Plessey-Ferranti ADAWS-4; Link 10
Radars: Air search: Marconi Type 965P with double AKE2 array and 1010/1011 IFF ●, A-band
 Surface search: Marconi Type 992Q ●, E/F-band
Navigation, HDWS and helicopter control: Kelvin Hughes Type 1008; I-band
Fire control: Marconi Type 909 ●; I/J-band (for Sea Dart missile control)
Sonars: Graseby Type 184M; hull-mounted; active search and attack; medium frequency 6–9 kHz
 Kelvin Hughes Type 162M classification set; sideways looking; active; high frequency

Helicopters: 2 Sea King ●.

Programmes: Contract signed 18 May 1970 between the Argentine government and Vickers Ltd

HERCULES

6/2001, Argentine Navy / 0130745

Modernisation: Combat Data System has been improved with local modifications. Refitted in Chile from November 1999 to July 2000 to make flight deck and hanger Sea King capable. Further modifications included removal of MM38 launchers to be replaced by assault boats and, in a refit which began in 2008, the Sea Dart launcher is likely to be removed and the missile magazine adapted to accommodate a company of marines. The

Type 965 radar is to be replaced by LW-08 (ex-25 de Mayo). The second of class, *Santísima Trinidad*, has been decommissioned and is to be converted into a museum

Operational: Based at Puerto Belgrano Seadart SAM and Type 909 fire-control radar are probably non-operational. Officially described as an Amphibious command and control ship

16 LCVPS

EDVP 30-37	+8
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Displacement, tons: 13 full load
Dimensions, feet (metres): 35.8 × 10.5 × 3.4 (10.9 × 3.2 × 1.1)
Main machinery: 1 Gray 64 HNS diesel; 165 hp (123 kW) sustained; 1 shaft
Speed, knots: 9. **Range, n miles:** 110 at 9 kt
Military lift: 3.5 tons
Guns: 2–12.7 mm MGs.

Comment: Details are for the eight LCVPS acquired from the US in 1970. There is a smaller variant built locally since 1971



LCVP 1 and 4

9/2007, A E Galarza / 1167921

SURVEY AND RESEARCH SHIPS

Notes: (1) There are also two Fisheries Research Ships employed by the government. These are *Oca Balda* and *Eduardo Heimberg*.
 (2) Two 10 m hydrographic launches, *Monte Blanco* and *Kuaichink* entered service in 2004.

1 RESEARCH SHIP (AGOR)

Name	No	Builders	Commissioned
COMODORO RIVADAVIA	Q 11	Mestrina, Tigre	6 Dec 1974

Displacement, tons: 820 full load
Dimensions, feet (metres): 171.2 × 28.9 × 9.5 (52.2 × 8.8 × 2.9)
Main machinery: 2 Stork Werkspoor RHO-218K diesels; 1,160 hp(m) (853 kW); 2 shafts, cp props
Speed, knots: 12. **Range, n miles:** 6,000 at 12 kt
Complement: 34 (8 officers)

Comment: Laid down on 17 July 1971 and launched on 2 December 1972. Used for research. To be re-engined in 2009



COMODORO RIVADAVIA

3/2001 / 0126380

1 SURVEY SHIP (AGOB)

Name	No	Builders	Commissioned
PUERTO DESEADO	Q 20 (ex-Q 8)	Astarsa, San Fernando	26 Feb 1979

Displacement, tons: 2,133 standard, 2,400 full load
Dimensions, feet (metres): 251.9 × 51.8 × 21.3 (76.8 × 15.8 × 6.5)
Main machinery: 2 MAN 9L20/27 diesels; 2,450 hp (1.8 MW); 2 shafts
Speed, knots: 14. **Range, n miles:** 12,000 at 12 kt
Complement: 61 (12 officers) plus 20 scientists
Radars: Navigation: Decca 1629; I-band.

Comment: Laid down on 17 March 1976 for Consejo Nacional de Investigaciones Técnicas y Científicas. Launched on 4 December 1976. For survey work fitted with four Hewlett-Packard 2108-A, gravimeter, magnetometer, seismic systems, high-frequency sonar, geological laboratory. Omega and NAVSAT equipped. Painted with an orange hull in late 1986 for Antarctic deployments.



PUERTO DESEADO

11/2004, A E Galarza / 1151098

1 SURVEY CRAFT (AGSC)

Name	No	Builders	Commissioned
CORMORAN	Q 15	AFNE, Rio Santiago	20 Feb 1964

Displacement, tons: 102 full load
Dimensions, feet (metres): 83 × 18.4 × 5.9 (25.3 × 5 × 1.8)
Main machinery: 2 GM 6-71 diesels, 440 hp(m) (323 kW); 2 shafts
Speed, knots: 11
Complement: 19 (3 officers)
Radars: Navigation: Decca TM1226; I-band.

Comment: Launched 10 August 1963. Classified as a coastal launch



CORMORAN

5/2003, A E Galarza / 0572406

TRAINING SHIPS

Notes: (1) There are also three small yachts: *Itati* (Q 73), *Fortuna I* (Q 74) and *Fortuna II* (Q 75) plus a 25 ton yawl *Tijuca* acquired in 1993. *Fortuna III* was commissioned in 2004. A further yacht, *Irene* was acquired in 2005.

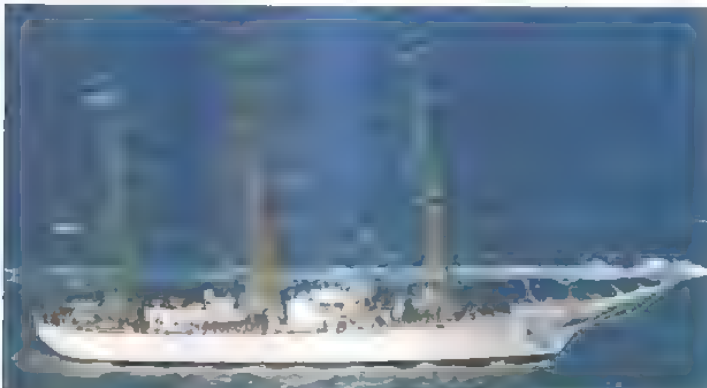
(2) Construction of a new sail-training vessel *Santa María de los Buenos Aires* was started at Domccq García (renamed CINAR) on 15 October 2008. The ship is to be completed in 2010 although it is not clear whether the vessel is to be civilian or naval operated.

1 SAIL TRAINING SHIP (AXS)

Name	No	Builders	Commissioned
LIBERTAD	Q 2	AFNE, Rio Santiago	28 May 1963

Displacement, tons: 3,025 standard, 3,765 full load
Dimensions, feet (metres): 262 wl; 301 oa x 45.3 x 21.8 (79.9; 91.7 x 13.8 x 6.6)
Main machinery: 2 Sulzer diesels; 2,400 hp(m) (1.76 MW); 2 shafts
Speed, knots: 13.5 under power
Range, n miles: 12,000 at 8 kt
Complement: 200 crew plus 150 cadets
Guns: 4 Hotchkiss 47 mm saluting guns.
Radars: Navigation: Decca; I-band.

Comment: Launched 30 May 1956. She set record for crossing the North Atlantic under sail in 1966. Sail area, 26,835 m². Based at Puerto Belgrano. Mid-life refit at Rio Santiago Shipyard completed in 2006. The refit is reported to have included new engines.



LIBERTAD 9/2008, Chris Sattler / 1335804

2 KING CLASS (AX)

Name	No	Builders	Launched	Commissioned
MURATURE	P 20	Base Nav Rio Santiago	5 July 1943	12 Apr 1945
KING	P 21	Base Nav Rio Santiago	2 Nov 1943	28 July 1946

Displacement, tons: 913 standard; 1,000 normal; 1,032 full load
Dimensions, feet (metres): 252.7 x 29.5 x 13.1 (77 x 9 x 4)
Main machinery: 2 Werkspoor diesels; 2,500 hp(m) (1.8 MW); 2 shafts
Speed, knots: 18
Range, n miles: 9,000 at 12 kt
Complement: 130
Guns: 3 Vickers 4 in (105 mm)/45; 16 rds/min to 19 km (10 n miles); weight of shell 16 kg
 3 Bofors 40 mm/60 (1 twin, 2 single); 120 rds/min/barrel to 10 km (5.5 n miles); weight of shell 0.89 kg.
 5—12.7 mm MGs.
Radars: Surface search Rascal Decca 1226; I-band

Comment: Named after Captain John King, an Irish follower of Admiral Brown, who distinguished himself in the war with Brazil, 1826–28; and Captain Jose Murature, who performed conspicuous service against the Paraguayans at the Battle of Cuevas in 1865. *King* laid down June 1938. *Murature* March 1940. Both used for cadet training.



MURATURE 9/2007, A E Galarce / 1167919

AUXILIARIES

Notes: (1) The acquisition of an Antarctic support vessel, possibly as part of a joint programme with Brazil, has been initiated.

(2) There is a fishery protection vessel *Luisito* Q 51. Painted yellow, it is based at Mer del Plata

1 CHARTERED SHIP (AKS/AOTL)

Name	No	Builders	Commissioned
INGENIERO JULIO KRAUSE	B 13	Astarsa, Tigre	1981

Displacement, tons: 8,346 full load
Dimensions, feet (metres): 366.8 x 56.4 x 22.0 (111.8 x 17.2 x 6.7)
Main machinery: 1 Sulzer diesel; 5,800 hp (4.3 MW); 1 shaft
Speed, knots: 14
Complement: 32
Cargo capacity: 7,500 tons fuel

Comment: Chartered by the navy on 5 March 1893. Capable of stern replenishment at sea. Has been employed as a fleet oiler 2007–08.

1 DURANCE CLASS (AORH)

Name	No	Builders	Launched	Commissioned
PATAGONIA (ex-Durance)	B 1	Brest Naval Dockyard	6 Sep 1975	1 Dec 1976

Displacement, tons: 17,800 full load
Dimensions, feet (metres): 616.9 x 69.5 x 38.5 (157.3 x 21.2 x 10.8)
Main machinery: 2 SEMT-Pielstick 16 PC2.5 V 400 diesels; 20,800 hp(m) (15.3 MW) sustained; 2 shafts, LIPS cp props
Speed, knots: 15. **Range, n miles:** 9,000 at 15 kt
Complement: 164 (10 officers) plus 29 spare
Cargo capacity: 9,000 tons fuel; 500 tons Avcat, 140 distilled water; 170 victuals; 150 munitions; 50 naval stores
Guns: 2 Bofors 40 mm/60. 4—12.7 mm MGs
Radars: Navigation: 2 Rascal Decca 1226; I-band.
Helicopters: 1 Alouette III.

Comment: Acquired from France on 12 July 1999 having been in reserve for two years. Entered Argentine Navy service in July 2000 after short refit



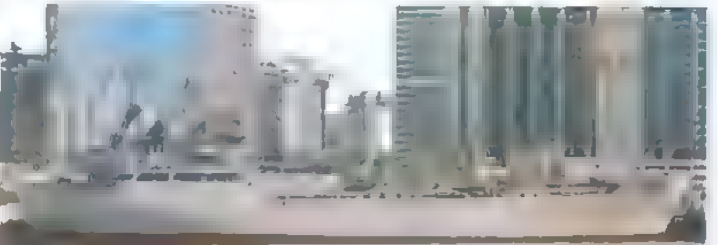
PATAGONIA 5/2000, A E Galarce / 0104175

3 COSTA SUR CLASS (TRANSPORT) (AKS)

Name	No	Builders	Commissioned
CANAL BEAGLE	B 3	Astillero Principe y Menghi SA	29 Apr 1978
BAHIA SAN BLAS	B 4	Astillero Principe y Menghi SA	27 Nov 1978
CABO DE HORNOS (ex Bahia Camarones)	B 5	Astillero Principe y Menghi SA	28 June 1979

Displacement, tons: 10,894 full load
Dimensions, feet (metres): 390.3 x 67.4 x 24.6 (119 x 12.5 x 7.5)
Main machinery: 2 AFNE-Sulzer diesels; 6,400 hp(m) (4.7 MW); 2 shafts
Speed, knots: 18.5
Complement: 40

Comment: Three ships ordered December 1975. Laid down 10 January 1977 (B 3), 11 April 1977 (B 4) and 29 April 1978 (B 5). Launched 19 October 1977 (B 3), 29 April 1978 (B 4) and 4 November 1978 (B 5). Used to supply offshore research installations in Naval Area South. *Bahia San Blas* painted grey in 1998 indicating an active naval role in amphibious support operations. Capable of carrying up to eight LCVPs on deck. 132 troops can be accommodated in containers. The ship has been fitted with a helicopter (light) landing deck near the bow. *Cabo de Hornos* entered refit at Astillero Rio Santiago in late 2007 but was not adapted for an amphibious role.



BAHIA SAN BLAS 7/2007, A E Galarce / 1167977



CANAL BEAGLE 8/1999, P Marsan / 0081446

1 FLOATING DOCK

Number	Dimensions, feet (metres)	Capacity, tons
3	215.8 x 46 x 45.5 (65.8 x 14 x 13.7)	750

Comment: Based at Puerto Belgrano. All other docks have been sold.

3 RED CLASS (BUOYTENDERS) (ABU)

Name	No	Builders	Commissioned
PUNTA ALTA (ex-Red Birch)	Q 63 (ex-WLM 687)	CG Yard, Maryland	19 Feb 1965
CIUDAD DE ZARATE (ex-Red Cedar)	Q 61 (ex-WLM 688)	CG Yard, Maryland	1 Aug 1970
CIUDAD DE ROSARIO (ex-Red Wood)	Q 62 (ex-WLM 685)	CG Yard, Maryland	4 Apr 1964

Displacement, tons: 525 full load
 Dimensions, feet (metres): 181.1 x 33 x 6 (49.7 x 10.7 x 1.8)
 Main machinery: 2 Caterpillar D398 diesels; 1,800 hp (1.34 MW); 2 shafts; cp props, bow thruster
 Speed, knots: 12. Range, n miles: 2,248 at 11 kt
 Complement: 31 (6 officers)
 Guns: 2—12.7 mm MGs

Comment: Ex-USCG buoy tenders. First one transferred on 10 June 1998 and recommissioned on 17 November 1998. Two more transferred 30 July 1999. Strengthened hull for light ice breaking. Equipped with a 10 ton boom *Punta Alta* used as supply ship in the southern archipelago. The other pair are used as river supply ships.



CIUDAD DE ROSARIO 7/2008, A E Galarce / 1335600

ICEBREAKERS

Notes: During the repair of *Almirante Irizar*, ships are being leased as required to support Antarctic operations. These include the Russian icebreaker *Vasily Golovnin* and the Chinese icebreaker, *Xue Long*.

1 SUPPORT SHIP (AGB/AGOB)

Name	No	Builders	Launched	Commissioned
ALMIRANTE IRIZAR	Q 5	Wärtsilä, Helsinki	3 Feb 1978	15 Dec 1978

Displacement, tons: 14,900 full load
 Dimensions, feet (metres): 398.1 x 82 x 31.2 (121.3 x 25 x 9.5)
 Main machinery: Diesel-electric; 4 Wärtsilä-SEMT-Pielstick 8 PC2.5 L diesels; 18,720 hp(m) (13.77 MW) sustained; 4 generators; 2 Stromberg motors; 16,200 hp(m) (11.9 MW); 2 shafts
 Speed, knots: 17
 Complement: 135 ship's company plus 45 passengers
 Radars: Air/surface search; Plessey AWS 2; E/F-band.
 Navigation: 2 Decca; I band.
 Helicopters: 2 ASH-3H Sea King.

Comment: Fitted for landing craft with two 16 ton cranes, fin stabilisers, Wärtsilä bubbling system and a 60 ton towing winch RAST helicopter securing system. Designed for Antarctic support operations and able to remain in polar regions throughout the Winter with 210 people aboard. Used as a transport to South Georgia in December 1981 and as a hospital ship during the Falklands war April to June 1982. Has been used as a Patagonian supply ship, and for other activities associated with the Navy in the region. The ship completed a refit including the installation of Satcom, by early 2005. 40 mm guns have been removed. Following a generator-room fire on 11 April 2007, the ship requires substantial repair work. This began on 1 October 2008 and is expected to be completed in 2012.



ALMIRANTE IRIZAR 3/2006, A E Galarce / 1040738

TUGS

11 TUGS (YTB/YTL)

QUERANDI R 2	CALCHAQUI R 6	CHULUPI R 10	CHIQUILYÁN R 18
TEHUELCHÉ R 3	ONA R 7	MATACO R 12	MORCOYÁN R 19
MOCOVI R 5	TOBA R 8	CAPAYÁN R 16	

Comment: R 2-3 and R 7-8 and R 12 are coastal tugs of about 250 tons. The remainder are harbour tugs transferred from the USA.



MATACO 5/2000, A E Galarce 0104177

PREFECTURA NAVAL ARGENTINA – COAST GUARD

Headquarters Appointments

Commander
 Prefecto General Oscar Adolfo Arce
 Vice Commander
 Prefecto General Enrique Julio Cingolani
 Director of Operations:
 Prefecto General Norberto Venerini

Personnel

2009: 11,900 (1,600 officers)

Tasks

Under the General Organisation Act the PNA is charged with:
 1. Enforcement of Federal Laws on the high seas and waters subject to the Argentine Republic.
 2. Enforcement of environmental protection laws in Federal waters.
 3. Safety of ships in EEZ. Search and Rescue.
 4. Security of waterfront facilities and vessels in port.
 5. Operation of certain Navais.

6. Operation of some Pilot Services
 7. Management and operation of Aviation Service; Coastguard Vessels; Salvage, Fire and Anti Pollution Service; Yachtmaster School; National Diving School, several Fire Brigades and Anti-Narcotics Department.
 8. Operation of some Customs activities.

Organisation

Formed in 10 districts; High Parana River, Upper Parana and Paraguay Rivers, Lower Parana River, Upper Uruguay River, Lower Uruguay River, Delta, River Plate, Northern Argentine Sea, Southern Argentine Sea, Lakes and Comahue.

History

The Spanish authorities in South America established similar organisations to those in Spain. In 1756 the Captainship of the Port came into being in Buenos Aires in 1810 the Ship Registry office was added to this title. On 29 October 1896 the title of Capitanía General de Puertos was established by Act of Congress, the beginning of the

PNA. Today, as a security and safety force, it has responsibilities throughout the rivers of Argentina, the ports and harbours as well as within territorial waters out to the 200 mile EEZ. An attempt was made in January 1992 to restrict operations to a 12 mile limit but the legislation was cancelled. The Coast Guard was placed under the Interior Ministry in 1996.

Identity markings

Two unequal blue stripes with, superimposed, crossed white anchors followed by the title Prefectura Naval.

Strength of Prefectura

Patrol Ships	6
Large Patrol Craft	3
Coastal Patrol Craft	20
Inshore Patrol Craft	77
Training Ships	4
Pilot Stations	1
Pilot and Patrol Craft	5

For details of the latest updates to *Jane's Fighting Ships* online and to discover the additional information available exclusively to online subscribers please visit jfs.janes.com

22 Argentina/Prefectura Naval Argentina — Patrol forces

PATROL FORCES

Notes: In addition to the ships and craft listed below the PNA operates 400 craft, including floating cranes, runabouts and inflatables of all types. Six Zodiac Hurricanes SR 9201–9206 entered service in 2004.

1 PATROL SHIP (WPSO)

Name	No	Builders	Commissioned
DELFIN	GC 13	Ijsselwerf, Netherlands	14 May 1957

Displacement, tons: 700 standard; 1,000 full load
Dimensions, feet (metres): 193.5 × 29.8 × 13.8 (59 × 9.1 × 4.2)
Main machinery: 2 MAN diesels; 2,300 hp(m) (1.69 MW), 2 shafts
Speed, knots: 15 **Range, n miles:** 6,720 at 10 kt
Complement: 27
Guns: 1 Oerlikon 20 mm (fitted for), 2—12.7 mm Browning MGs.
Radars: Navigation: Decca; I-band.

Comment: Whaler acquired for PNA in 1969. Commissioned 23 January 1970.



DELFIN 7/2003, A E Galarce / 0572409

2 LYNCH CLASS (LARGE PATROL CRAFT) (WPB)

Name	No	Builders	Commissioned
LYNCH	GC 21	AFNE, Rio Santiago	20 May 1964
TOLL	GC 22	AFNE, Rio Santiago	7 July 1966

Displacement, tons: 100 standard; 117 full load
Dimensions, feet (metres): 98.4 × 21 × 6.9 (30 × 6.4 × 2.1)
Main machinery: 2 MTU Maybach diesels; 2,700 hp(m) (1.98 MW); 2 shafts
Speed, knots: 22 **Range, n miles:** 2,000
Complement: 14 (3 officers)
Guns: 1 Oerlikon 20 mm (can be carried), 1—7.62 mm MG
Radars: Surface search: Decca, I-band.



LYNCH 1/1997, Prefectura Naval / 0012018

5 HALCON (TYPE B 119) CLASS (WPSO)

Name	No	Builders	Commissioned
MANTILLA	GC 24	Bazán, El Ferrol	20 Dec 1982
AZOPARDO	GC 25	Bazán, El Ferrol	28 Apr 1983
THOMPSON	GC 26	Bazán, El Ferrol	20 Jun 1983
PREFECTO FIQUE	GC 27	Bazán, El Ferrol	28 July 1983
PREFECTO DERBES	GC 28	Bazán, El Ferrol	20 Nov 1983

Displacement, tons: 910 standard, 1,084 full load
Dimensions, feet (metres): 219.9 × 34.4 × 13.8 (67 × 10.5 × 4.2)
Main machinery: 2 Bazán-MTU 16V 956TB91 diesels; 7,500 hp(m) (5.52 MW) sustained, 2 shafts
Speed, knots: 20 **Range, n miles:** 5,000 at 18 kt
Complement: 33 (10 officers)
Guns: 1 Breda 40 mm/70; 300 rds/min to 12.5 km (7 n miles); weight of shell 0.96 kg, 2—12.7 mm MGs
Radars: Navigation: Decca 1226 ARPA, I-band.
Helicopters: Platform for 1 Dauphin 2

Comment: Ordered in 1979 from Bazán, El Ferrol, Spain. All have Magnavox MX 1102 SATNAV. Hospital with four beds. Carry one rigid rescue craft (6 m) with a 90 hp MWM diesel powering a Hamilton waterjet and a capacity for 12 and two inflatable craft (4.1 m) with Evinrude outboard. Refits of these ships started in 2005.



MANTILLA 6/2005, A E Galarce / 1151095

1 LARGE PATROL CRAFT (WAX)

Name	No	Builders	Commissioned
MANDUBI	GC 43	Rosa Naval Rio Santiago	1940

Displacement, tons: 270 full load
Dimensions, feet (metres): 106.9 × 20.7 × 6.2 (32.2 × 6.3 × 1.9)
Main machinery: 2 MAN G6V-23 5/33 diesels, 500 hp(m) (367 kW); 1 shaft
Speed, knots: 14
Range, n miles: 800 at 14 kt; 3,400 at 10 kt
Complement: 12
Guns: 2—12.7 mm Browning MGs.
Radars: Surface search: Decca, I-band

Comment: Since 1966 has acted as training craft for PNA Cadets School carrying 20 cadets.



MANDUBI 8/1994, Mario Diaz / 0056488

1 RIVER PATROL SHIP (WARS)

Name	No	Builders	Commissioned
TONINA	GC 47	SANYM SA San Fernando, Argentina	30 June 1978

Displacement, tons: 103 standard; 153 full load
Dimensions, feet (metres): 83.8 × 21.3 × 10.1 (25.5 × 6.5 × 3.3)
Main machinery: 2 GM 16V-71TA diesels; 1,000 hp (746 kW) sustained; 2 shafts
Speed, knots: 10 **Range, n miles:** 2,800 at 10 kt
Complement: 11 (3 officers)
Guns: 1 Oerlikon 20 mm.
Radars: Navigation: Decca 1226; I-band

Comment: Served as training ship for PNA Cadets School until 1986. Now acts as salvage ship with salvage pumps and recompression chamber. Capable of operating divers and underwater swimmers. Also used as a patrol ship.



TONINA 1/1998, Hartmut Ehlers / 00175A1

18 MAR DEL PLATA (Z-28) CLASS (COASTAL PATROL CRAFT) (WPB)

MAR DEL PLATA GC 64	RIO DE LA PLATA GC 70	INGENIERO WHITE GC 76
MARTIN GARCIA GC 65	LA PLATA GC 71	GOLFO SAN MATIAS GC 77
RIO LUJAN GC 66	BUENOS AIRES GC 72	MADRYN GC 78
RIO URUGUAY GC 67	CABO CORRIENTES GC 73	RIO DESEADO GC 79
RIO PARAGUAY GC 68	RIO QUEQUEN GC 74	USHUAIA GC 80
RIO PARANA GC 69	BAHIA BLANCA GC 75	CANAL DE BEAGLE GC 81

Displacement, tons: 81 full load
Dimensions, feet (metres): 91.8 × 17.4 × 5.2 (28 × 5.3 × 1.6)
Main machinery: 2 MTU 8V-331-TC92 diesels; 1,770 hp(m) (1.3 MW) sustained; 2 shafts
Speed, knots: 22 **Range, n miles:** 1,200 at 12 kt; 780 at 18 kt
Complement: 14 (3 officers)
Guns: 1 Oerlikon 20 mm, 2—12.7 mm Browning MGs.
Radars: Navigation: Decca 1226, I-band

Comment: Ordered 24 November 1978 from Blohm + Voss to a Z-28 design. First delivered in June 1979 and then at monthly intervals. Steel hulls. GC 82 and 83 were captured by the British Forces in 1982



CABO CORRIENTES 4/2008*, A E Galarce / 1335599

1 COASTAL PATROL CRAFT (WPB)

Name DORADO
No GC 101
Builders Base Naval, Rio Santiago
Commissioned 17 Dec 1939

Displacement, tons: 43 full load
Dimensions, feet (metres): 69.5 x 14.1 x 4.9 (21.2 x 4.3 x 1.5)
Main machinery: 2 GM 6071-6A diesels; 360 hp (268 kW); 1 shaft
Speed, knots: 12
Range, n miles: 1,550
Complement: 7 (1 officer)
Radars: Navigation: Furuno; I-band



DORADO 12/1999, R O Rivero / 0056490

10 ALUCAT 1050 CLASS (WPB)

CORMORAN GC 137	SURUBI GC 143	HUALA GC 146	MANDURUYU GC 148
CISNE GC 138	BOGA GC 144	PACU GC 147	CORVINA GC 149
PEJERREY GC 139	SABALO GC 145		

Displacement, tons: 9 full load
Dimensions, feet (metres): 37.7 x 12.5 x 2 (11.5 x 3.8 x 0.6)
Main machinery: 2 Volvo 61 ALD; 577 hp(m) (424 kW); 2 Hamilton 273 waterjets
Speed, knots: 18
Complement: 4
Radars: Navigation: Furuno 12/24; I-band



HUALA 4/2000, Hartmut Ehlers / 0104180

33 ALUCAT 850 CLASS (WPB)

GC 152-184 (ex-LS 9201-9233)

Displacement, tons: 7 full load
Dimensions, feet (metres): 30.2 x 10.8 x 2 (9.2 x 3.3 x 0.6)
Main machinery: 2 Volvo TAMD 418; 400 hp(m) (294 kW); 2 waterjets
Speed, knots: 26
Complement: 4
Radars: Navigation: Furuno, I-band.

Comment: Alucat 850 class built by Damen. First six delivered in 1995, six more in February 1996, five more in December 1996 and five in December 1997. Five more ordered in 1999



GC 181 10/2005, A E Galarce / 1151092

35 SMALL PATROL CRAFT (WPB)

ESTRELLEMAR GC 48	SALMON GC 54	ORCA GC 80	ROBALDO GC 92
REMORA GC 49	BIGUA GC 55	PINGUINO GC 81	CAMARON GC 93
CONGRIO GC 50	FOCA GC 58	MEDUSA GC 88	GAVIOTA GC 94
MERO GC 51	TIBURON GC 57	PERCA GC 89	ABADEJO GC 95
MARSOPA GC 52	MELVA GC 59	CALAMAR GC 90	GC 102-114
PETREL GC 53	LENGUADO GC 59	HIPOCAMPO GC 91	

Displacement, tons: 15 full load
Dimensions, feet (metres): 41 x 11.8 x 3.6 (12.5 x 3.6 x 1.1)
Main machinery: 2 GM diesels; 514 hp (383 kW); 2 shafts
Speed, knots: 20
Range, n miles: 400 at 18 kt
Complement: 3
Guns: 12.7 mm Browning MG.
Radars: Navigation: I-band

Comment: First delivered September 1978. First 14 built by Cadonazzi, Tigre 1977-79, most of the remainder by Ast Bolen de Escobar 1984-86. GC 102-114 are slightly smaller.



PERCA 11/2004, A E Galarce / 1151093

36 FAST INTERVENTION CRAFT (WPB)

Displacement, tons: To be announced
Dimensions, feet (metres): 28.5 x 6.9 x 1.97 (8.7 x 2.1 x 0.6)
Main machinery: 1 diesel; waterjet propulsion
Speed, knots: 33
Complement: 10
Guns: 1 - 7.62 mm MG

Comment: Built to a local design. Began entering service in 2007.

1 BAZAN TYPE (WPBF)

SUREL GC 142

Displacement, tons: 14.5 full load
Dimensions, feet (metres): 39 x 12.4 x 2.2 (11.9 x 3.8 x 0.7)
Main machinery: 2 MAN D2848 LXE diesels; 1,360 hp(m) (1 MW) sustained; 2 Hamilton 362 waterjets
Speed, knots: 38
Range, n miles: 300 at 25 kt
Complement: 4
Guns: 1 - 12.7 mm MG
Radars: Navigation: Furuno; I-band.

Comment: Acquired in 1997 from Bazán, San Fernando. Similar to Spanish Bazán 39 class for Spanish Maritime Police. Plans to acquire further craft were not fulfilled



SUREL 12/2001, A E Galarce / 0529889

22 PATROL CRAFT (PB)

ALUMINE GC 118 (ex-SP 14)	COLHUE GC 129 (ex-SP 18)	COLHUE HUAPI GC 138 (ex-SP 33)
TRAFUL GC 119 (ex-SP 15)	MARIA L PENDO GC 130 (ex-SP 18)	YEHUIN GC 140 (ex-SP 30, ex-SP 35)
LACAR GC 120 (ex-SP 24)	ROCA GC 131 (ex-SP 28)	QUILLEN GC 141 (ex-SP 27)
MASCARDI GC 122 (ex-SP 17)	PUELO GC 132 (ex-SP 29)	FAGNANO GC 150 (ex-SP 23)
FONTANA GC 121 (ex-SP 32)	FUTALAUQUEN GC 133 (ex-SP 30)	NAHUEL HUAPI GC 151 (ex-SP 19)
VIEDNA GC 123 (ex-SP 20)	FALKNER GC 134 (ex-SP 31)	CARDIEL - (ex-SP 25)
SAN MARTIN GC 124 (ex-SP 21)	HESS (ex-Huechulafquen) GC 135 (ex-SP 34)	
BUENOS AIRES GC 125 (ex-SP 22)		
MUSTERS GC 126 (ex-SP 26)		

(All names preceded by LAGO)

Comment: There are three main types of craft. Eight 23 m Stan Tender 2200 were built by Damen, Gorinchem (GC 122-125, 129, 130, 150, 151); three 16 m Stan Tender 1750 were built by Damen, Gorinchem (GC 118, 119, 133); six 11 m CAT 1100 were built by Damen, Gorinchem (GC 120, 126, 131, 132, 141 and Cardiel); five 11 m CAT 1100 were built by Astillero Mestrina, Tigre (GC 121, G 134-136, GC 140). GC 133, 141, 150, 151 and Cardiel are employed as pilot craft.



VIEDNA 4/2007, A E Galarce / 1167974

4 TRAINING SHIPS (WAXL/WAXS)

ESPERANZA ADHARA II TALITA II DR BERNARDO HOUSSAY (ex-El Austrá)

Displacement, tons: 33.5 standard
Dimensions, feet (metres): 62.3 x 14.1 x 8.9 (19 x 4.3 x 2.7)
Main machinery: 1 VM diesel, 90 hp(m) (66 kW); 1 shaft
Speed, knots: 6; 15 sailing
Complement: 6 plus 6 cadets

Comment: Details given are for *Esperanza* built by Ast Central de la PNA. Launched and commissioned 20 December 1968 as a sail training ship. The 30 ton training craft *Adhara II* and *Talita II* are of similar dimensions. *Dr Bernardo Houssay* is a Danish-built ketch built in 1930. Displacement 460 tons and has a crew of 25 (five officers). Acquired by the PNA in 1996 and underwent refit at Tandano Shipyard in 2007.



TALITA II 6/1998, Prefectura Naval / 0017545



DR BERNARDO HOUSSAY 5/2000, Harald Carstens / 0104181

6 SERVICE CRAFT (YTL/YTR)

PUERTO BUENOS AIRES SI 4 -SB 5 CANAL EMILIO MITRE SB 8
-SB 3 CANAL COSTANERO SB 9 -SB 10

Comment: *Canal Emilio Mitre* is a small tug of 53 tons full load, it has a speed of 10 kt and was built by Damen Shipyard, Netherlands in 1982

PILOT VESSELS

1 PILOT STATION (WAGH/AHH)

Name	No	Builders	Commissioned
RECALADA (ex-Río Uruguay)	DF 15	Astillero Astarsa	30 May 1972

Displacement, tons: 10,070 full load
Dimensions, feet (metres): 482.3 x 65.6 x 28 (147 x 20 x 8.5)
Speed, knots: 13
Complement: 28 (3 officers)

Comment: Commissioned as a Coast Guard ship 24 December 1991. Painted red with a white superstructure. Has a helicopter deck forward and a 20 bed hospital. After an extensive conversion and refit the ship replaced *Lago Lacar* in 1995.



RECALADA 8/1994, Marcelo Campodonico / 0056494

LAND-BASED MARITIME AIRCRAFT

Notes: In addition to the aircraft listed, there are two Piper Warrior II/Archer II training aircraft and five Schweizer 300C training helicopters.

Numbers/Type: 2/3 Casa C-212 S 68/C-212 A 68 Aviocar.
Operational speed: 190 kt (353 km/h).
Service ceiling: 24,000 ft (7,315 m).
Range: 1,650 n miles (3,055 km).

Role/Weapon systems: Two S 68 acquired in 1989, three A 68 in 1990. Medium-range reconnaissance and coastal surveillance duties in EEZ. Sensors: Bendix RDS 32 surface search radar, Omega Global GNS-500. Weapons: ASW; can carry torpedoes, depth bombs or mines. ASW; 2 x rockets or machine gun pods not normally fitted



CASA C-212 6/2002, CASA/EADS / 0571295

Numbers/Type: 1 Aerospatiale SA 330 Super Puma.
Operational speed: 151 kt (279 km/h).
Service ceiling: 15,090 ft (4,600 m).
Range: 335 n miles (620 km).

Role/Weapon systems: Support and SAR helicopter for patrol work. Updated in France in 1996. Sensors: Omera search radar. Weapons: Can carry pintle-mounted machine guns but is usually unarmed



SUPER PUMA 11/1996, Luis O Zunino / 0056495

Numbers/Type: 3 Aerospatiale AS 365 Dauphin 2
Operational speed: 150 kt (278 km/h).
Service ceiling: 15,000 ft (4,575 m).
Range: 410 n miles (758 km).

Role/Weapon systems: Updated in 1995-96 to replace the Super Puma during the latter's update but have been retained. Sensors: Agrion search radar. Weapons: Unarmed



DAUPHIN 2 10/1996, Prefectura Naval / 0017077

Australia



Country Overview

The Commonwealth of Australia comprises the island continent and the island of Tasmania which are separated by the Bass Strait. The British monarch, represented by a governor-general, is head of state. With an overall area of 2,966,151 square miles, it has a 13,910 n mile coastline with the Pacific (Coral and Tasman Seas) and Indian Oceans, the Timor Sea, Arafura Sea and the Torres Strait. External dependencies are the Australian Antarctic Territory, Christmas Island, the Cocos Islands, the Territory of Heard Island and McDonald Islands, Norfolk Island, the Ashmore and Carter Islands and the Coral Sea Islands Territory. Canberra is the capital while Sydney is the largest city and a major port. There are further ports at Melbourne, Fremantle, Newcastle, Port Kembla, Geelong, Brisbane, Gladstone, Port Hedland and Port Walcott. Territorial Seas (12 n miles) are claimed. An EEZ (200 n miles) is also claimed.

Headquarters Appointments

Chief of Navy:
Vice Admiral R H Crane, AM, CSM
Deputy Chief of Navy:
Rear Admiral D R Thomas, AM, CSC
Fleet Commander, Australia:
Rear Admiral N S Coates, AM
Commander Australian Navy Systems Command:
Commodore S Gilmore, AM, CSC

Senior Appointments

Chief Capability Development Group:
Vice Admiral M J Trpovich, AM, CSC
Head of Maritime Systems Division:
Rear Admiral B C Robinson, AM
Commander Border Protection Command:
Rear Admiral A K Du Toit, AM
Head of Information and Capability Management Division:
Rear Admiral P D Jones, DSC, AM
Commander Australian Defence College:
Rear Admiral J V P Goldrick, AM, CSC

Diplomatic Representation

Head Australian Defence Staff, Washington:
Air Vice Marshall K Osley, AM, CSC
Head Australian Defence Staff, London:
Air Commodore S Martin, AM
Naval Attaché in Washington:
Commodore V di Pietro, CSC
Defence Attaché in Riyadh:
Captain B Gorringe
Naval Attaché in Jakarta:
Captain R Plath
Naval Adviser in London:
Captain W Martin
Defence Attaché in Wellington:
Captain M C Keilam
Defence Attaché, NATO/EU:
Commander C Dunchue
Defence Adviser in Dili:
Captain D Micheal
Defence Adviser in Islamabad:
Captain M Schmidt

Diplomatic Representation — continued

Defence Adviser in Manila:
Captain V Jones
Defence Adviser in New Delhi:
Captain J Mead

Personnel

- (a) 2009: Permanent 13,219 officers and sailors
(b) Reserve: 8,599 (4,274 active, 4,325 standby)

RAN Reserve

The Naval Reserve is integrated into the Permanent Force. Personnel are either Active Reservists with regular commitments or Inactive Reservists with periodic or contingent duty. The missions undertaken by the Reserve include Coordination and Guidance of Psychology, Public Relations, Intelligence, Diving and patrol boat/landing craft operations. In addition, members of the Ready Reserve (a component of the Active Reserve) are shadow posted to selected major fleet units.

Border Protection Command

Border Protection Command (BPC), established on 30 March 2005 as the Joint Offshore Protection Command and renamed on 23 October 2006, coordinates and manages offshore maritime security within Australia's Offshore Maritime Domain. BPC integrates the resources of the Department of Defence and the Australian Customs Service (ACS) and includes personnel from the Australian Fisheries Management Agency and the Australia Quarantine Inspection Service. BPC has responsibility for offshore counter-terrorism prevention, interdiction and response capabilities and activities, including the protection of offshore oil and gas facilities, and civil maritime surveillance and response. The Commander is jointly accountable to the Chief of the Defence Force and the Chief Executive Officer of Customs.

BPC also manages the developing Australian Maritime Identification System. This system will bring together all the information held across government agencies on vessels operating in Australia's maritime area of interest. The aim is to be capable of identifying and assessing all vessels, other than recreational boats, within the 200 n mile EEZ.

Principal day-to-day assets of the Command include: one major fleet unit (FFG/FFH/LPA/AOR/HS); Armidale-class patrol boats, ACS surface units including the Bay class, contracted vessels *Triton* and *Oceanic Viking*; contracted Coastwatch surveillance aircraft and RAAF AP-3C maritime patrol aircraft.

Shore Establishments

Canberra: Navy Headquarters, Navy Systems Command Headquarters, *Herman* (Communications, Administration).
Sydney: Fleet Headquarters, Fleet Base East (Garden Island), *Waterhen* (Mine Warfare and Clearance Diving), *Watson* (Warfare Training), *Penguin* (Diving, Hospital), *Kuttabul* (Administration).
Wollongong Hydrographic Headquarters
Jervis Bay Area: *Albatross* (Air Station), *Creswell* (Leadership and Management Training and Fleet Support), Jervis Bay Range Facility.

Cockburn Sound (WA): Fleet Base West, *Stirling* (Administration and Maintenance Support, Submarines, Communications).

Darwin: Minor warship base, *Cooswarra* (Administration).

Cairns: *Cairns* (Administration), Minor Warship Base
Adelaide: Regional Naval Headquarters, South Australia.
Brisbane: Regional Naval Headquarters, South Queensland.
Hobart: Regional Naval Headquarters, Tasmania.

Fleet Deployment

Fleet Base East (and other Sydney bases): 4 FFG, 3 FFH, 1 AOR, 2 LPA, 1 LSH, 1 ASR, 8 MHC, 2 MSA.
Fleet Base West: 6 SS, 1 DSRV, 5 FFH, 1 AORH
Darwin Naval Base: 10 PB, 2 LCH.
Cairns: 4 PB, 4 LCH, 2 AGS, 4 AGSC

Fleet Air Arm (see Shipborne Aircraft section).

Squadron	Aircraft
723	Squirrel AS 350B, Utility, SAR
817	Sea King Mk 50, Utility
816	Seahawk S-70B-2, ASW, ASST

Prefix to Ships' Names

HMAS. Her Majesty's Australian Ship

Strength of the Fleet

Type	Active	Building (Projected)
Patrol Submarines	8	—
Destroyers	—	(3)
Frigates (FFG)	12	—
Minehunters (Coastal)	6	—
Minesweepers (Auxiliary)	2	—
Large Patrol Craft	14	—
Assault Ships	—	(2)
Amphibious Heavy Lift Ship	1	—
Amphibious Transports	2	(1)
Landing Craft	10	—
Survey Ships	6	—
Replenishment Ships	2	—
Training Ships	7	—

DELETIONS

Frigates

2008 *Adelaide*

Patrol Forces

2006 *Wollongong, Gawler, Geelong, Fremantle, Launceston, Bendigo, Geraldton*
2007 *Dubbo, Gladstone, Townsville, Ipswich*

Auxiliaries

2006 *Westralia*

PENNANT LIST

Submarines	05	Melbourne	M 85	Gascoyne	91	Bundaberg	L 130	Wewak
	08	Newcastle	M 86	Diamantina	92	Wollongong	L 133	Betano
73	Collins	150	Anzac	M 87	Yarra	Childers		
74	Farncomb	151	Arunta	Y 298	Bandicoot	Launceston		Survey Ships
75	Waller	152	Warramunga	Y 299	Wallaroo	Maryborough		A 01
76	Dechauneux	153	Stuart			Glennelg		A 02
77	Sheean	154	Parramatta					A 03
78	Rankin	155	Ballarat					A 04
Destroyers		156	Toowoomba					A 245
39	Hobart (bldg)	157	Perth					A 248
41	Brisbane (bldg)			Patrol Forces		Amphibious Forces		
42	Sydney (bldg)			83	Armidale	L 50	Tobruk	
				84	Larrakia	L 51	Kanimbla	
				85	Bathurst	L 52	Mancora	
				86	Albany	L 126	Balikpapan	
				87	Pirie	L 127	Brunei	
				88	Maitland	L 128	Labuan	
				89	Ararat	L 129	Tarakan	
				90	Broome			
								Auxiliaries
								O 266
								OR 304
								Sirius
								Success

SUBMARINES

Notes: Feasibility studies on the next generation of submarines were initiated in December 2007. Initial (First Pass) approval is likely to be sought in about 2011 with a view to (Second Pass) approval of construction and contracts following by 2015. Entry into service is expected in about 2022. The capability mix is likely to include greater emphasis on land attack. While nuclear propulsion is an option, it is unlikely to be selected.



6 COLLINS CLASS (SSK)

Name	No	Builders	Laid down	Launched	Commissioned
COLLINS	73	Australian Submarine Corp, Adelaide	14 Feb 1990	28 Aug 1993	27 July 1996
FARNCOMB	74	Australian Submarine Corp, Adelaide	1 Mar 1991	15 Dec 1995	31 Jan 1998
WALLER	75	Australian Submarine Corp, Adelaide	19 Mar 1992	14 Mar 1997	10 July 1999
DECHAINÉUX	76	Australian Submarine Corp, Adelaide	4 Mar 1993	12 Mar 1998	23 Feb 2001
SHEEAN	77	Australian Submarine Corp, Adelaide	17 Feb 1994	1 May 1999	23 Feb 2001
RANKIN	78	Australian Submarine Corp, Adelaide	12 May 1995	1 Nov 2001	29 Mar 2003

Displacement, tons: 3,051 surfaced; 3,353 dived
Dimensions, feet (metres): 255.2 × 25.6 × 23
 (77.8 × 7.8 × 7)

Main machinery: Diesel-electric; 3 Hedemora/Garden Island Type V18B/14 diesels; 6,020 hp (4.42 MW); 3 Jeumont Schneider generators; 4.2 MW; 1 Jeumont Schneider motor; 7,344 hp (m) (5.4 MW); 1 shaft; 1 MacTaggart Scott DM 43006 hydraulic motor for emergency propulsion

Speed, knots: 10 surfaced; 10 snorting; 20 dived
Range, n miles: 9,000 at 10 kt (snort); 11,500 at 10 kt (surfaced) 400 at 4 kt (dived)

Complement: 45 (8 officers)

Missiles: SSM: McDonnell Douglas Sub Harpoon Block 1B (UGM 84C); active radar homing to 92 km (50 n miles) at 0.9 Mach; warhead 227 kg.

Torpedoes: 6–21 in (533 mm) fwd tubes. Gould Mk 48 Mod 4/6/7, dual purpose; wire guided, active/passive homing to 38 km (21 n miles) at 55 kt or 50 km (27 n miles) at 40 kt; warhead 295 kg. Air turbine pump discharge. Total of 22 weapons including Mk 48 and Sub Harpoon

Mines: 44 in lieu of torpedoes.

Countermeasures. Decoys: 2 SSE

ESM: Condor CS-5600; intercept and warning

Weapons control: AN-BYG 1. Link 11.

Radars: Navigation: Kelvin Hughes Type 1007; I-band

Sonars: Thomson Sintra Scylla active/passive bow array and passive flank, intercept and ranging arrays.

Thales SHORTASS retractable, passive

Programmes: Contract signed on 3 June 1987 for construction of six Swedish-designed Kockums Type 471. Fabrication work started in June 1989; bow and midships (escape tower) sections of the first submarines built in Sweden.

Structure: Stirling air independent propulsion (AIP) has been tested on a shore rig. Scylla is an updated Eledone sonar suite. Diving depth, 250 m (820 ft). Anchoic tiles are fitted during build to all but *Collins* which is retrofitted. Pilkington Optronics CK 43 search and CH 93 attack periscopes fitted. Plans for an external mine belt have been abandoned.

Modernisation: The Replacement Combat System AN-BYG 1 is based on Raytheon's CCS Mk 2. The shore facilities version was established in mid-2005 and the

first seagoing system in *Waller* in 2008. The other boats are to follow by 2010. Meanwhile, following trials in *Collins* to improve the performance of the current combat system, the systems in *Dechainéux*, *Sheean*, *Rankin* and *Farncomb* have been augmented. In parallel, significant improvements to noise signature have been achieved following modifications to propellers and casing sections and improvements to the hydraulics system and engine reliability. These have been made to all six boats. Collaborative development of the US Mk 48 Mod 7 ADCAP torpedo is being progressed and the first firing was conducted by *Waller* during RIMPAC 08 in July 2008. All boats have been fitted with the Condor CS 5600 ESM system. *Collins* has received a set of modifications to facilitate the deployment and recovery of special forces. Further upgrades under the Collins Continuous Improvement Programme are to include improvements to communications and EW capabilities, a periscope system upgrade and sonar upgrades

Operational. All submarines are based at Fleet Base West with one or two deploying regularly to the east coast



RANKIN

1/2008*, Chris Sattler / 1335626



COLLINS

1/2008*, Chris Sattler / 1335624



WALLER

5/2008, Chris Sattler / 1335625

DESTROYERS

0 + 3 HOBART CLASS (DESTROYERS) (DDGHM)

Name	No	Builders	Laid down	Launched	Commissioned
HOBART	39	ASC, Osborne, South Australia	2011	2013	2014
BRISBANE	41	ASC, Osborne, South Australia	2012	2014	2016
SYDNEY	42	ASC, Osborne, South Australia	2014	2015	2017

Displacement, tons: 6,250 full load
Dimensions, feet (metres): 481.3 oa; 437 pp × 61 × 16.1 (146.7; 133.2 × 18.6 × 4.9)
Flight deck, feet (metres): 86.6 × 56 (26.4 × 17)
Main machinery: CODOG; 2 GE LM 2500 gas turbines, 47,328 hp(m) (34.8 MW) sustained; 2 Bazar/Caterpillar diesels; 12,240 hp(m) (9 MW) sustained; 2 shafts; LIPS cp props
Speed, knots: 28
Range, n miles: 4,500 at 18 kt
Complement: 202 (accommodation for 734)

Missiles: SSM: 8 Boeing Harpoon Block 2; active radar homing to 124 km (67 n miles) at 0.9 Mach; warhead 227 kg
SAM: Mk 41 VLS (48 cells); 32 Raytheon SM2 MR (Block IIIA); command/inertial guidance, semi-active radar homing to 167 km (90 n miles) at 2.5 Mach. 64 Evolved Sea Sparrow RIM 162B (in quadpacks); semi-active radar homing to 18 km (9.7 n miles) at 3.6 Mach; warhead 38 kg

Guns: 1 FMC 5 in (127 mm)/54 Mk 45 Mod 4, 20 rds/min to 100 km (54 n miles) for extended range munitions; weight of shell 32 kg.
 1 Raytheon 20 mm Vulcan Phalanx Block 2B; 6 barrels per launcher; 4,500 rds/min combined to 1.5 km. 2 Rafael Typhoon 25 mm
Torpedoes: 4 323 mm (2 twin) Mk 32 Mod 9 fixed launchers. Eurotorp MU 90; anti-submarine; active/passive homing to 25 km (13.5 n miles) at 29/50 kt, warhead 32 kg.
Countermeasures: Decoys: G & D Aircraft SRBOC Mk 36 Mod 1 decoy launchers for SRBOC/NATO Sea Gnat. Nulka expendable decoy launchers.
ESM: To be announced.
ECM: To be announced.
Combat data systems: Lockheed Aegis Baseline 71; Link 11/16
Weapons control: GFCS to be announced
Radars: Air/surface search: Aegis SPY-1D. E/F-band
 Surface search: Sperry Marine AN/SPQ-9B; I-band.
Fire control: 2 Raytheon SPG-62 Mk 99 (for SAM). I/J-band.

Navigation: To be announced
Sonars: Ultra integrated sonar suite comprising Type 2150 hull mounted sonar, towed array and torpedo detection.

Helicopters: 1 Sikorsky S-70B Seahawk or MRH 90.

Programmes: The Navantia F-100 was selected by the Australian government as the platform for the Hobart class Air Warfare Destroyers on 20 June 2007. The contract to build the ships was signed on 4 October 2007. The Combat System is to be an Australian version of Aegis; subsystems yet to be selected include communications and electronic warfare. The project is to be executed under an alliance arrangement between the Australian government, ASC AWD Shipbuilder Pty Ltd and Raytheon Australia Pty Ltd. The headquarters of the Alliance is the AWD Systems Centre in Adelaide. Hull blocks are to be manufactured around Australia and consolidated at the ASC Shipyard in Osborne, South Australia. There is an option for a fourth ship.



HOBART CLASS

10/2007, Royal Australian Navy / 1292470

FRIGATES

8 ANZAC (MEKO 200) CLASS (FFGHM)

Name	No	Builders	Laid down	Launched	Commissioned
ANZAC	150	Transfield, Williamstown	5 Nov 1993	16 Sep 1994	18 May 1996
ARUNTA (ex-Arrarnte)	151	Transfield, Williamstown	22 July 1995	28 June 1996	12 Dec 1998
WARRAMUNGA (ex-Warumungu)	152	Tenix Defence Systems, Williamstown	26 July 1997	23 May 1998	31 Mar 2001
STUART	153	Tenix Defence Systems, Williamstown	25 July 1998	17 Apr 1999	17 Aug 2002
PARRAMATTA	154	Tenix Defence Systems, Williamstown	4 June 1999	17 June 2000	4 Oct 2003
BALLARAT	155	Tenix Defence Systems, Williamstown	4 Aug 2000	25 May 2002	26 June 2004
TOOWOOMBA	156	Tenix Defence Systems, Williamstown	26 July 2002	16 May 2003	8 Oct 2005
PERTH	157	Tenix Defence Systems, Williamstown	24 July 2003	20 Mar 2004	26 Aug 2006

Displacement, tons: 3,700 full load

Dimensions, feet (metres): 387.1 oa; 357.6 wl x 48.6 x 14.3 (118; 109 x 14.8 x 4.35)

Main machinery: CODOG: 1 GE LM 2500 gas turbine, 30,172 hp (22.5 MW) sustained; 2 MTU 12V 1163 TB83 diesels; 8,840 hp (6.5 MW) sustained; 2 shafts; cp props

Speed, knots: 27

Range, n miles: 6,000 at 18 kt

Complement: 174 (24 officers)

Missiles: SSM: 8 McDonnell Douglas Harpoon Block 2 active radar homing to 124 km (67 n miles) at 0.9 Mach; warhead 227 kg.

SAM: Lockheed Martin Mk 41 Mod 5 octuple vertical launcher. Quadpack Evolved Sea Sparrow RIM-162 for 32 missiles; semi-active homing to 18.0 km (9.7 n miles) at 3.6 Mach; warhead 38 kg.

Guns: 1 United Defense 5 in (127 mm)/54/82 Mk 45 Mod 2; 20 rds/min to 23 km (12.6 n miles); weight of shell 32 kg.

4-12.7 mm MGs

2 Rafael Mini Typhoon 12.7 mm remote-controlled guns (for selected deployments)

Torpedoes: 8-324 mm (2 triple) Mk 32 Mod 5 tubes Eurotorp MU 90; active/passive homing to 25 km (13.5 n miles) at 29/50 kt.

Countermeasures: Decoys: G & D Aircraft SRBOC Mk 36 Mod 1 decoy launchers for SRBOC/NATO Sea Gnat. 4 BAe Nulka quad expendable decoy launchers. FEL SLO-25A towed torpedo decoy.

RESM: Thales Centaur; radar intercept. CESM Telefonken PST 1720 Telegon 10; comms intercept.

Combat data systems: Saab Systems 9LV 453 Mk 3 (Mk 3E in 157). Link 11. Link 16.

Weapons control: Saab Systems Ceres 200 optronic director with CEA SSCWI (for RIM 162)

ARUNTA

Radars: Air search: Raytheon SPS-49(V)8 ANZ; C-band Air/surface search: Ericsson Sea Giraffe G/H band

Navigation: Atlas Elektronik 9800 ARPA; I-band.

Fire control: CelsiusTech Ceres 200; J-band.

IFF: Cossor AIMS Mk XI.

Sonars: Thomson Sintra Spherion B Mod 5; hull-mounted, active search and attack, medium frequency. Thales UMS 5424 Petrel; active mine avoidance; very high frequency.

Helicopters: 1 S-70B-2 Seahawk.

Programmes: Contract signed with Australian Marine Engineering Consolidated (now Tenix Defence) on 10 November 1989 to build eight Blohm + Voss designed MEKO 200 ANZAC frigates for Australia and two for New Zealand. First ship started construction 27 March 1992. Modules were constructed at Whangarei and shipped to Williamstown for assembly. The second and fourth ships of the class were delivered to New Zealand.

Modernisation: Evolved Seasparrow missile (ESSM) was integrated in *Warumunga*, the world's first warship to be so fitted (first missile launched 21 January 2003). All remaining ships have since been similarly equipped. Petrel MOAS (Mine Obstacle Avoidance Sonar) was introduced



(Scale 1 : 1,200), Ian Sturton / 1153838

in 2005, the MU 90 torpedo in 2008 and Harpoon has now been progressively installed across the entire class. F157 is the first of class to be fitted with the 9LV Mk 3E Combat Management System, which forms the foundation of the ASMD Upgrade programme to be implemented 2010-16. Other key elements of the upgrade include replacement of Sea Giraffe radar with CEAFAAR active phased array radar; installation of the Sagem Vampir IRST (Infra-Red Search and Track) system, replacement of the navigation radar with a dual Kelvin Hughes Sharp Eye system and a significant modernisation and upgrade to the Operations Room. A major communications upgrade will also be completed.

Structure: Space and weight have been reserved for the installation of Mini Typhoon, an additional octuple VLS, additional channels of fire for VLS, towed array sonar, offboard active ECM, extended ESM frequency coverage, Helo datalink and SATCOM. The installation of CEAFAAR phased array radar involves removal of the lattice mast and replacement with an enclosed cupola mast structure.

Operational: Two RHBs are carried on all ships. 153, 154 and 155 are based at Sydney; the remainder at Perth.



STUART

1/2008, Chris Sattler / 1335623



TOOWOOMBA

7/2008, John Mortimer / 1335622



PERTH

2/2008, Chris Sattler / 1335621



PARRAMATTA

6/2008, Mick Prendergast / 1335610



BALLARAT

5/2008, Chris Sattler / 1335672

4 ADELAIDE (OLIVER HAZARD PERRY) CLASS (FFGHM)

Name	No	Builders	Laid down	Launched	Commissioned
SYDNEY	03	Todd Pacific Shipyard Corporation, Seattle, US	16 Jan 1980	26 Sep 1980	29 Jan 1983
DARWIN	04	Todd Pacific Shipyard Corporation, Seattle, US	3 July 1981	26 Mar 1982	21 July 1984
MELBOURNE	05	Australian Marine Eng (Consolidated), Williamstown	12 July 1985	5 May 1989	15 Feb 1992
NEWCASTLE	06	Australian Marine Eng (Consolidated), Williamstown	21 July 1989	21 Feb 1992	11 Dec 1993

Displacement, tons: 4,200 full load

Dimensions, feet (metres): 453 × 45 × 24.5 (sonar); 14.8 (keel)
(138.1 × 13.7 × 7.5; 4.5)

Main machinery: 2 GE LM 2500 gas turbines; 41,000 hp (30.6 MW) sustained, 1 shaft; cp prop; 2 auxiliary electric retractable propulsors fwd; 650 hp (484 kW)

Speed, knots: 29 (4 on propulsors)

Range, n miles: 4,500 at 20 kt

Complement: 184 (15 officers) plus aircrew

Missiles: SSM: 8 McDonnell Douglas Harpoon Block 2; active radar homing to 124 km (67 n miles) at 0.9 Mach, warhead 227 kg

SAM: GDC Pomona Standard SM 1MR Block VI; Mk 13 Mod 4 launcher for both SAM and SSM systems; command guidance; semi-active radar homing to 38 km (20.5 n miles) at 2 Mach, 40 missiles (combined SSM and SAM) 32 Raytheon RIM-162 ESSM; Mk 41 8-cell VLS launcher; semi-active radar homing to 18.5 km (10 n miles) at 3.6 Mach, warhead 227 kg.

Guns: 1 OTO Melara 3 in (76 mm) 62 US Mk 75 compact; 85 rds/min to 16 km (9 n miles) anti-surface; 12 km (6.5 n miles) anti-aircraft, weight of shell 6 kg
1 General Electric/GDC 20 mm Mk 15 Vulcan Phalanx; anti-missile system with 6 barrels; 4,500 rds/min combined to 1.5 km
Up to 6 12.7 mm MGs.

Torpedoes: 6—324 mm Mk 32 (2 triple) tubes Eurotorp MJ 90, active/passive homing to 25 km (13.5 n miles) at 29/50 kt

Countermeasures: Decoys: 4 Loreal Hycor SRBOC Mk 36 chaff and IR decoy launchers; fixed 6-barrelled system; range 1–4 km. 4 BAe Nulka quad expendable decoy launchers.
2 Rafael long-range chaff rocket launchers (fixed 2-barrel system). LSCUT torpedo countermeasures



SYDNEY

(Scale 1 : 1,200), Ian Sturton / 1153837

ESM/ECM: Elbit EA-2118 jammer. Rafael C-Pearl; intercept.

Combat data systems: ADACS. OE-2 SATCOM; Link 11. Link 16.

Weapons control: Sperry Mk 92 Mod 12 gun and missile control (Signal derivative). Radamec 2500 optronic director with TV, laser and IR magor

Radars: Air search: Raytheon SPS-49 A(V)1; C-band. Surface search/navigation: ISC Cardion SPS-55; I-band. Fire control: Lockheed SPG-50; I/J-band; range 110 km (60 n miles); Doppler search and tracking Sperry Mk 92 Mod 12; I/J-band
IFF: AIMS Mk XII

Sonars: Thales Sphenon (TMS 4131); active search and attack, medium frequency; hull mounted Petrel (TMS 5424) high frequency mine-avoidance, Albatros (TMS 4350) towed-array torpedo-warning system.

Helicopters: 2 Sikorsky S-70B-2 Seahawks or 1 Seahawk and 1 Squirrel.

Programmes: US numbers: Sydney FFG 35; Darwin FFG 44.
Modernisation: The original ship design was modified to provide improved helicopter facilities. The improvements

resulted in angling the transom, increasing the ship's overall length by 8 ft and fitting the RAST helo recovery system. The modifications also included longitudinal strengthening and buoyancy upgrades. The FFG Upgrade Program (FFG-UP) was delivered by Project Sea 1390. The lead ship Sydney returned to service in April 2006. Work on Melbourne completed in 2007 and Darwin and Newcastle completed in 2008. All four ships are to return to full operational service in 2009. The modification included major upgrades to the combat system and sensors including installation of the Mk 41 VLS and integration of ESSM. The first firing of ESSM from an FFG was conducted by Sydney on 20 August 2007. SM 1 missiles are to be replaced by SM-2 Block IIIA from 2010.

Operational: Canberra decommissioned on 12 November 2005 and Adelaide on 19 January 2008. The four remaining upgraded ships of the class are based at Fleet Base East. For operational tasking the ships are fitted with enhanced communications, TopLite Electro-Optical sights and the Mini Typhoon weapon system. All ships are lighter and air control capable.



DARWIN

6/2008, Mick Prendergast / 1335609



SYDNEY

6/2008, Chris Settler / 1335620

SHIPBORNE AIRCRAFT

Numbers/Type: 6 Westland Sea King HAS 50/50A
Operational speed: 125 kt (230 km/h).
Service ceiling: 14,500 ft (4,400 m).
Range: 490 n miles (908 km).

Role/Weapon systems: Utility helicopter; embarked periodically for operations from *Success*, *Tobruk* and the LPAs. Life extension completed in November 1996 for six aircraft. To be replaced by MRH 90 from 2010. One more acquired from UK in 1996 and upgraded to 50LEP (Mk 50) standard. Sensors: AW 391(A) radar. Weapons: MAG 58 2.82 mm MG.



SEA KING 2/2005, Paul Jackson / 1153648

Numbers/Type: 16 Sikorsky S-708 2 Seahawk
Operational speed: 135 kt (250 km/h).
Service ceiling: 10,000 ft (3,050 m).
Range: 600 n miles (1,110 km).

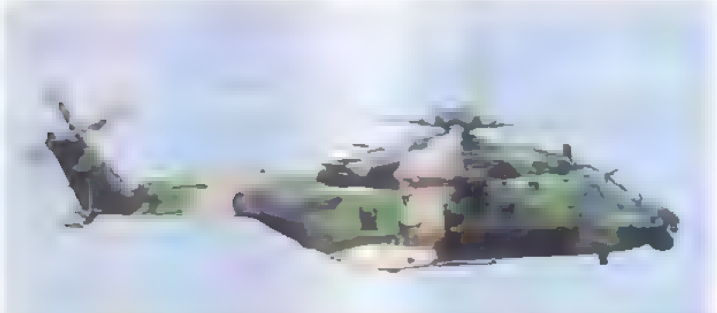
Role/Weapon systems: Seahawk SH 60F derivative aircraft designed by Sikorsky to meet RAN specifications for ASW and ASuW operations. Eight assembled by ASTA in Victoria. Helicopters embarked in FFG-7 and in ANZAC frigates. Fully NVG compatible cockpit. Upgrades from 2004 (expected to complete in 2009) include Raytheon AAQ 27 FLIR, Tracor ALE 47 countermeasures Northrop Grumman AN/AAR-54 MAWS and Elisra AES 210 ESM. A two-phase Seahawk Capability Assurance Programme is in progress; obsolescent parts are to be replaced in the first phase and systems capability to be upgraded in the second. Sensors: Thales Super Searcher Surface surveillance radar, CDC Sonobuoy Processor and Barra Side Processor, and CAE Magnetic Anomaly Detector Set controlled by a Rockwell Collins Tactical Data System. Weapons: ASW; two Mk 46 Mod 5 (replacement by MU 90 is under review) torpedoes; ASV; one Mag 58 MG.



SEAHAWK 9/2006, Royal Australian Navy / 1187434

Numbers/Type: 6 Eurocopter MRH-90.
Operational speed: 165 kt (305 km/h).
Service ceiling: 10,000 ft (3,050 m).
Range: 648 n miles (1,200 km).

Role/Weapon systems: Contract let with Australian Aerospace to provide a total of 46 MRH-90 to the Australian Defence Force (ADF). The Army is to be allocated 40 while six MSH (Maritime Support Helicopters) are to enter RAN service in 2011 to replace the Sea King fleet. They are to be capable of operating from *Kanimbla*, *Menoora* and future amphibious ships. Primary missions are to be afloat logistics support, SAR and MEDIVAC and boarding party operations. Sensors: Honeywell PRIMUS 701A weather radar, piloting FLIR, EW Self Protection System (Thales RWR, EADS Laser Warner System, LFK AN/AAR-50 Missile Launch Detection System (MILDS), MBDA Saphir-M chaff/flare dispenser system), Thales 'Top Owl' Helmet Mounted Sight and Display (HMSD) with integrated night vision device. Weapons: 2—7.62 mm MGs.



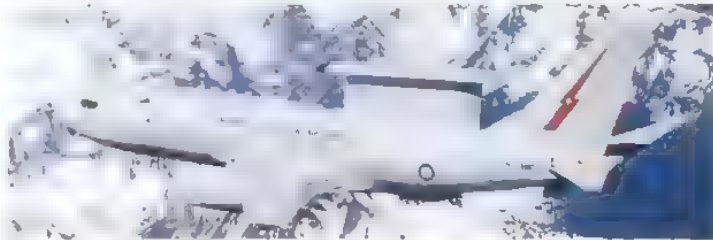
MRH 90 12/2007, RAN / 1336111

LAND-BASED MARITIME AIRCRAFT

Notes: (1) Replacement of the AP-3C maritime patrol aircraft fleet from around 2015 is being taken forward under Project Air 7000. The Boeing P-8A Poseidon is a potential platform. The same project includes procurement of a Maritime Unmanned Aerial System (MUAS) to augment the AP-3C replacement platform. (2) Australia joined the System Design and Development phase of the Joint Strike Fighter in October 2002. Up to 100 aircraft are required to replace the F/A-18 Hornet and F/A-18F Super Hornet fleets by 2020.

Numbers/Type: 6 Boeing 737 AEW&C 'Wedgetail'
Operational speed: to be confirmed.
Service ceiling: 41,000 ft (12,500 m).
Range: to be confirmed.

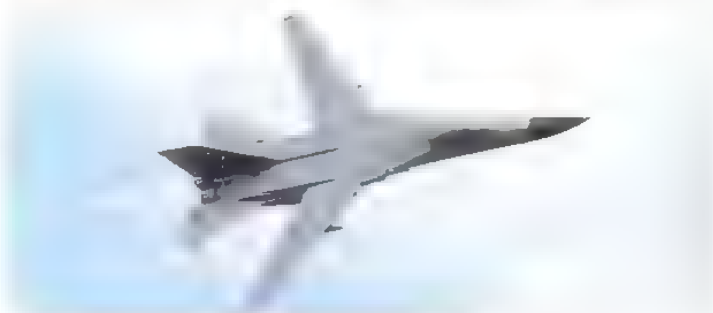
Role/Weapon systems: Contract for four aircraft (adaptation of Boeing Business Jet) signed on 20 December 2000. Two additional aircraft, under option, were added in 2004. Delivery of first two aircraft was originally scheduled for November 2006 but these have been delayed. The aircraft are planned to be delivered from mid-2009. AAR capable. Sensors: Details unconfirmed but likely to include Northrop Grumman ESSD L-band multirole electronically scanned array (MESA) radar (fuselage mounted), electronic warfare self-protection (EWSP) system (including IR countermeasures, chaff and flares); Links 11 and 16; Satcom.



BOEING WEDGETAIL 7/2004, Boeing / 0566617

Numbers/Type: 17/4 General Dynamics F-111C/RF-111C
Operational speed: 793 kt (1,469 km/h).
Service ceiling: 60,000 ft (18,290 m).
Range: 2,540 n miles (4,700 km).

Role/Weapon systems: Air Force operates the F-111 for maritime and land strike. Four are designated RF-111 and are employed as photo reconnaissance aircraft. Upgraded F/A-18A/Bs and 24 F/A-18F Block 2 Super Hornets will replace the F-111 from late 2010. Sensors: AN/APQ 169 radar, Elta EL-8222 ECM pod, AN/AVQ-26 Pave Track targeting pod. Weapons: 4 Harpoon missiles, 2 AGM-142 stand-off missiles, combinations of Mk 82 and Mk 84 bombs or Paveway II laser guided bombs, AIM-9 Sidewinder AAM.



F-111C 2/2003, Paul Jackson / 0552764

Numbers/Type: 18 Lockheed P-3C/AP-3C Orion.
Operational speed: 410 kt (760 km/h).
Service ceiling: 28,300 ft (8,625 m).
Range: 4,000 n miles (7,410 km).

Role/Weapon systems: Operated by Air Force for long range maritime patrol, ASW, maritime strike and ISR. Three more aircraft (plus one for spare parts) without armament or sensors acquired for training. All aircraft upgraded to AP-3C standard by late 2004. Sensors: Elta EL/M-2022A(V)3 radar, GDC UYS-503 acoustic system, Star Safire III electro-optics, ELTA ALR-2001 ESM, up to 84 sonobuoys. Weapons: eight Mk 46(V)5 torpedoes (replacement by MU 90 is under review), up to six Harpoon missiles.



ORION AP-3C 2/2005, Paul Jackson / 1153668

Numbers/Type: 68 McDonnell Douglas F/A-18 Hornet.
Operational speed: 1,032 kt (1,910 km/h).
Service ceiling: 50,000 ft (15,240 m).
Range: 1,000 n miles (1,829 km).

Role/Weapon systems: Air defence and strike aircraft operated by Air Force but with fleet defence and anti-shipping secondary roles. An upgrade programme is being conducted in three phases. Phase 1 modifications, completed in 2002, included new radios, upgraded mission computers, EW upgrade and GPS. Phase 2-1, completed in 2003, included installation of the AN/APG-73 radar and upgraded aircraft software. In Phase 2-2, completed by late 2007, the aircraft are to be equipped with Link 16, improved avionics and helmet mounted sight. In Phase 2-3, the EW suite (RWR and jammer) is to be upgraded and in Phase 2-4, a new target designation system (HDTs) is to be installed. Phase 3, structural modifications, is to be completed by 2010. Upgraded F/A-18A/Bs are 24 F/A-18F Block 2 Super Hornets are to replace the F-111 from late 2010. Sensors: APG-73 attack radar, Litening Pod radar warning receiver. Weapons: ASW; 4 x Harpoon missiles. Strike: 1 x 20 mm cannon, up to 77 tons of 'iron' bombs. Fleet defence: 4 x AAMRAM and 4 x ASRAAM.



F/A-18 Hornet 6/1997, Jane's / 0581750

32 Australia/Land-based maritime aircraft – Amphibious forces

Numbers/Type: 13 Aerospatiale AS 350B Squirrel.

Operational speed: 125 kt (232 km/h).

Service ceiling: 10,000 ft (3,050 m).

Range: 275 n miles (510 km).

Role/Weapon systems: Support helicopter for utility tasks and training duties. No longer deployed as shipborne aircraft. **Sensors:** None **Weapons:** ASV, two Mag 58 MGs



SQUIRREL

9/2006, Royal Australian Navy / 1167433

Numbers/Type: 24 Boeing F/A-18F Super Hornet

Operational speed: 930 kt (1,721 km/h).

Service ceiling: 60,000 ft (18,240 m).

Range: 1,320 n miles (2,376 km).

Role/Weapon systems: Acquisition of 24 aircraft confirmed on 17 March 2008. To enter service in 2010, they are to act as an interim replacement for the F-111 from 2010. Details are for those in US Navy service. **Sensors:** APG-73 radar, APG-79 AESA radar, ALR-87(V)3 RWR ECM; ALQ-165 ASPJ, ALQ-214 RFCM, towed decoys **Weapons:** 11 wing stations for 8,680 kg of weapons (same armament as C/D) plus 20 mm guns.



F/A-18F

9/2005, US Navy / 1154040

AMPHIBIOUS FORCES

Notes: Replacements for the current amphibious capability are being procured under Joint Project (JP) 2048. *Tobruk* and one of the LPA amphibious transports (*Kanimbla* and *Manoora*) are to be replaced by the Canberra-class LHDs and the second LPA is to be replaced by a 'strategic sealift' capability by 2018. JP 2048 is also to delivery replacement of the watercraft capability represented by the Balikpapan class LCH, LCM 8 and LCVP and other ship-to-shore assets required to integrate with the new LHDs.

2 KANIMBLA (NEWPORT) CLASS (LCCH/LLP)

Name	No	Builders	Laid down	Launched	Commissioned	Recommissioned
KANIMBLA (ex-Saginaw)	L 51 (ex-1188)	National Steel & Shipbuilding	24 May 1969	7 Feb 1970	23 Jan 1971	29 Aug 1994
MANOORA (ex-Fairfax County)	L 52 (ex-1193)	National Steel & Shipbuilding	28 Mar 1970	19 Dec 1970	16 Oct 1971	25 Nov 1994

Displacement, tons: 4,975 light; 8,450 full load
Dimensions, feet (metres): 552 × 69.5 × 17.5 (aft)
(168.2 × 21.2 × 5.3)

Main machinery: 6 ALCO 16-251 diesels; 16,500 hp (12.3 MW) sustained, 2 shafts; cp props; bow thruster

Speed, knots: 20 **Range, n miles:** 23,500 at 15 kt

Complement: 213 (12 officers)

Military lift: 450 troops (25 officers); 229 lane metres of vehicles, 2 LCM 8; 250 tons aviation fuel

Guns: 1 General Electric/General Dynamics 20 mm Vulcan Phalanx Mk 15 can be fitted ● 4–12.7 mm MGs. Fitted for but not with army-operated RBS 70 launchers.

2 Mini Typhoon 12.7 mm guns. 2 Typhoon 25 mm guns.

Countermeasures: 2 SRBOC Mk 36 chaff and IR launchers.

Radars: Surface search: Kelvin Hughes 1007 ●; I-band Navigation. Kelvin Hughes ●; I-band

Helicopters: 4 Army Black Hawks ● or 3 Sea Kings or 1 Chinook.

Programmes: Acquired by sale from US on 25 August and 27 September 1994.



MANOORA

(Scale 1 : 1,500), Ian Sturton / 0569257

Modernisation: Conversion contract let to Forgas Shipbuilding, Newcastle in May 1995. Both ships modified by fitting a hangar to take four Black Hawk helicopters, to incorporate a third landing spot forward, to increase aviation fuel capacity and to dispense with the bow landing ramp. The after flight deck is Chinook capable. A stern gate to the tank deck is retained. The ships' carrying capacity includes the M1A1 tank as well as other wheeled and tracked vehicles and artillery.

Two LCM 8 are carried on the deck forward when the third landing spot is not used. Installation of communications and command support system to support a deployable JTFHQ was undertaken in both ships in 2001. The ships have a Joint Operations Room and an enhanced medical and surgical fit which can provide Level 3 clinical capacity when a Primary Care Reception Facility is embarked.

Operational: Both based at Sydney. To be replaced in 2013 and 2016



MANOORA

5/2008*, Chris Settler / 1335618



KANIMBLA

11/2008, Chris Sattler / 1335673



MANOORA

6/2008, Mick Prendergast / 1335608



KANIMBLA

11/2008, Chris Sattler / 1335619

1 HEAVY LIFT SHIP (LSLH)

Name	No	Builders	Laid down	Launched	Commissioned
TOBRUK	L 50	Carrington Slipways Pty Ltd	7 Feb 1978	1 Mar 1980	23 Apr 1981

Displacement, tons: 3,300 standard; 5,700 full load
Dimensions, feet (metres): 417 × 60 × 16 (127 × 18.3 × 4.9)
Main machinery: 2 Mirrless Blackstone KDMRB diesels, 9,600 hp (72 MW); 2 shafts
Speed, knots: 18. **Range, n miles:** 8,000 at 15 kt
Complement: 143 (13 officers)
Military lift: 314 troops (prolonged embarkation); 1,300 tons cargo or 330 lane-metres of vehicles, 70 tons capacity derrick; 2—4.25 ton cranes; 2 LCVP; 2 LCM 8

Guns: 2—12.7 mm MGs. 2 Mini Typhoon 12.7 mm guns. 2 Mini Typhoon 25 mm guns.
Radars: Surface search: Kelvin Hughes Type 1006; I-band. Navigation: Kelvin Hughes 1007; I-band.
Helicopters: Platform for one Sea King. Second Chinook capable spot on forward flight deck (clear of cargo).
Structure: The design is an update of the British Sir Bedivere class and provides facilities for the operation of helicopters, landing craft, amphibians for ship-to-shore movement. A special feature is the ship's heavy lift derrick system for handling heavy loads. Able to embark a squadron of M1A1 tanks plus a number of wheeled vehicles and artillery in addition to its troop lift. Bow and stern ramps are fitted. Two LCM 8 carried on deck and two LCVPs at davits.
Operational: A basic communications fit enables participation in amphibious operations but not in command role. Based at Sydney. To be replaced in 2012



TOBRUK

3/2007, Chris Sattler / 1167905



TOBRUK

6/2008, Chris Sattler / 133551

6 LANDING CRAFT (HEAVY) (LCH/LSM)

Name	No	Builders	Commissioned
BALIKPAPAN	L 126	Walkers Ltd, Queensland	8 Dec 1971
BRUNEI	L 127	Walkers Ltd, Queensland	5 Jan 1973
LABUAN	L 128	Walkers Ltd, Queensland	9 Mar 1973
TARAKAN	L 129	Walkers Ltd, Queensland	15 June 1973
WEWAK	L 130	Walkers Ltd, Queensland	10 Aug 1973
BETANO	L 133	Walkers Ltd, Queensland	8 Feb 1974

Displacement, tons: 358 light; 509 full load
Dimensions, feet (metres): 146 × 33 × 6.5 (44.5 × 10.1 × 2)
Main machinery: 2 Caterpillar 3406E diesels; 442 hp (330 kW) sustained; 2 shafts
Speed, knots: 10. **Range, n miles:** 3,000 at 10 kt
Complement: 16 (2 officers)
Military lift: 2 M1A1
Guns: 2—12.7 mm MGs.
Radars: Navigation: Racal Decca Bridgmaster; I-band

Comment: Originally this class was ordered for the Army but only *Balikpapan* saw Army service until being commissioned into the Navy on 27 September 1974. The remainder were built for the Navy. *Balikpapan* and *Betano* based at Darwin. The remainder are based at Cairns. All have been given a life extension refit, which started with *Wewak* in 2000, and completed with *Brunel* in 2002. All were re-engined with Caterpillar diesels 2005–07. *Buna* and *Salamaua* transferred to Papua New Guinea Defence Force in November 1974.



TARAKAN

8/2008, Chris Sattler / 1335076

4 LANDING CRAFT (LIGHT) (LCVP)

T-47
Displacement, tons: 6.5 full load
Dimensions, feet (metres): 43.3 × 11.5 × 2.3 (13.2 × 3.5 × 0.7)
Main machinery: 2 Volvo Penta Sterndrives; 400 hp(m) (294 kW)
Speed, knots: 22; 15 (fully laden)
Complement: 3
Military lift: 4.5 tons cargo or 1 Land Rover or 36 troops

Comment: Prototype built by Geraldton, Western Australia. Trials conducted in late 1992. Three more delivered in July 1993. Two for *Tobruk*, one for *Success* and one spare attached to Defence Maritime Services at Garden Island, Sydney.



T5

8/1999, van Ginderen Collection / 0104188

0 + 2 CANBERRA CLASS (AMPHIBIOUS ASSAULT SHIPS) (LHD)

Name	Builders	Laid down	Launched	Commissioned
CANBERRA	Navantia, Ferrol/Tenix, Williamstown	2009	2011	2013
ADELAIDE	Navantia, Ferrol/Tenix, Williamstown	2010	2012	2014

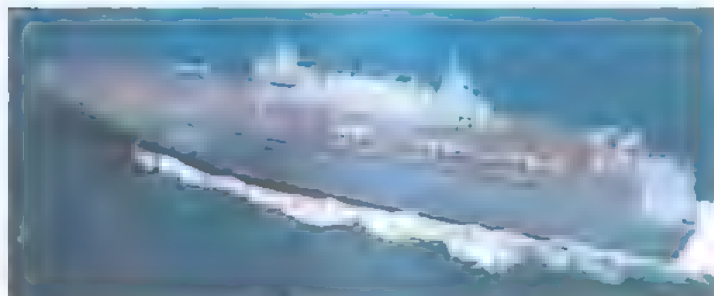
Displacement, tons: 25,790 full load
Dimensions, feet (metres): 757.2 × 105.0 × 19.7 (230.8 × 32.0 × 6.0)
Flight deck, feet (metres): 663.9 × 105.0 (202.3 × 32.0)
Main machinery: Diesel-electric; 4 diesels, 35,000 hp (26 MW), 2 podded propulsors
Speed, knots: 19
Range, n miles: 9,000 at 15 kt
Complement: 243 (plus 978 embarked forces)
Guns: To be announced
Countermeasures: To be announced
Combat data systems: To be announced

Helicopters: Landing spots for 6 NH90 TTH or S-70 Blackhawk or Eurocopter Tiger ARH

Programmes: Tenix/Navantia announced on 20 June 2007 as the preferred tenderer for Project 2048, the procurement of two helicopter-capable assault ships. A contract for the design and build of the ships was signed on 9 October 2007. The design of the ships is based on the Navantia Strategic Projection Ship under construction for the Spanish Navy. It is planned that the ships' hulls from keel to flight deck are to be built at Ferrol, Spain. Once built, they are to be transported to Tenix's Williamstown shipyard in Melbourne where the locally built superstructure will be joined to the hull. *Canberra* is planned to arrive in Australia in 2011 and *Adelaide* in 2013. The majority of combat system design and integration work is to take place at Adelaide.

Structure: The hanger (1,000 m³) is to be capable of accommodating 11 NH90s. Below the hanger, there is to be a 2,000 m³ 'garage' to accommodate 150 vehicles (including main battle tanks), provisions or containers. The landing dock (69.3 × 16 m) is to be capable of operating four LCM-8 landing craft or at least one landing craft air cushion. Medical facilities will include operating rooms, intensive care unit and sick bay. The 'ski jump' dock is also suitable for launching fixed-wing UAVs and will also enable cross-decking of STOVL aircraft operated by allies.

Operational: The principal roles are amphibious, strategic projection of land forces and disaster relief. The ships are to replace the capabilities of *Tabruk* and *Kenimble* of *Manoora*.



LHD 8/2007, TENIX MARINE / 1167951

PATROL FORCES**14 ARMIDALE CLASS (PATROL CRAFT) (PB)**

Name	No	Builders	Commissioned
ARMIDALE	63	Austal Ships, Fremantle	24 June 2005
LARRAKIA	64	Austal Ships, Fremantle	10 Feb 2006
BATHURST	65	Austal Ships, Fremantle	10 Feb 2006
ALBANY	66	Austal Ships, Fremantle	15 July 2006
PIRIE	67	Austal Ships, Fremantle	29 July 2006
MAITLAND	68	Austal Ships, Fremantle	29 Sep 2006
ARARAT	69	Austal Ships, Fremantle	10 Nov 2006
BROOME	90	Austal Ships, Fremantle	10 Feb 2007
BUNDEBERG	91	Austal Ships, Fremantle	3 Mar 2007
WOLLONGONG	92	Austal Ships, Fremantle	23 June 2007
CHILDERS	93	Austal Ships, Fremantle	10 July 2007
LAUNCESTON	94	Austal Ships, Fremantle	22 Sep 2007
MARYBOROUGH	95	Austal Ships, Fremantle	8 Dec 2007
GLENELG	96	Austal Ships, Fremantle	22 Feb 2008

Displacement, tons: 270
Dimensions, feet (metres): 184.6 × 31.8 × 8.8 (56.8 × 9.7 × 2.7)
Main machinery: 2 MTU 4000 16V diesels; 6,225 hp (4.64 MW); 2 shafts
Speed, knots: 25 **Range, n miles:** 3,000 at 12 kt
Complement: 21
Guns: 1–25 mm Rafael M242 Bushmaster 2 12.7 mm MGs.
Countermeasures: RESM; BAE Systems Prism III; intercept.
Electro-optic systems: Rafael Toplite optronic director.
Radars: Surface search/navigation: Bridgmaster E; E/F/I-band

Comment: Austal Ships in conjunction with Defence Maritime Services (DMS) contracted on 17 December 2003 to supply patrol boats to replace the Fremantle class under Project Sea 1444. The craft are of monohull design and are capable of carrying two RHIBs. DMS is contracted to provide through-life logistics and maintenance support over 15 years. The craft are named after Australian cities and towns. Ten of the craft are based at Darwin, Northern Territory and four at Cairns, Queensland. The ships are operated by 21 crews under a multicrewing regime to maximise operational availability of the hulls.



WOLLONGONG 8/2008, Chris Sattler / 1335615

MINE WARFARE FORCES**6 HUON (GAETA) CLASS (MINEHUNTERS—COASTAL) (MHC)**

Name	No	Builders	Launched	Commissioned
HUON	82	Intermarine/ADI, Newcastle	25 July 1997	15 May 1999
HAWKESBURY	83	ADI, Newcastle	24 Apr 1998	12 Feb 2000
NORMAN	84	ADI, Newcastle	3 May 1999	26 Aug 2000
GASCOYNE	85	ADI, Newcastle	11 Mar 2000	2 June 2001
DIAMANTINA	86	ADI, Newcastle	2 Dec 2000	4 May 2002
YARRA	87	ADI, Newcastle	19 Jan 2002	1 Mar 2003

Displacement, tons: 720 full load
Dimensions, feet (metres): 172 × 32.5 × 9.8 (52.5 × 9.9 × 3.0)
Main machinery: 1 Fincantieri GMT diesel; 1,985 hp(m) (1.46 MW); 1 shaft; LIPS cp prop; 3 Isotta Fraschini 1300 diesels; 1,440 hp(m) (1,058 kW); 3 electrohydraulic motors; 506 hp(m) (372 kW); Riva Calzoni retractable/rotatable APUs
Speed, knots: 14 diesel, 6 APUs
Range, n miles: 1,600 at 12 kt
Complement: 40 (6 officers) plus 9 spare

Guns: 1 MSI DS 308 30 mm/75 650 rds/min to 10 km (5.4 n miles) ant-surface; 3 km (1.6 n miles) anti-aircraft; weight of shell 0.36 kg.

Countermeasures: MCM: 2 Bofors SUTEC Double-Eagle Mk 2 mine disposal vehicles with DAMDIC charges, AD: double Oropesa mechanical sweep and capable of towing the Australian developed Mini-Dyad influence sweep.

Decoys: 2 MEL Aviation Super Barracade, chaff launchers

ESM: AWADI Prism.

Combat data systems: GEC-Marconi Nautis 2M with Link 11 receive only

Weapons control: Radamac 1400N optronic surveillance system.

Radars: Navigation: Kelvin Hughes 1007, I-band

Sonars: GEC-Marconi Type 2093; VDS; VLF-VHF multifunction with five arrays; mine search and classification.

Programmes: The Force Structure Review of May 1991 recommended the acquisition of coastal minehunters of proven design. A contract was signed with Australian Defence Industries (ADI) on 12 August 1994 to build six Intermarine designed Gaeta class derivatives. The hull of the first ship was constructed at Intermarine's Sarzana Shipyard in Italy and arrived in Australia as deck cargo on 31 August 1995 for fitting out in Newcastle, where the remaining five ships were built at ADI's Throsby Basin. Local content for this project was about 69 per cent.

Structure: Monocoque GRP construction. A recompression chamber, one RIB and an inflatable diving boat are carried to support a six-man diving team.

Operational: This class which is named after Australian rivers, is based at HMAS *Waterhen* in Sydney. *Huon* and *Hawkesbury* are tasked on a rotational basis to meet border security requirements.



ALBANY 7/2008, John Mortimer / 1335614

2 MINESWEEPERS AUXILIARY (TUGS) (MSCD/YTB)

BANDICOOT (ex-Grenville VII) Y 298 **WALLAROO (ex-Grenville V) Y 299**

Displacement, tons: 412 full load
Dimensions, feet (metres): 95.8 × 28 × 11.3 (29.6 × 8.5 × 3.4)
Main machinery: 2 Stork Werkspoor diesels; 2,400 hp(m) (1.76 MW); 2 shafts
Speed, knots: 11
Range, n miles: 6,300 at 10 kt
Complement: 10
Radars: Navigation: Furuno 7040D, I-band

Comment: Built in Singapore 1982 and operated by Meritimo (PTE) Ltd. Purchased by the RAN and refurbished prior to delivery 11 August 1990. Used for minesweeping trials towing large AMASS influence and mechanical sweeps. No side scan sonar. Also used as berthing tugs. Bollard pull, 30 tons. Both are expected to decommission in 2010.



BANDICOOT 5/2007, Chris Sattler / 1167900

36 Australia/Mine warfare forces — Survey ships (hydrographic survey)

3 MINESWEEPING DRONES (MSD)

MSD 02-04

Dimensions, feet (metres): 24 × 9.2 × 2 (7.3 × 2.8 × 0.6)
Main machinery: 2 Yamaha outboards, 300 hp(m) (221 kW)
Speed, knots: 45; 8 (sweeping)

Comment: Built by Hamil Haven in 1991-92. Remote-controlled drones. GRP hulls made by Hydrofield. Used for sweeping ahead of the MSA craft. Differential GPS navigation system with Syledis Vega back-up.



MSD 02 10/2007, Royal Australian Navy / 116/888

SURVEY SHIPS (HYDROGRAPHIC SURVEY)

Notes: In addition to the ships listed below, there are three civilian survey capable vessels: *Southern Surveyor*, *Solander* and *Cape Fergusson*. The Australian Antarctic Division also lease-operates the Antarctic supply ship *Aurora Australis*. This ship commenced operations in the Antarctic in 1990, is capable of carrying 70 scientists and is fitted with a helicopter hanger.



AURORA AUSTRALIS 4/2007, Bob Fildes / 116/889

2 LEEUWIN CLASS (AGS)

Name	No	Builders	Launched	Commissioned
LEEUWIN	A 245	NQEA, Cairns	19 July 1997	27 May 2000
MELVILLE	A 246	NQEA, Cairns	23 June 1998	27 May 2000

Displacement, tons: 2,170 full load
Dimensions, feet (metres): 233.6 × 49.9 × 14.1 (71.2 × 15.2 × 4.3)
Main machinery: Diesel-electric; 4 GEC Alsthom 6RK 215 diesel generators, 4,290 hp (3.2 MW) sustained; 2 Alsthom motors, 1.94 MW; 2 shafts; 1 Schottel bow thruster
Speed, knots: 14
Range, n miles: 18,000 at 9 kt
Complement: 56 (10 officers) plus 5 trainees
Radars: Navigation: STN Atlas 9600 ARPA; I-band.
Sonars: C-Tech CMAS 36/39; hull mounted; high frequency active

Helicopters: 1 AS 350B (not permanently embarked)

Comment: Contract awarded 2 April 1996 to North Queensland Engineers & Agents (NQEA). Fitted with Atlas Fansweep-20 multibeam echo sounder and one Atlas Hydrographic Deso single beam echo sounder. Also fitted with Klein 2000 towed lightweight sidescan sonar. The ships are capable of various small boat configurations utilising the three SMB davits. The ships are also fitted with an additional RHIB and two light utility boats. Based at Cairns.



MELVILLE 11/2003, John Mortimer / 0568143

4 PALUMA CLASS (AGSC)

Name	No	Builders	Commissioned
PALUMA	A 01	Eglo, Adelaide	27 Feb 1989
MERMAID	A 02	Eglo, Adelaide	4 Dec 1989
SHEPPARTON	A 03	Eglo, Adelaide	24 Jan 1990
BENALLA	A 04	Eglo, Adelaide	20 Mar 1990

Displacement, tons: 320 full load
Dimensions, feet (metres): 118.9 × 42.0 × 8.6 (36.6 × 12.8 × 2.65)
Main machinery: 2 Detroit 12V-92TA diesels; 1,100 hp (820 kW) sustained; 2 shafts
Speed, knots: 11
Range, n miles: 3,600 at 11 kt
Complement: 14 (3 officers)
Radars: Navigation: Kelvin Hughes 1007; I band.
Sonars: Skipper S113, hull-mounted, active, high frequency.

Comment: Catamaran design based on Prince class ro-ro passenger ferries. Steel hulls and aluminium superstructure. Contract signed in November 1987. Fitted with two ELAC LAX 4700 dual-frequency echo sounders and Knudsen 320B high frequency hull-mounted side-scan sonar. The ships are to be upgraded to multibeam echo-sounder systems 2008-10. All ships based at Cairns and normally operate in pairs when undertaking survey operations.



MERMAID 7/2008, John Mortimer / 1335613

9 SURVEY MOTOR BOATS (YGS)

FANTOME 1005	TOM THUMB 1009	CASUARINA 1012
MEDA 1006	JOHN GOWLLAND 1010	CONDER 1021
DUYFKEN 1008	GEOGRAPHE 1011	WYATT EARP ASV 01

Dimensions, feet (metres): 35.1 × 9.5 × 5.6 (10.7 × 2.9 × 1.7)
Main machinery: 2 Volvo Penta AOAD-41A diesel stern drives; 400 hp(m) (294 kW), 2 props
Speed, knots: 24
Range, n miles: 300 at 12 kt
Complement: 4 (1 officer)
Radars: Navigation: JRC; I-band.

Comment: Six Survey Motor Boats (SMB) built by Pro Marine, Victoria 1992-1993. Two additional SMBs (CAS and GEO) were built in 1997 to supplement the Leeuwin-class AGS. One SMB has been taken out of service. The remaining seven SMBs are fitted with an Atlas Hydrographic Fansweep 20 multibeam echo sounder and Atlas Hydrographic Deso 15 single beam echo sounder. Three SMBs are fitted for the Klein 2000 towed lightweight side scan sonar. SMB Conder built by North Queensland Engineers and Agents in 2003 as a prototype replacement SMB is fitted with an Atlas Hydrographic Fansweep 20 multibeam echo sounder and Atlas Hydrographic Deso 15 single beam echo sounder. Six SMBs are allocated to the Leeuwin class AGS in Cairns and two to the hydrographic school at HMAS Penguin. The Antarctic Survey Vessel (ASV) Wyatt Earp, a 9 m craft purpose built by Pro Marine, Victoria in 1992 for operations in the Antarctic. ASV Wyatt Earp is allocated to the Deployable Geospatial Support Team (DGST 1) in Wollongong and is fitted with ODOM Hydrotrac single beam echo sounder. The ASV is also fitted for a C-MAX CM2 towed lightweight side scan sonar or JW Fishers, Proton 4 marine magnetometer.



TOM THUMB 8/2008, Chris Settler / 1335612

DEEP SUBMERGENCE VEHICLES

1 RESCUE SUBMERSIBLE (DSRV)

REMORA

Displacement, tons: 16.5
Dimensions, feet (metres): 19.7 × 7.9 × 13.4 (with skirt); 7.9 (without skirt)
 (6.0 × 2.4 × 4.1; 2.4)
Main machinery: 2 electric motors, 150 hp (112 kW), 4 axial thrusters, 4 vertical thrusters, 2 transverse thrusters
Speed, knots: 3 (dived)
Complement: 1 operator and 6 survivors

Comment: Manufactured in 1985 by Can Dive Marine Services, Canada for Australian Submarine Corporation and subsequently in 2001 wholly owned by the RAN, *Remora* is operated and maintained (at 12 h notice) by a contractor. Capable of operating to depths in excess of 500 m in a current of 3 kt, it can evacuate six personnel at a time and transfer them under pressure of up to 5 Bar directly to two 36-man decompression chambers for medical and hyperbaric treatment. A Remotely Operated Vehicle (ROV), *Remora* is flown and powered from the surface giving it unlimited endurance (emergency life support onboard is 240 man-hours). It is launchable from a craft of opportunity in up to Sea State 5 using a Launch And Recovery System (LARS) that is part of the deployable suite. The skirt on the vehicle can be remotely manipulated to achieve mating angles up to 60°.

Communications are by fibre-optic cable. The entire suite of *Remora*, LARS and all associated equipment can be fitted into ISO containers to facilitate rapid worldwide deployment. The USN replacement system, SRDRS, is based on the *Remora* system. Following an accident on 5 December 2006, the DSRV was stranded on the seabed until it was recovered on 24 April 2007. However, safety certification for the system had not been obtained by early 2008 and alternative options are under consideration.



REMORA 6/2002, K Bristow, RAN / 0528408



YOUNG ENDEAVOUR 5/2007, Chris Sattler / 1167902

1 SAIL TRAINING SHIP (AXS)

SALTHORSE

Displacement, tons: 32 full load
Dimensions, feet (metres): 65.0 × 16.7 × 7.6 (19.8 × 5.1 × 2.3)
Main machinery: 2 Ford Lehman diesel; 120 hp (89 kW)
Speed, knots: 8
Range, n miles: 1,400 at 6 kt
Complement: 1 JRC JMA-2253, I-band

Comment: Ketch with steel hull and aluminium masts. Acquired in 1999 for officer training at HMAS *Creswell*.



SALTHORSE 6/2002, Royal Australian Navy / 0528411

1 TRAINING SHIP (AXL)

Name	Builders	Launched
SEAHORSE MERCATOR	Tenix Shipbuilding, Henderson WA	15 Oct 1998

Displacement, tons: 165 full load.
Dimensions, feet (metres): 103.3 × 26.9 × 7.9 (31.5 × 8.2 × 2.4)
Main machinery: 2 Caterpillar 3412 diesels; 2 shafts
Speed, knots: 16
Range, n miles: 2,700 at 10 kt
Complement: 8 plus 18 trainees

Comment: Operated by Defence Maritime Services as a Navigation training ship based at Sydney. Similar to Pacific class patrol craft.



SEAHORSE MERCATOR 11/2008*, Chris Sattler / 1335634

TRAINING SHIPS

Notes: In addition to *Young Endeavour* (navy operated) and *Salthorse* there are five Fleet class yachts. Of 36.1 ft (11 m). GRP yachts named *Charlotte of Carberus*, *Friendship of Leeuwin*, *Scarborough of Carberus*, *Lady Penrhyn of Nirimba* and *Alexander of Creswell*. The names are a combination of Australia's first colonising fleet and the training base to which each yacht is allocated.

1 SAIL TRAINING SHIP (AXS)

Name	Builders	Launched	Commissioned
YOUNG ENDEAVOUR	Brooke Yachts, Lowestoft	2 June 1987	25 Jan 1988

Displacement, tons: 239 full load
Dimensions, feet (metres): 144 × 26 × 13 (44 × 7.8 × 4)
Main machinery: 2 Perkins V8 diesels, 334 hp (294 kW); 2 shafts
Speed, knots: 14 sail; 10 diesel
Range, n miles: 2,500 at 7 kt
Complement: 33 (9 RAN, 24 youth)

Comment: Built to Lloyds 100 AI LMC yacht classification by Brooke Yachts, Lowestoft. Sail area 707.1 m². Presented to Australia by UK Government as a bicentennial gift. Operated by RAN on behalf of the Young Endeavour Youth Scheme

AUXILIARIES

Notes: (1) Only *Sirius* and *Success* are navy operated. The rest have been contracted to the Defence Maritime Services. These craft have blue hulls and buff superstructures, and are chartered as required.

(2) In addition to the vessels listed there are some 24 workboats (AWB and NWB numbers), a VIP launch *Tresco II* and an admiral's barge *Admiral Hudson*.

1 SIRIUS CLASS (REPLENISHMENT TANKER) (AORH)

Name	No	Builders	Launched	Commissioned
SIRIUS (ex-Delos)	O 268	Hyundai Mipo Dockyard, Korea	12 Apr 2004	16 Sep 2006

Displacement, tons: 46,017 full load
Measurement, tons: 8,585 light
Dimensions, feet (metres): 621.7 x 101.7 x 34.5 (189.5 x 31.0 x 10.5)
Main machinery: 1 Hyundai B&W 6S 50MC diesel; 1 shaft; bow thruster
Speed, knots: 16.5
Range, n miles: 16,000 at 14 kt
Complement: 56 (8 officers)
Cargo capacity: Total volume in excess of 36,000 m³. Dry cargo capacity 240 tonnes
Guns: 5—12.7 mm MGs (Rafael Mini Typhoon 12.7 mm from 2010).
Radars: 2 Sperry Marine Bridgmaster-E; E/F/I-bands.

Helicopter: Platform for day/night operations.

Comment: Acquired as the replacement for the single-hulled *Westralia*, *Sirius* is a double-hulled ship built to Lloyd's standard. Bought new in June 2004 as *MT Delos* and subsequently leased for use as an oil tanker until September 2005. Contract for the conversion of the ship to military use awarded to Tenix Defence on 15 March 2005. The conversion included the addition of a flight deck and RAS equipment. The first RAN ship to carry the name *Sirius*, she is named after the flagship of the First Fleet which arrived in Australia in 1788. To remain in service until 2020.



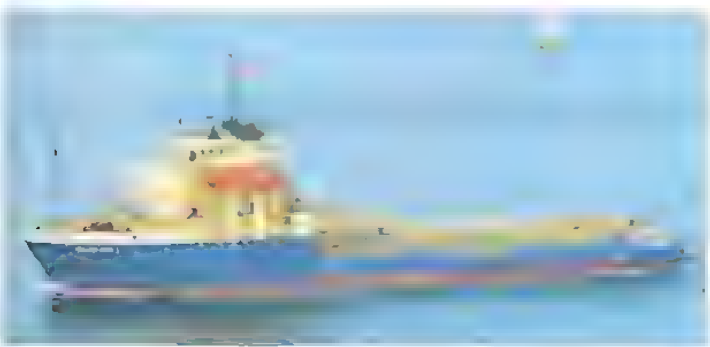
SIRIUS 2/2007, Chris Sattler / 1167803

2 TRIALS AND SAFETY VESSELS (ASR)

Name	Builders	Commissioned
SEAHORSE STANDARD (ex-British Viking)	Marystown Shipyard, Newfoundland	1980
SEAHORSE SPIRIT (ex-British Magnus)	Marystown Shipyard, Newfoundland	1980

Measurement, tons: 2,090 grt; 1,835 dwt
Dimensions, feet (metres): 236.2 x 52.5 x 17.4 (72 x 16 x 5.3)
Main machinery: 2 MLW-ALCO Model 251 V-12 diesels; 5,480 hp(m) (4.03 MW); 1 shaft; cp prop; 2 stern and 2 bow thrusters
Speed, knots: 9
Complement: 20 plus 44 spare

Comment: Acquired 2 December 1998 by Defence Maritime Services to support RAN trials in Western and Southern Australian waters. Dynamic Positioning system. These ships are also used for weapon recovery and can embark the 'Remora' submarine rescue suite.



SEAHORSE SPIRIT 8/2008, Chris Sattler / 1139537

1 TRIALS AND SAFETY VESSEL (ASR)

Name	No	Builders	Commissioned
SEAHORSE HORIZON (ex-Protector, ex-Blue, Nabilla, ex-Osprey)	—(ex-ASR 241)	Stirling Marine Services, WA	1984

Displacement, tons: 670 full load
Dimensions, feet (metres): 140.1 x 31.2 x 9.8 (42.7 x 9.5 x 3)
Main machinery: 2 Detroit 12V-92TA diesels; 2,440 hp (1.82 MW) sustained; 2 Herdial cp props
Speed, knots: 11.5
Range, n miles: 10,000 at 11 kt
Complement: 6 civilian or 9 navy (for training)
Radars: Navigation: JRC 310; I-band. Decca RM 970BT, I-band.
Sonars: Klein; side scan; high frequency.

Helicopters: Platform for 1 light.

Comment: A former National Safety Council of Australia vessel commissioned into the Navy in November 1990. Used to support contractor's sea trials of the Collins class submarines, and for mine warfare trials and diving operations. LIPS dynamic positioning, two ROVs and a recompression chamber. Helicopter deck and a submersible were removed in 1992. Based at Jarvis Bay. Decommissioned in early 1998 and run as part of the commercial support programme. Also used for junior officer training.



SEAHORSE HORIZON 10/2006, Chris Sattler / 1164767

3 FISH CLASS (TORPEDO RECOVERY VESSELS) (YPT)

TUNAR TRV 801	TREVALLY TRV 802	TAILOR TRV 803
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Displacement, tons: 91.6 full load
Dimensions, feet (metres): 88.5 x 20.9 x 4.5 (27 x 6.4 x 1.4)
Main machinery: 3 GM diesels, 890 hp (664 kW); 3 shafts
Speed, knots: 13
Complement: 9
Radars: Navigation: I-band.

Comment: All built at Williamstown completed between January 1970 and April 1971. Can transport eight torpedoes. Based at Jarvis Bay, Sydney and Fleet Base West respectively. Run as part of the commercial support programme from 1997. Blue hulls and buff superstructures.



TREVALLY 5/2006, Bob Fildes / 1158952

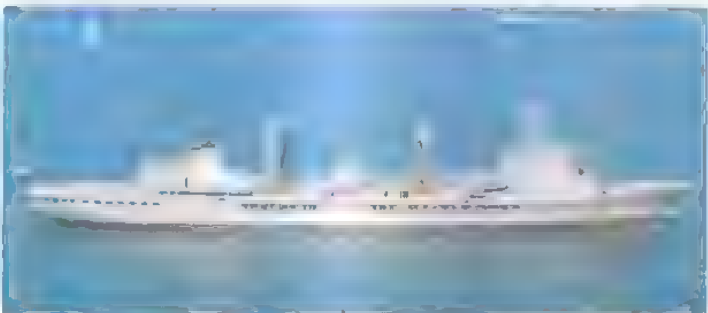
1 DURANCE CLASS (UNDERWAY REPLENISHMENT TANKER) (AORH)

Name	No	Builders	Laid down	Launched	Commissioned
SUCCESS	OR 304	Cockatoo Dockyard, Sydney	9 Aug 1980	3 Mar 1984	19 Feb 1986

Displacement, tons: 17,933 full load
Dimensions, feet (metres): 515.7 x 69.5 x 30.6 (157.2 x 21.2 x 8.6)
Main machinery: 2 SEMT Pielstick 16 PC2.5 V 400 diesels; 20,800 hp(m) (15.3 MW) sustained; 2 shafts; LIPS cp props
Speed, knots: 20
Range, n miles: 8,616 at 15 kt
Complement: 237 (25 officers)
Cargo capacity: 10,200 tons; 8,707 diesel, 975 Avcat; 116 distilled water; 57 victuals; 250 munitions including SM1 missiles and Mk 46 torpedoes; 95 naval stores and spares
Guns: 1 Vulcan Phalanx Mk 15 CIWS 7—12.7 mm MGs. Rafael Mini Typhoon 12.7 mm guns from 2010
Radars: Navigation: 2 Kelvin Hughes Type 1006, I-band

Helicopters: 1 AS 350B Squirrel, Sea King or Seahawk.

Comment: Based on French Durance class design. Replenishment at sea from four beam positions (two having heavy transfer capability) and vertrep. One LCVP is carried on the starboard side aft. Hanger modified to take Sea Kings. Phalanx gun fitted aft in 1997. The ship is to be replaced in about 2015.



SUCCESS 4/2008, Chris Sattler / 1139533

4 SELF-PROPELLED LIGHTERS (WFL/AOTL)

WARRIGAL 333 (ex-WFL 8001) **WOMBAT** 332 (ex-WFL 8003)
WALLABY 331 (ex-WFL 8002) **WYULDA** 334 (ex-WFL 8004)

Displacement, tons: 265 light; 1,206 full load
Dimensions, feet (metres): 124.6 × 33.5 × 12.5 (38 × 10.2 × 3.8)
Main machinery: 2 Harbourmaster outdrives (1 fwd, 1 aft)
Speed, knots: 8
Cargo capacity: 560 tons diesel and 200 tons water

Comment: First three were laid down at Williamstown in 1978. The fourth, for HMAS *Stirling*, was ordered in 1981 from Williamstown Dockyard. Used for water/fuel transport. Steel hulls with twin, swivelling, outboard propellers. *Warrigal* at Darwin; *Wombat* and *Wallaby* at Fleet Base East, *Wyulda* at Fleet Base West.



WALLABY 9/2007, Chris Sattler / 1167895

3 WATTLE CLASS STORES LIGHTERS (YE)

WATTLE CSL 01 **BORONIA** CSL 02 **TELOPEA** CSL 03

Displacement, tons: 147 full load
Dimensions, feet (metres): 79.4 × 32.8 × 5.4 (24.2 × 10.0 × 1.66)
Main machinery: 2 Caterpillar D333C diesels; 600 hp (447 kW)
Speed, knots: 8
Range, n miles: 320 at 8 kt
Radars: Navigation: 1 JRC JMA-2253; I-band.

Comment: Built by Cockatoo DY, Sydney and delivered in 1972. Employed to transport ammunition and stores. Equipped with 3-ton electric crane. CSL 02 and 03 based at Sydney and CSL 01 at Darwin.



TELOPEA 10/2006, Chris Sattler / 1164784

4 DIVING TENDERS (YDT/PB)

SEAL 2001 **MALU BAIZAM** 2003 **SHARK** 2004 **DUGONG** 21689

Displacement, tons: 22 full load
Dimensions, feet (metres): 65.5 × 18.5 × 4.6 (20 × 5.6 × 1.4)
Main machinery: 2 MTU 8V 183 diesels, 2 shafts
Speed, knots: 26
Range, n miles: 450 at 20 kt
Complement: 6 plus 16 divers

Comment: Built by Geraldton Boat Builders, Western Australia and completed in August 1993. Carry 2 tons of diving equipment to support 24 hour diving operations in depths of 54 m. *Shark* based at *Stirling*, *Seal* at *Waterhen* and *Dugong* at Sydney, *Malu Baizam* is based at Thursday Island in the Torres Strait and is navy manned. *Porpoise* grounded in 1995 and was assessed as being beyond economical repair. Replacement built in 1996. Run as part of the commercial support operation from 1997. Sister craft *Coral Snake* and *Red Viper* are operated by the Army



SEAL 3/2007, John Mortimer / 1335631

TUGS

Notes: In addition the two MSCD are used as tugs. Details under Mine Warfare Forces.

7 HARBOUR TUGS (YTL)

TAMMAR DT 2601 **BRONZEWING** HTS 501 (152) **MOLLYMAWK** HTS 504 (154)
QUOKKA DT 1801 **CURRAWONG** HTS 502 (153) **SEAHORSE** CHUDITCH
SEAHORSE QUENDA

Comment: *Tammar* has a bollard pull of 35 tons and is based at *Stirling*; *Quokka* bollard pull 8 tons, is based at Darwin. The three HTS vessels have a bollard pull of 5 tons. Run as part of the commercial support programme from 1997. *Seahorse Chuditch* and *Seahorse Quenda* were built in Malaysia and delivered in 2003. 23 m long they have a bollard pull of 16 tons.



CURRAWONG 8/2006, Chris Sattler / 1335630



QUOKKA 8/2006, Chris Sattler / 1335679

ARMY

Notes: (1) Operated by Royal Australian Army Corps of Transport. Personnel: About 300 as required
 (2) In addition to the craft listed below there are 159 assault boats 16.4 ft (5 m) in length and capable of 30 kt. Can carry 12 troops or 1,200 kg of equipment. Also there are 12 ex-US Army LARC-V amphibious wheeled lighters can operate with *Manoora* and *Kanimba* and have limited capability cooperate with *Tabrak* and LCHs. They will be able to operate with LHDs.
 (3) All LCM are to be replaced in about 2016 by new amphibious watercraft (JP 2048)

6 AMPHIBIOUS WATERCRAFT (LCM)

AB 2000–2005

Displacement, tons: 135 full load
Dimensions, feet (metres): 83.3 × 24.9 × 3.3 (25.4 × 7.6 × 1.0)
Main machinery: 2 Detroit 6062 diesels; 2 Doan waterjets
Speed, knots: 11
Range, n miles: 720 at 10 kt
Complement: 5
Guns: 2–12.7 mm MGs

Comment: Contract signed with ADI in June 2002 to provide watercraft to operate in conjunction with the LPAs. Two carried by each ship. Of aluminium construction, they have through-deck, roll-on/roll-off design and bow and stern ramps. With 65 tonne cargo capacity, the craft can carry five armoured vehicles



AB 2000 12/2004, Bob Fildes / 1153864

40 Australia/Army – Non-naval patrol craft

14 LCM 8 CLASS

AB 1050-1051, 1053, 1056, 1058-1067

Displacement, tons: 107 full load
Dimensions, feet (metres): 73.5 x 21 x 5.2 (22.4 x 6.4 x 1.6)
Main machinery: 2 8V92GM diesels; 720 hp (547 kW), 2 shafts
Speed, knots: 11
Range, n miles: 290 at 10 kt
Complement: 4
Military lift: 55 tons
Guns: 2—12.7 mm MGs.

Comment: Built by North Queensland Engineers, Cairns and Dillinghams, Fremantle to US design. Based at Townsville and Darwin. AB 1057 transferred to Tonga 1982, AB 1052 and AB 1054 sold to civilian use in 1992. All upgraded to Mod 2 standard by late 1999 with new engines and with endurance increased



AB 1056

10/2002, John Mortimer / 0528389

2 SAFCOL CRAFT

CORAL SNAKE AM 1353 RED VIPER

Displacement, tons: 22 full load
Dimensions, feet (metres): 65.5 x 20.0 x 4.6 (20 x 6.1 x 1.4)
Main machinery: 2 General Motors Detroit 8V92 diesels; 1,800 hp (1.34 MW)
Speed, knots: 28
Range, n miles: 350 at 25 kt
Complement: 3

Comment: Sister to Seal class built at Geraldton Boat Builders. Coral Snake delivered in 1994 and Red Viper in 1996. Used as Special Action Forces Craft Offshore Large (SAFCOL) to support dives and transport of stores and personnel



RED VIPER

7/2007, Mick Prendergast / 1167934

9 EXPRESS SHARK CAT CLASS (PB)

AM 237-244 AM 428

Comment: Built by NoosaCat, Queensland and delivered by 1995. Trailer transportable. Similar craft in service with Navy and Police. Multihulls 30.8 ft (9.4 m) in length overall with twin Johnson outboards; 450 hp (336 kW) total power output, giving 40 kt maximum speed



AM 243

11/1997, van Ginderen Collection / 0012946

NON-NAVAL PATROL CRAFT

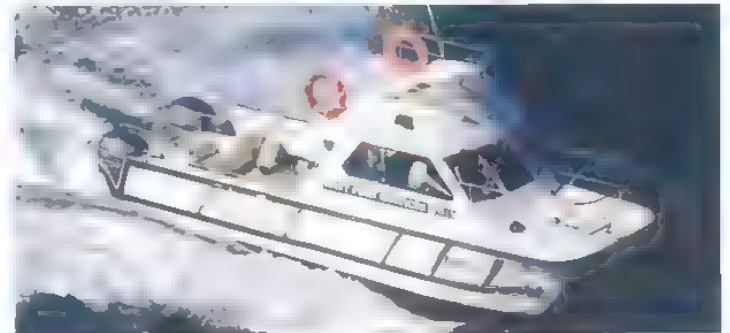
Notes: (1) In addition to the commercial support craft already listed, various State and Federal agencies, including some fishery departments, have built offshore patrol craft up to 25 m and 26 kt.
 (2) Cocos Island patrol carried out by Sir Zelman Cowan of 47.9 x 14 ft (14.6 x 4.3 m), with two Cummins diesels; 20 kt, range 400 n miles at 17 kt, complement 13 (3 officers) Operated by West Australian Department of Harbours and Lights.
 (3) All previously listed RAAF craft have been sold for civilian use

4 SHARK CAT 800 CLASS (WORKBOATS) (YFL)

0801-0803 0805

Displacement, tons: 13.7 full load
Dimensions, feet (metres): 27.4 x 9.2 x 3.3 (8.35 x 2.8 x 1.0)
Main machinery: 2 Mercury outboard engines
Speed, knots: 30
Complement: 1 plus 11 passengers

Comment: Built by Shark Cat, Noosaville, Queensland and delivered in 1980s. GRP construction. Used for target-towing, naval police and range clearance duties. 0801 and 0802 based at Fleet Base East; 0803 and 0805 at HMAS Creswell



SHARK CAT 0801

9/2006, Chris Sattler / 1164782

4 NOOSACAT 930 WORKBOATS (YFL)

0901-0904

Dimensions, feet (metres): 30.5 x 11.5 x 2.3 (9.3 x 3.5 x 0.7)
Main machinery: 2 Volvo Penta A0Q41DP diesels; 2 props
Speed, knots: 30 **Range, n miles:** 240 at 20 kt

Comment: Built by Noosacat, Queensland and delivered in 1994. GRP hulled craft for general purpose stores and personnel transport. 0903 and 0904 based at Sydney, 0902 at HMAS Creswell and 0901 at HMAS Cerberus.



NOOSACAT 0904

6/2002, Royal Australian Navy / 0678412

10 STEBER CLASS WORKBOATS (YFL/YDT)

BUNDEENA NGPWB 01	ETHEL JOY NGPWB 05	BILGOLA NGPWB 08
ELOUERA NGPWB 02	RELIANCE NGPWB 06	SEA WITCH NGPWB 09
SHOALHAVEN NGPWB 03	PATONGA NGPWB 07	BRUTUS NGPWB 10
SEA DRAGON NGPWB 04		

Displacement, tons: 13.7 full load
Dimensions, feet (metres): 43.3 x 15.4 x 4.4 (13.2 x 4.7 x 1.3)
Main machinery: 2 diesels (01-06), 1 diesel (07-10)
Speed, knots: 25 (01-06), 20 (07-10)

Comment: Built by Steber craft and delivered in 1997. GRP hulled craft for general purpose stores and personnel transport and for use as diving tenders. Most have radars 01, 02, 07 and 08 based at Sydney, 03 at HMAS Creswell, 04 and 09 at Fleet Base West and 06 at HMAS Cerberus.



ELOUERA

3/2008, Chris Sattler / 1335678

CUSTOMS

Notes: (1) Surface Vessels: The Australian Customs Service (ACS) has initiated a study of a replacement vessel for the Bay class.

(2) Aircraft: The ACS manages its civil aerial surveillance programme through commercial contracts with Surveillance Australia (fixed wing), Australian Helicopters (Torres Strait) and Helicopters Australia (Gove). The new fixed wing aircraft fleet consists of six De Havilland Dash 8-202 and four Dash 8-315 equipped with radar, IR and EO sensors. These aircraft are either new or have been upgraded under Project Sentinel which provided the Dash 8 with new electro-optics and the Raytheon 2022 SAR/ISAR radar, as well as an integrated information management system and a range of other electronic sensors. The aircraft are based in Broome (WA), Darwin (NT), Horn Island (QLD - Torres Strait), Weipa (QLD) and Cairns (QLD). The ACS helicopter surveillance fleet consists of a Bell 412 and an AS350 Squirrel (Australian Helicopters) which are both based in the Torres Strait. A Eurocopter-145 helicopter is based in Gove (NT) in a rapid response and surveillance role.



DASH 8-200 6/2005, Massimo Anneti / 1153871

8 BAY CLASS (PB)

ROEBUCK BAY ACV 10	HERVEY BAY ACV 40	DAME ROMA MITCHELL ACV 70
HOLDFAST BAY ACV 20	CORIO BAY ACV 50	STORM BAY ACV 80
BOTANY BAY ACV 30	ARNHEM BAY ACV 50	

Displacement, tons: 134
Dimensions, feet (metres): 125.3 x 23.6 x 7.9 (38.2 x 7.2 x 2.4)
Main machinery: 2 MTU 16V 2000M 70 diesels, 2,856 hp(m) (2.1 MW) sustained; 2 shafts.
 1 Vosper Thornycroft bow thruster
Speed, knots: 24
Range, n miles: 1,000 at 20 kt
Complement: 12
Radars: Surface search: Racal Decca; E/F and I band.
Sonars: Wesmar SS 390E dipping sonar

Comment: Built by Austal Ships and delivered from February 1999 to August 2000. The craft carry two RIBs capable of 35 kt.



CORIO BAY 7/2008*, John Mortimer / 1335677

1 OFFSHORE PATROL VESSEL (PSO)

Name	Builders	Commissioned
OCEANIC VIKING	Flekkefjord Slip & Maskinfabrik AS, Norway	1996

Displacement, tons: 12,698 full load
Measurement, tons: 9,075 grt
Dimensions, feet (metres): 346.4 x 72.2 x 22.3 (105.6 x 22.0 x 6.8)
Main machinery: 2 Wärtsilä 12V 28 B diesels; 10,770 hp (7.9 MW). 2 shafts; bow and stern thrusters; bow and midships azimuth propellers
Speed, knots: 18
Range, n miles: 33,800 at 12 kt
Complement: 20 plus 35 government officials
Guns: 2 - 12.7 mm MGs.
Radars: Surface search, Kelvin Hughes 6000R2/S-U; E/F band.
Navigation: Kelvin Hughes 6000A/1/6-U; I-band.

Comment: Originally built as a cable-laying vessel. Chartered by the Customs Service to conduct patrols in the Southern Ocean particularly in the vicinity of Australian waters surrounding Heard Island and McDonald Islands. Also available for general border protection tasks. Usually carries fisheries officers and an armed boarding party. Equipped with infra-red camera for low-light and night vision. Carries three high-speed craft for boarding, interception and surveillance.



OCEANIC VIKING 1/2007, ACS / 1167437

1 OFFSHORE PATROL VESSEL (PSOH)

Name	Builders	Commissioned
TRITON	Vosper Thornycroft, Woolston	Sep 2000

Displacement, tons: 1,100 full load
Measurement, tons: 2,236 grt
Dimensions, feet (metres): 323.8 x 73.8 x 10.5 (98.7 x 22.5 x 3.2)
Main machinery: Diesel-electric; 2 Paxman 12V 185 diesel generators; 5,364 hp (4 MW); 1 HMA motor; 4,700 hp (3.5 MW); 1 shaft (centreline); 2 HMA motors, 938 hp (700 kW); 2 Schottel propulsors (outer hulls)
Speed, knots: 20; 8 (outer propulsors)
Range, n miles: 17,000 at 10 kt
Complement: 14 plus 30 government officials
Guns: 2 - 12.7 mm MGs
Radars: Surface search/navigation: Grumman Sperry Marine Bridgemaster E, E/F/I bands

Helicopters: Platform for 1 medium

Comment: Originally built as trimaran hull demonstrator vessel for the UK MoD research agency. Following five years of trials, sold to Gardline Shipping in 2005 and thereafter acted as a hydrographic survey vessel for the UK Maritime and Coast Guard Agency. Contracted in early 2007 by the Australian Customs Service to act as an offshore patrol vessel in northern waters from Broome, West Australia, to Cairns, Queensland. It carries two 7 m high-speed interception craft.



TRITON 12/2006, Gardline Shipping Ltd / 1167431

1 OFFSHORE PATROL VESSEL (PBO)

ASHMORE GUARDIAN ACV 110

Measurement, tons: 339 grt
Dimensions, feet (metres): 114.5 x 26.2 x 7 (34.9 x 8.0 x 2)
Main machinery: 2 diesels; 2 shafts
Speed, knots: 10
Complement: 6 plus 10 government officials
Radars: Surface search/navigation. To be announced.

Comment: Modified commercial fleet support ship chartered by Border Defence Command to protect offshore maritime areas off north-western Australia. Priority tasks are environmental protection and the prevention of illegal fishing and people smuggling. The vessel is stationed at the Ashmore Reef National Nature Reserve and Cartier Island Marine Reserves. The ship is equipped with two 7 m RHIBs



ASHMORE GUARDIAN 12/2008*, Australian Customs Service / 1335635



Azerbaijan

Country Overview

Formerly part of the USSR, the Republic of Azerbaijan declared its independence in 1991. Situated in the Transcaucasia region of western Asia, the country, which includes the disputed region of Nagorno-Karabakh, has an area of 33,400 square miles and is bordered to the north by Russia and Georgia and to the south with Iran. Armenia to the west includes the

exclave of Nakhichevan. Azerbaijan has a coastline of 398 n miles with the Caspian Sea on which Baku, the capital and largest city, is the principal port. Maritime claims in the Caspian Sea have yet to be resolved. Coast Guard formed in July 1992 with ships transferred from the Russian Caspian Flotilla and Border Guard. Operational control and maintenance was assumed by Russia 1995–99 but since then, the Azari Navy has taken back full responsibility. During 2003 there were

increasing signs of a drive to improve effectiveness, reflecting heightened tensions in the Caspian Sea. US assistance has been granted as part of the Caspian Guard initiative.

Personnel
2009: 2,200

Headquarters Appointments

Commander of Navy:
Rear Adm rai Shahin Sultanov

Bases
Baku

FRIGATES

1 PETYA II (PROJECT 159A) CLASS (FFL)

BAKINETS (ex-SKR 16) G 121

Displacement, tons: 950 standard, 1,180 full load
Dimensions, feet (metres): 268.3 × 29.9 × 9.5 (81.8 × 9.1 × 2.9)
Main machinery: CODAG: 2 gas turbines; 30,000 hp (m) (22 MW); 1 Type 61V-3 diesel; 6,400 hp (m) (3.97 MW) sustained; centre shaft, 3 shafts
Speed, knots: 32
Range, n miles: 4,870 at 10 kt
Complement: 98 (8 officers)

Guns: 4–3 in (76 mm)/69 AK 726 (2 twin); 90 rds/min to 15 km (8 n miles); weight of shell 5.9 kg. 4–30 mm/65 (2 twin) AK 230; 500 rds/min to 5 km (2.7 n miles), weight of shell 0.54 kg
A/S mortars: 2 RBU 6000 12-tubed trainable; range 6,000 m; warhead 31 kg
Mines: Can carry 22
Countermeasures: ESM.

Radars: Air/surface search. Strut Curve; F-band
Navigat on: I-band.

Comment: Probably transferred from the Russian Caspian Flotilla in 1992. The bridge superstructure has been extended aft to provide another deck at 01 level. The removal of the funnel suggests that there may be an underwater exhaust system. There appears not to be a fire-control radar.



BAKINETS

6/2008* / 1335330

PATROL FORCES

1 TURK (AB 25) CLASS (PB)

ARAZ (ex-AB 34) P 223

Displacement, tons: 170 full load
Dimensions, feet (metres): 132 × 21 × 5.5 (40.2 × 6.4 × 1.7)
Main machinery: 4 SACM-AGO V16CSHR diesels; 9,600 hp (m) (706 MW); 2 cruise diesels; 300 hp (m) (220 kW); 2 shafts
Speed, knots: 22
Complement: 31 (3 officers)
Guns: 1 or 2 Bofors 40 mm/70
1 Derlikon 20 mm (if only 1–40 mm fitted). 2 – 12.7 mm MGs.
Depth charges: 1 rack
Radars: Surface search. Racal Decca; I-band

Comment: Ex-AB 34 transferred from Turkey July 2000.



TURK CLASS (Turkish colours)

11/1998, *Selim San* / 005026/

3 PETRUSHKA (UK-3) CLASS (PB/AXL)

P 213–215

Displacement, tons: 335 full load
Dimensions, feet (metres): 129.3 × 27.6 × 7.2 (39.4 × 8.4 × 2.2)
Main machinery: 2 Wole H12 diesels; 756 hp (m) (556 kW); 2 shafts
Speed, knots: 11
Range, n miles: 1,000 at 11 kt
Complement: 13 plus 30

Comment: Built as training ships at Wisla Shipyard, Poland. Probably operated both in the training and patrol ship role.



P 214

7/2008*, *M Globke* / 1335/03

1 LUGA CLASS (PROJECT 888) (PB/AXT)

T 710 (ex-Oka)

Displacement, tons: 1,697 standard; 1,820 full load
Dimensions, feet (metres): 234.3 × 38.1 × 14.8 (77.4 × 11.6 × 4.5)
Main machinery: 2 Zgoda-Sulzer 6TD48 diesels; 2,650 hp(m) (1.95 MW) sustained; 2 shafts, cp props
Speed, knots: 16
Range, n miles: 7,200 at 11 kt
Complement: 56 (24 officers)
Guns: 4 ZU-23-2MR Wrabel 23 mm (2 twin).
Radars: Navigation: 2 Don 2; I-band.

Comment: Built at Gdansk, Poland in 1976-77. Of same general design as Polish Wodnik class ships with an extra deck and a larger superstructure. Probably employed in both training and patrol ship roles.

AMPHIBIOUS FORCES**2 POLNOCHNY B CLASS (PROJECT 771) (LSM)**

D 432 (ex-MDK 36) D 433 (ex-MDK 37)

Displacement, tons: 760 standard; 834 full load
Dimensions, feet (metres): 246.1 × 31.5 × 7.6 (78 × 9.6 × 2.3)
Main machinery: 2 Kolomna Type 40-D diesels; 4,400 hp(m) (3.2 MW) sustained; 2 shafts
Speed, knots: 18
Range, n miles: 1,000 at 18 kt
Complement: 42
Military lift: 180 troops; 350 tons including up to 6 tanks
Guns: 2—30 mm/65 (twin) AK 230; 500 rds/min to 5 km (2.7 n miles); weight of shell 0.54 kg.
 2—140 mm 18-tubed rocket launchers.
Radars: Navigation, Don 2, I-band.
Fire control: Drum Tilt; H/I-band.
IFF: Square Head High Pole B.

Comment: Built in Poland 1968-70. Tank deck covers 237 m².



D 432 6/2008* / 1335326

1 POLNOCHNY A (PROJECT 770) CLASS (LSM)

D 431 (ex-MDK 107)

Displacement, tons: 800 full load
Dimensions, feet (metres): 239.5 × 27.9 × 5.8 (73 × 8.5 × 1.8)
Main machinery: 2 Kolomna Type 40-D diesels; 4,400 hp(m) (3.2 MW) sustained; 2 shafts
Speed, knots: 19
Range, n miles: 1,000 at 18 kt
Complement: 40
Military lift: 6 tanks; 350 tons
Guns: 2 USSR 30 mm/65 (twin); 500 rds/min to 5 km (2.7 n miles); weight of shell 0.54 kg.
 2—140 mm rocket launchers; 18 barrels to 9 km (4.9 n miles)
Radars: Surface search, Decca; I-band.
Fire control: Drum Tilt; H/I-band.

Comment: Built at Northern Shipyard, Gdansk in the late 1960s.



POLNOCHNY CLASS (Egyptian colours) 10/2000, F Sadek / 0103742

2 T-4 (PROJECT 1785) CLASS (LCM)

D 437 +1

Displacement, tons: 35 light; 93 full load
Dimensions, feet (metres): 66.9 × 17.7 × 3.9 (20.4 × 5.4 × 1.2)
Main machinery: 2 diesels; 2 shafts
Speed, knots: 10
Complement: 2
Military lift: 50 tons cargo

Comment: Transferred from Russia in 1992.

1 VYDRA CLASS (LCU)

D 436

Displacement, tons: 425 standard; 600 full load
Dimensions, feet (metres): 179.7 × 25.3 × 8.6 (54.8 × 7.7 × 2)
Main machinery: 2 Type 3-D-12 diesels; 600 hp(m) (440 kW) sustained; 2 shafts
Speed, knots: 11
Range, n miles: 2,500 at 10 kt
Complement: 20
Military lift: 200 troops, 150 tons
Radars: Navigation: Decca; I-band.

Comment: Probably transferred from the Russian Caspian Flotilla in 1992.



D 436 6/2008* / 1335375

MINE WARFARE FORCES**2 YEVGENYA CLASS (PROJECT 1258) (MINEHUNTERS) (MHC)**

M 328 (ex-RT 136)

M 327 (ex-RT 473)

Displacement, tons: 77 standard; 90 full load
Dimensions, feet (metres): 80.7 × 18 × 4.9 (24.6 × 5.5 × 1.5)
Main machinery: 2 Type 3-D-12 diesels; 600 hp(m) (440 kW) sustained; 2 shafts
Speed, knots: 11
Range, n miles: 300 at 10 kt
Complement: 10
Guns: 2—14.5 mm (twin) MGs.
Countermeasures: Minehunting gear is lowered on a crane at the stern.
Radars: Navigation, Don 2; I-band.
Sonars: MG 7 lifted over the stern.

Comment: Ex-Russian craft built in the 1970s.



M 328 6/2008* / 1335373

For details of the latest updates to *Jane's Fighting Ships* online and to discover the additional information available exclusively to online subscribers please visit
jfs.janes.com

44 Azerbaijan / Mine warfare forces – Border guard

2 SONYA (YAKHONT) (PROJECT 12650) CLASS (COASTAL MINEHUNTER) (MHC)

M 325 (ex-BT 16) M 326

Displacement, tons: 450 full load
Dimensions, feet (metres): 157.4 × 28.9 × 6.6 (48 × 8.8 × 2)
Main machinery: 2 Kolomna Type 9-D-8 diesels; 2,000 hp(m) (1.47 MW) sustained; 2 shafts
Speed, knots: 15
Range, n miles: 3,000 at 10 kt
Complement: 43 (5 officers)
Missiles: 2 quad SA-N-6 launchers.
Guns: 2—30 mm/65 AK 630 or 2—30 mm/65 (twin) and 2—25 mm/80 (twin).
Mines: 8.
Radars: Don 2 or Kivach or Nayada; I-band.
IFF: 2 Square Head, High Pole B
Sonars: MG 69/79; hull-mounted; active minehunting; high frequency.

Comment: Wooden hull with GRP sheath. Transferred from Russia in 1992. One further vessel is reported non-operational.



M 325

6/2008* / 1335324

AUXILIARIES

Notes: A variety of auxiliary craft is reported to be in Azerbaijan service although operational status has not been confirmed. Vessels include a Shelon class torpedo recovery craft, an Emba class cable ship and four survey ships (one Kamenka, one Finik, one Vadim Popov and one Valeryan Uryvayev). There is also a Neftegaz (B 92) class salvage tug S 003, three Toplivo class coastal tankers, two Pozharny class firefighting craft, an SK 620 class A 343 and two Tamyr-class icebreakers *Kapitan Izmaylov* and *Kapitan A Radzhabov*.

1 VIKHR (IVA) (PROJECT B-99) CLASS (FIREFIGHTING TUG) (ARS)

S 703

Displacement, tons: 2,300 full load
Dimensions, feet (metres): 237.2 × 46.9 × 16.1 (72.3 × 14.3 × 4.6)
Main machinery: 2 diesels; 5,900 hp(m) (4.4 MW); 2 shafts; cp props; 2 bow thrusters
Speed, knots: 16
Range, n miles: 2,500 at 12 kt
Complement: 25

Comment: Built in Gdansk, Poland, in mid-1980s.



S 703

6/2008* / 1335322

1 RESEARCH SHIP (PROJECT 10470) (AGS)

A 671 (ex-Svyaga)

Displacement, tons: To be announced
Dimensions, feet (metres): 413.4 × 54.5 × 13.8 (126 × 16.6 × 4.2)
Main machinery: 2 diesels; 1,315 hp (1.165 MW); 2 shafts
Speed, knots: To be announced
Complement: To be announced

Comment: Former civilian Project 1677 Oleg Koshevoy class river/sea tanker converted by the Soviet Union in 1985 to undertake underwater research. Taken over by the Azerbaijan Navy in 1992. Possibly used as a platform for the operation of submarines.



A 671

5/2008*, M Globke / 1335704

BORDER GUARD

3 STENKA (PROJECT 205P) CLASS (PBF)

S 005 S 006 (ex-AK 374) S 007 (ex-AK 234)

Displacement, tons: 253 full load
Dimensions, feet (metres): 129.3 × 25.9 × 8.2 (39.4 × 7.9 × 2.5)
Main machinery: 3 diesels; 14,100 hp(m) (10.36 MW); 3 shafts
Speed, knots: 37
Range, n miles: 2,300 at 14 kt
Complement: 25
Guns: 4—30 mm/65 (2 twin) AK 230.
Radars: Surface search, Pot Drum; H/I band
Fire control: Drum Tilt; H/I band
Navigation: Palm Frond, I-band.

Comment: Ex-Russian craft built in the 1970s. Sonar and torpedo tubes removed. Operated by the Border Guard.



STENKA S 006

6/2008* / 1335327

2 SILVER SHIPS 48 ft CLASS (PB)

S 11–12

Displacement, tons: 12.5
Dimensions, feet (metres): 48.0 × 12 × 3.5 (14.6 × 3.7 × 1.1)
Main machinery: 2 Caterpillar 3196D diesels; 1,140 hp (850 kW); 2 surface piercing props
Speed, knots: 40
Range, n miles: 385 at 36 kt
Complement: 6
Radars: Surface search I-band

Comment: Constructed by Silver Ships of Theodore, Alabama. Acquired in 2001, although the details of the purchase are unclear.



S 11 and S 12

6/2008* / 1335371

1 OSA II (PROJECT 205) CLASS (PB)

S 008

Displacement, tons: 245 full load
Dimensions, feet (metres): 126.6 x 24.9 x 8.8 (38.6 x 7.6 x 2.7)
Main machinery: 3 Type M 504 diesels; 10,800 hp(m) (7.94 MW) sustained; 3 shafts
Speed, knots: 37
Range, n miles: 500 at 35 kt
Complement: 30
Guns: 4 USSR 30 mm/85 AK 230 (2 twin); 500 rds/min to 5 km (2.7 n miles); weight of shell 0.54 kg.
Radars: Surface search: I-band.
Fire control: Drum Tit, H/I-band.

Comment: Probably transferred from the Russian Caspian Flotilla in 1992. SS-N-2B missiles have been removed



OSA S 008 6/2008* / 133579

1 POINT CLASS (PB)

Name	No	Builders	Commissioned
– (ex-Point Brower)	S 14 (ex-S-201, ex-82372)	USCGYard, Curtis Bay	21 Apr 1970

Displacement, tons: 67 full load
Dimensions, feet (metres): 83 x 17.2 x 5.8 (25.3 x 5.3 x 1.8)
Main machinery: 2 Caterpillar diesels; 1,800 hp (1.19 MW), 2 shafts
Speed, knots: 22
Range, n miles: 1,200 at 8 kt
Complement: 10
Guns: 2–12.7 mm MGs.
Radars: Surface search: Hughes/Furuno SPS-73; I band.

Comment: Transferred from US Coast Guard on 28 February 2003.



POINT CLASS 6/2008* / 133579

1 ZHUK (GRIF) CLASS (PROJECT 1400M) (PB)

P 222 (ex AK 55)

Displacement, tons: 39 full load
Dimensions, feet (metres): 78.7 x 16.4 x 3.9 (24 x 5 x 1.2)
Main machinery: 2 Type M 401B diesels, 2,200 hp(m) (1.6 MW) sustained; 2 shafts
Speed, knots: 30
Range, n miles: 1,100 at 15 kt
Complement: 13
Guns: 2–14.5 mm (twin), 1–12.7 mm MG
Radars: Surface search: Spin Trough; I-band.

Comment: Ex-Russian craft built in the 1970s.



ZHUK CLASS (Ukraine colours) 7/2000, Hartmut Ehlers / 0106655

Bahamas



Country Overview

The Commonwealth of the Bahamas gained independence in 1971; the British monarch, represented by a governor-general, is head of state. Situated in the west Atlantic Ocean, it comprises about 700 islands and islets, and nearly 2,400 cays and rocks which stretch between Florida and Hispaniola. About 30 of the islands are inhabited. The capital, Nassau, is on New Providence Island which contains more than half of the total population. Grand Bahama, the most northerly of the group, is the second

major island. An archipelagic regime, territorial seas (12 n miles) and a fishery zone (200 n miles) are claimed. A 200 n mile Exclusive Economic Zone (EEZ) has been claimed but the limits are not defined.

Headquarters Appointments

Commander Royal Bahamas Defence Force:
 Commodore Clifford Scaveia
Squadron Commanding Officer:
 Commander Samuel Evans

Bases

HMBS Coral Harbour (New Providence Island)
 HMBS Matthew Town (Great Inagua Island)

Personnel

2009 922

Prefix to Ships' Names

HMBS (Her Majesty's Bahamian Ship)

PATROL FORCES

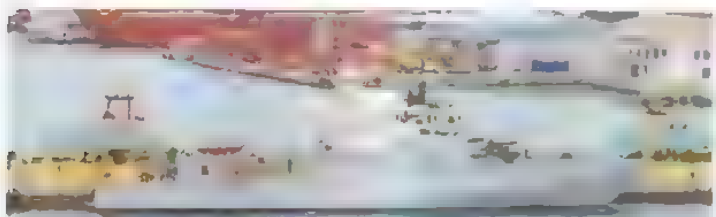
Notes: There are three interception craft P 121–123

2 BAHAMAS CLASS

Name	No	Builders	Commissioned
BAHAMAS	P 60	Moss Point Marine, Escatawpa	27 Jan 2000
NASSAU	P 61	Moss Point Marine, Escatawpa	27 Jan 2000

Displacement, tons: 375 full load
Dimensions, feet (metres): 198.8 x 29.2 x 8.5 (60.6 x 8.9 x 2.6)
Main machinery: 3 Caterpillar 3516B diesels, 6,600 hp(m) (4.85 MW); 3 shafts
Speed, knots: 24
Range, n miles: 3,000 at 10 kt
Complement: 35 plus 28 spare
Guns: 1 Bushmaster 25 mm, 3–12.7 mm MGs
Radars: Surface search/Navigation, Decca Bridgmaster Type 656-14/CAB; I band.

Comment: Order placed 14 March 1997 with Halker Marine Group. Aluminium superstructures fabricated at Equitable Shipyards while hulls built at Moss Point. The design is an adapted Vosper International Europatrol 250 with a RIB and launching crane at the stern. Based at Nassau.



BAHAMAS 6/2003, Marco Ghiglino / 1129991

1 CHALLENGER CLASS (PB)

P 41

Displacement, tons: 8 full load
Dimensions, feet (metres): 27 x 5.5 x 1 (8.2 x 1.7 x 0.3)
Main machinery: 2 Evinrude outboards; 450 hp (330 kW)
Speed, knots: 26
Complement: 4
Guns: 1 7.62 mm MG.

Comment: Built by Boston Whaler Edgewater, Florida and delivered in September 1995 GRP hull.



P 41 9/1996, RBDF / 0056530

46 Bahamas/Patrol forces

1 PROTECTOR CLASS (PB)

Name	No	Builders	Commissioned
YELLOW ELDER	P 03	Fairey Marine, Cowes	20 Nov 1986

Displacement, tons: 110 standard; 180 full load
Dimensions, feet (metres): 108.3 × 22 × 6.9 (33 × 6.7 × 2.1)
Main machinery: 3 Detroit 16V-149TI diesels; 3,483 hp (2.6 MW) sustained; 3 shafts
Speed, knots: 30
Range, n miles: 300 at 24 kt, 600 at 14 kt on 1 engine
Complement: 20 (3 officers) plus 5 spare
Guns: 1 Rheinmetall 20 mm 3—7.62 mm MGs.
Radars: Surface search, Furuno; I-band.

Comment: Ordered December 1984. Steel hull. One RIB is carried and can be launched by a trainable crane. Based at Coral Harbour. *Port Nelson* and *Samana* decommissioned in 2007.



PROTECTOR CLASS 4/1996, RBDF / 0018527

1 ELEUTHERA (KEITH NELSON) CLASS (PB)

Name	No	Builders	Commissioned
INAGUA	P 27	Vosper Thornycroft	10 Dec 1979

Displacement, tons: 30 standard; 37 full load
Dimensions, feet (metres): 60 × 15.8 × 4.6 (18.3 × 4.8 × 1.4)
Main machinery: 2 Caterpillar 3408BTA diesels; 1,070 hp (800 kW) sustained; 2 shafts
Speed, knots: 20
Range, n miles: 650 at 16 kt
Complement: 11
Guns: 3—7.62 mm MGs
Radars: Surface search, Furuno; I-band.

Comment: The survivor of a class of five. Light machine guns mounted in sockets either side of the bridge. One more is used as a museum. Main engine replaced in 1990



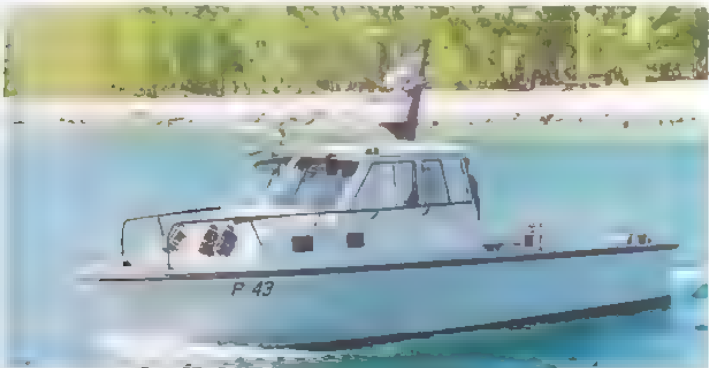
INAGUA 6/1998, RBDF / 0017574

2 DAUNTLESS CLASS (INSHORE PATROL CRAFT) (PB)

P 42 P 43

Displacement, tons: 11 full load
Dimensions, feet (metres): 40.4 × 14 × 4.3 (12.3 × 4.3 × 1.3)
Main machinery: 2 Caterpillar 3208TA diesels; 870 hp (650 kW) sustained; 2 shafts
Speed, knots: 25
Range, n miles: 600 at 16 kt
Complement: 5
Guns: 2—7.62 mm MGs.
Radars: Furuno 1761; I-band.

Comment: Built by SeaArk Marine, Monticello, Arkansas and delivered in January 1996 Aluminium construction. Used primarily for medium-range search and rescue missions. Based at Coral Harbour.



P 43 6/1999, RBDF / 0081453

4 BOSTON WHALERS (PBF)

P 110-113

Displacement, tons: 1.5 full load
Dimensions, feet (metres): 20 × 7.2 × 1.1 (6.1 × 2.2 × 0.4)
Main machinery: 2 Evinrude outboards; 180 hp (134 kW) (P 110-111); 2 Meriner outboards; 150 hp (120 kW) (P 112-113)
Speed, knots: 45 (P 110-111); 38 (P 112 113)
Complement: 3

Comment: P 110 and 111 are impact designs commissioned 25 September 1995. P 112 and 113 are Wahoo types commissioned 23 October 1995.



P 110 and P 111 9/1997, RBDF / 0012053



P 113 6/1999, RBDF / 0081454

2 SEA ARK 49 ft CUTTERS (PB)

P 48-49

Displacement, tons: 16.5 full load
Dimensions, feet (metres): 49.0 × 16.0 × 4.5 (14.9 × 5.25 × 1.4)
Main machinery: 2 Caterpillar C-12 diesels; 1,320 hp (984 kW); 2 shafts
Speed, knots: 30
Range, n miles: 300 at 12 kt
Complement: 6
Radars: Navigation, Furuno; I band.

Comment: Sea Ark Dauntless RAM design. Aluminium construction. Donated by the US on 26 May 2006. Delivered on 18 July 2008.



P 48 6/2008, SeaArk Marine / 1298814

Bahrain



Country Overview

Formerly under British control from 1861, Bahrain gained its independence in 1971. Situated in the southern Gulf, with which it has a coastline of 87 n miles, the country comprises a group of 33 islands between the Qatar Peninsula to the east and Saudi Arabia to the west. The principal islands include Bahrain (217 square miles), Al Muharraq, Umm an Na'san, Sitrah, Jiddah and the Hawar group. The capital, largest city and principal port is Manama. Territorial seas (12 n miles) are claimed. An EEZ has not been claimed.

Headquarters Appointments

Chief of Staff

Major General Shaikh Abdulrah Bin Salman Bin Khalid A. Khalifa

Headquarters Appointments – continued

Commander of Navy:
Brigadier Abdulla al Mansoori
Director of Coast Guard:
Colonel Ala Abdulla Seyad

Personnel

(a) 2009, 1,000 (Navy), 770 (Coast Guard 260 seagoing)
(b) Voluntary service

Bases

Mina Sulman (Navy)
Bandar-Dar (CG base)
Muharraq (CG HQ)

Coast Guard

This unit is under the direction of the Ministry of the Interior.

Prefix to Ships' Names

BRNS (Bahrain Royal Navy Ship)

FRIGATES

1 OLIVER HAZARD PERRY CLASS (FFGHM)

Name	No	Builders	Laid down	Launched	Commissioned	Recommissioned
SABHA (ex-Jack Williams)	90 (ex-FFG 24)	Bath Iron Works	25 Feb 1980	30 Aug 1980	19 Sep 1981	25 Feb 1997

Displacement, tons: 2,750 light; 3,638 full load
Dimensions, feet (metres): 446 × 45 × 14.8, 24.5 (sonar)
(135.6 × 13.7 × 4.5; 7.5)

Main machinery: 2 GE LM 2500 gas turbines; 41,000 hp (30.59 MW) sustained; 1 shaft, cp prop
2 auxiliary retractable props; 650 hp (484 kW)

Speed, knots: 29. **Range, n miles:** 4,500 at 20 kt

Complement: 206 (13 officers) including 19 aircrew

Missiles: SSM: 4 McDonnell Douglas Harpoon; active radar homing to 90 km (52 n miles) at 0.9 Mach; warhead 227 kg
SAM: 36 GDC Standard SM-1MR Block VI; command guidance; semi-active radar homing to 38 km (20.5 n miles) at 2 Mach.

1 Mk 13 Mod 4 launcher for both SSM and SAM missiles
Guns: 1 OTO Melara 3 in (76 mm)/62 Mk 75 85 rds/min to 16 km (8.7 n miles) anti-surface, 12 km (6.6 n miles) anti-aircraft; weight of shell 6 kg

1 General Electric/General Dynamics 20 mm/76 6-barrelled Mk 15 Vulcan Phalanx 3,000 rds/min (4,500 in Block 1) combined to 1.5 km.
4–12 7 mm MGs

Torpedoes: 8–324 mm Mk 32 Mod 7 (2 triple) tubes
24 Honeywell Mk 46; anti-submarine; active/passive homing to 11 km (5.9 n miles) at 40 kt, warhead 44 kg.

Countermeasures: Decoys: 2 Loral Hycoor SRBOC 6-barrelled fixed Mk 36; IR flares and chaff to 4 km (2.2 n miles).
SLQ-25 Nixie, torpedo decoy.



SABHA

(Scale 1 : 1,200), Ian Sturton / 0056537

ESM/ECM: SLQ-32(V)2 radar warning. Sidekick modification adds jammer and deception system.

Combat data systems: NTDS with Link 14. INMARSAT

Weapons control: SWG-1 Harpoon LCS. Mk 92 (Mod 4).

The Mk 92 is the US version of the Signal WM28 system.

Mk 13 weapon direction system. 2 Mk 24 optical directors.

Radars: Air search: Raytheon SPS-49(V)4 C-band; range 467 km (250 n miles).

Surface search: ISC Cardion SPS-55 I-band.

Fire control: Lockheed STIR (modified SPG-60) WJ-band, range 110 km (60 n miles).

Sperry Mk 92 (Signal WM28) WJ-band.

Tacan: URN 25.

Sonars: Raytheon SQS-56; hull-mounted, active search and attack; medium frequency.

Helicopters: 1 Eurocopter BO 105. Space for 2 SH-2G

Programmes: *Sabha* transferred from the US by grant 18 September 1986. Arrived in the Gulf in June 1997 for a work-up and training period. Transfer of a second ship is unlikely.

Structure: Apart from the removal of the US SATCOM aerials there are no visible changes from US service.

Operational: A transfer of helicopters is required if the ASW potential of the ship is to be realised.



SABHA

4/2000, Guy Torrens / 0104700



SABHA

6/2003, A Sharma / 0568881

CORVETTES

2 AL MANAMA (MGB 62) CLASS (FSGH)

Name	No	Builders	Commissioned
AL MANAMA	50	Lürssen	14 Dec 1987
AL MUHARRAQ	51	Lürssen	3 Feb 1988

Displacement, tons: 632 full load
Dimensions, feet (metres): 206.7 × 30.5 × 9.5
 (63 × 9.3 × 2.9)
Main machinery: 4 MTU 20V 538TB92 diesels, 12,820 hp(m)
 (9.42 MW) sustained; 4 shafts
Speed, knots: 32 **Range, n miles:** 4,000 at 16 kt
Complement: 43 (7 officers)

Missiles: SSM: 4 Aerospatiale MM 40 Exocet launchers
 (2 twin) ● inertial cruise; active radar homing to 70 km
 (40 n miles) at 0.9 Mach; warhead 165 kg; sea-skimmer.
Guns: 1 OTO Melara 3 in (76 mm)/82 compact ●; 85 rds/min
 to 16 km (8.7 n miles) anti-surface; 12 km (6.5 n miles)
 anti-aircraft; weight of shell 6 kg.
 2 Breda 40 mm/70 (twin) ●; 300 rds/min to 12.5 km (6.8 n
 miles); weight of shell 0.96 kg.
 2 × 7.62 mm MGs.

Countermeasures: Decoys: CSEE Degaie ●; chaff and IR
 flares.
ESM/ECM: Racal Decca Cutlass/Cygnus ●; intercept and
 jammer.

Weapons control: CSEE Panda Mk 2 optical director. Philips
 TVIR optronic director ●.



AL MANAMA

(Scale 1 : 600), Ian Sturton / 0104701

Radars: Air/surface search: Philips Sea Giraffe 50 HC ●;
 G-band.

Navigation: Racal Decca 1278, I-band.
Fire control: Philips 9LV 331 ●, J-band.

Helicopters: 1 Eurocopter BO 105 ●.

Programmes: Ordered February 1984.

Modernisation: Upgrade planned to include a SAM self-
 defence system.

Structure: Similar to Singapore and UAE designs. Steel
 hull, aluminium superstructure. Fitted with a helicopter
 platform which incorporates a lift to lower the aircraft
 into the hangar.

Operational: Planned SA 355F helicopters were not
 acquired.



AL MUHARRAQ

9/2008*, Shaun Jones / 1335640



AL MANAMA

11/2001, Royal Australian Navy / 05276836

SHIPBORNE AIRCRAFT

Notes: SH-2G helicopters may be acquired for the frigate in due course.

Numbers/Type: 2 Eurocopter BO 105.

Operational speed: 113 kt (210 km/h).

Service ceiling: 9,845 ft (3,000 m).

Range: 407 n miles (754 km).

Role/Weapon systems: Acquired in August 1994 as the first
 aircraft of a Naval Air Arm. Sensors: Bondix RDR 1500B
 radar Weapons: Unarmed.

BO 105
6/1995
0056541

PATROL FORCES

4 AHMAD EL FATEH (TNC 45) CLASS (FAST ATTACK CRAFT—MISSILE) (PGGF)

Name	No	Builders	Commissioned
AHMAD EL FATEH	20	Lürssen	5 Feb 1984
AL JABIRI	21	Lürssen	3 May 1984
ABDUL RAHMAN AL FADEL	22	Lürssen	10 Sep 1986
AL TAWEELAH	23	Lürssen	25 Mar 1989

Displacement, tons: 228 half load; 259 full load
Dimensions, feet (metres): 147.3 x 22.9 x 8.2 (44.9 x 7 x 2.5)
Main machinery: 4 MTU 16V 538 TB92 diesels; 13,640 hp(m) (10 MW) sustained; 4 shafts
Speed, knots: 40
Range, n miles: 1,600 at 16 kt
Complement: 36 (6 officers)

Missiles: SSM: 4 Aerospatiale MM 40 Exocet (2 twin), inertial cruise; active radar homing to 70 km (40 n miles) at 0.9 Mach; warhead 165 kg, sea-skimmer.

Guns: 1 OTO Melara 3 in (76 mm)/62, dual purpose; 85 rds/min to 16 km (8.7 n miles) anti-surface; 12 km (6.5 n miles) anti-aircraft; weight of shell 6 kg
 2 Breda 40 mm/70 (twin), 300 rds/min to 12.5 km (6.8 n miles); weight of shell 0.96 kg
 3—7.62 mm MGs

Countermeasures: Decoys: CSEE Dagaie launcher; trainable mounting; 10 containers firing chaff decoys and IR flares.

ESM: Thales Sealion

ECM: Racal Cygnus (not in 20 and 21); jammer

Weapons control: 1 Panda optical director for 40 mm guns

Radars: Air/surface search: Philips Sea Giraffe 50 HC; G-band.

Fire control: Philips 9LV 226/231; J-band

Navigation: Racal Decca 1226; I-band.

Programmes: First pair ordered in 1979, second pair in 1985. Similar craft in service with Ecuador, Kuwait and UAE navies.

Structure: Only the second pair have the communication radome on the after superstructure.

Operational: Refits from 2000 by Lürssen at Abu Dhabi.



AHMAD EL FATEH 4/2003, A Sharma / 0568844



AL TAWEELAH 4/2000, Guy Toremans / 0104703

2 AL JARIM (FPB 20) CLASS (FAST ATTACK CRAFT—GUN) (PB)

Name	No	Builders	Commissioned
AL JARIM	30	Swiftships, Morgan City	9 Feb 1982
AL JASRAH	31	Swiftships, Morgan City	26 Feb 1982

Displacement, tons: 33 full load
Dimensions, feet (metres): 63 x 18.4 x 6.5 (19.2 x 5.6 x 2)
Main machinery: 2 Detroit 12V-71TA diesels, 840 hp(m) (627 kW) sustained, 2 shafts
Speed, knots: 30
Range, n miles: 1,200 at 18 kt
Guns: 1 Oerlikon GAM BO1 20 mm
Radars: Surface search Decca 110; I-band.

Comment: Aluminium hulls.



AL JARIM 5/2003, A Sharma / 0568879

2 AL RIFFA (FPB 38) CLASS (FAST ATTACK CRAFT—GUN) (PB)

Name	No	Builders	Commissioned
AL RIFFA	10	Lürssen	3 Mar 1982
HAWAR	11	Lürssen	3 Mar 1982

Displacement, tons: 188 half load; 205 full load
Dimensions, feet (metres): 126.3 x 22.9 x 7.2 (38.5 x 7 x 2.2)
Main machinery: 2 MTU 16V 538 TB92 diesels; 6,810 hp(m) (5 MW) sustained, 2 shafts
Speed, knots: 32 **Range, n miles:** 1,100 at 16 kt
Complement: 27 (3 officers)
Guns: 2 Breda 40 mm/70 (twin), dual purpose, 300 rds/min to 12 km (6.5 n miles) anti-surface; 4 km (2.2 n miles); weight of shell 0.96 kg
 1—57 mm Starshell rocket launcher
Mines: Mine rails fitted
Countermeasures: Decoys: 1 Wallop Barricade chaff launcher.
ESM: Racal RDL-2 ABC; radar warning.
Weapons control: CSEE Lynx optical director with Philips 9LV 126 optronic system.
Radars: Surface search: Philips 9GR 600; I-band
Navigation: Racal Decca 1226; I-band.

Comment: Ordered in 1979. *Al Riffa* launched April 1981 *Hawar* launched July 1981



HAWAR 6/2003, A Sharma / 0568880

AUXILIARIES

Notes: There are also two RTK Medevac boats and one Diving Boat (512).

1 PERSONNEL TRANSPORT CRAFT (YFL)

TIGHATLIB 46

Comment: Catamaran hulled transport craft. Details not known.



TIGHATLIB 6/2003, A Sharma / 0568877

AMPHIBIOUS FORCES

0 + 2 LANDING CRAFT (LCU)

Displacement, tons: 380
Dimensions, feet (metres): 145.5 x 32.8 x 7.2 (44.4 x 10.0 x 2.2)
Main machinery: 2 Caterpillar CAT 3406TA diesels; 730 hp (544 kW); 2 shafts
Speed, knots: 10
Range, n miles: 1,000 at 8.5 kt
Complement: 11 (3 officers) plus 40 troops
Military lift: military vehicles

Comment: Contract with Abu Dhabi Shipbuilding for the construction of two landing craft announced on 11 November 2008. The vessels, designed in the UAE, are to be of steel construction and based on those in service in the UAE Navy. Delivery of the first vessel is expected in 2010.



LCU (UAE colours) 6/2006, ADSB / 1159231

50 Bahrain/Amphibious forces – Coast guard

1 AJEERA CLASS (SUPPLY SHIP) (YFU)

<i>Name</i>	<i>No</i>	<i>Builders</i>	<i>Commissioned</i>
AJEERA	41	Swiftships, Morgan City	21 Oct 1982

Displacement, tons: 420 full load
Dimensions, feet (metres): 129.9 × 36.1 × 5.9 (39.6 × 11 × 1.8)
Main machinery: 2 General Motors 16V-71 diesels; 1,800 hp (1.34 MW) sustained; 2 shafts
Speed, knots: 13
Range, n miles: 1,500 at 10 kt
Complement: 21
Guns: 2—12.7 mm MGs
Radars: Navigation: Racal Decca, I-band

Comment: Used as general purpose cargo ships and can carry up to 200 tons of fuel and water. Built to an LCU design with a bow ramp and 15 ton crane.



AJEERA

4/2003, A Sharma / 0568843

4 LCU 1466 CLASS (LCU)

MASHTAN 42	RUBODH 43	SUWAD 44	JARADAH 45
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Displacement, tons: 360 full load
Dimensions, feet (metres): 119 × 34 × 6 (36.3 × 10.4 × 1.8)
Main machinery: 3 Gray Marine 64YTL diesels, 675 hp (504 kW); 3 shafts
Speed, knots: 8
Range, n miles: 800 at 8 kt
Complement: 15
Cargo capacity: 167 tons
Guns: 2—12.7 mm MGs
Radars: Navigation: Racal Decca; I-band

Comment: Transferred from US in 1991. Capable of carrying 150 tons of cargo.



RUBODH

4/2003, A Sharma / 0568842

0 + 2 HALMATIC WORK BOATS (PB)

Displacement, tons: 13.3
Dimensions, feet (metres): 52.5 × 13.1 × 2.3 (16.0 × 4.0 × 0.7)
Main machinery: 2 diesels, 2 waterjets
Speed, knots: 24
Complement: 5
Radars: Navigation: I-band.

Comment: Contract with Abu Dhabi Shipbuilding for the construction of two work boats announced on 11 November 2008. Based on the VT Halmatic Sea Keeper design with an asymmetric catamaran hull, the craft are highly manoeuvrable and are capable of carrying a 10 tonne payload. Delivery is expected in 2010.



WORK BOAT

2/2007, Patrick Allen/Jane's 1321982

1 LANDING CRAFT (LCU)

AL ZUBARA (ex-Sabha) 40

Displacement, tons: 150 full load
Dimensions, feet (metres): 73.8 × 24.6 × 3.9 (22.5 × 7.5 × 1.2)
Main machinery: 2 General Motors 8V92N diesels; 780 hp (575 kW); 2 shafts
Speed, knots: 6
Complement: 8
Radars: Navigation: I-band.

Comment: Fairry Marine Cowes, UK Loadmaster II class which entered service in 1981



AL ZUBARA

4/2003, A Sharma / 0568839

COAST GUARD

Notes: (1) Six 11.6 m Fountain Boats interceptor craft, capable of 55+ kt, are to be delivered in 2009
 (2) There are six 8 m coastal patrol craft, Haris 2, Haris 4-8.
 (3) There are 10 interceptor craft. Jarada 1-2 (11 m, 36 kt); Jarada 3 (9.7 m, 42 kt); Jarada 4-5 (11 m, 36 kt) and Haris 10-15 (9.7 m, 42 kt)



JARADA 1

11/2008, John Fidler / 1331635

1 WASP 30 METRE CLASS (WPB)

AL MUHARRAQ

Displacement, tons: 90 standard, 103 full load
Dimensions, feet (metres): 98.5 × 21 × 5.5 (30 × 6.4 × 1.6)
Main machinery: 2 Detroit 16V-149TI diesels; 2,322 hp (1.73 MW) sustained, 2 shafts
Speed, knots: 26
Range, n miles: 500 at 22 kt
Complement: 9
Guns: 2—7.62 mm MGs,
 1 Hughes chain 7.62 mm.
Radars: Surface search: Racal Decca, I-band

Comment: Ordered from Souters, Cowes, Isle of Wight in 1984. Laid down November 1984, launched 12 August 1985, shipped 21 October 1985. GRP hull.



AL MUHARRAQ

4/2003, A Sharma / 0568841

4 HALMATIC 20 METRE CLASS (WPB)

DERA'A 2 DERA'A 6 DERA'A 7 DERA'A 8

Displacement, tons: 31.5 full load
Dimensions, feet (metres): 65.9 × 19.4 × 5.1 (20.1 × 6.9 × 1.5)
Main machinery: 2 MTU 8V 2000 M92 diesels; 2,170 hp (1.6 MW) sustained; 2 shafts
Speed, knots: 29
Range, n miles: 500 at 20 kt
Complement: 7
Guns: 1—12.7 mm MG 2—7.62 mm MGs.

Comment: Three delivered in late 1991, the last in early 1992. GRP hulls. All four craft underwent a mid-life refit at Abu Dhabi shipbuilding 2008–09.



DERA'A 8 11/2008*, John Fidler / 1335639

2 WASP 20 METRE CLASS (WPB)

DERA'A 4 DERA'A 5

Displacement, tons: 36.3 full load
Dimensions, feet (metres): 65.8 × 16.4 × 4.9 (20 × 5 × 1.5)
Main machinery: 2 Detroit 12V-71TA diesels; 840 hp (626 kW) sustained; 2 shafts
Speed, knots: 24.5
Range, n miles: 500 at 20 kt
Complement: 8
Guns: 2 7.62 mm MGs
Radars: Surface search: Racal Decca; I-band

Comment: Built by Souters, Cowes, Isle of Wight. Delivered 1983. GRP hulls.



DERA'A 4 6/2000, Bahrain Coast Guard / 0104206

6 HALMATIC 160 CLASS (WPB)

SAIF 5–10

Displacement, tons: 17 full load
Dimensions, feet (metres): 47.2 × 12.8 × 3.9 (14.4 × 3.9 × 1.2)
Main machinery: 2 MTU S6062 06N04M diesels; 950 hp (708 kW) sustained; 2 shafts
Speed, knots: 27
Range, n miles: 500 at 20 kt
Complement: 4
Guns: 1 7.62 mm MG.
Radars: Surface search: Furuno; I-band

Comment: Built by Halmatic, UK, and delivered in 1990–91. GRP hulls. All six craft underwent a mid-life refit at Abu Dhabi Shipbuilding 2008–09.



SAIF 10 10/2008*, John Fidler / 1335637

4 FAIREY SWORD CLASS (WPB)

SAIF 1–4

Displacement, tons: 15
Dimensions, feet (metres): 44.9 × 13.4 × 4.3 (13.7 × 4.1 × 1.3)
Main machinery: 2 GM 8V-71 diesels; 590 hp (440 kW) sustained; 2 shafts
Speed, knots: 22
Complement: 6
Radars: Navigation: Furuno; I-band.

Comment: Purchased in 1980. Built by Fairey Marine Ltd.



SAIF 3 11/1999, Bahrain Coast Guard / 0056543

2 HAWAR CLASS (PB)

HAWAR 1 HAWAR 2

Displacement, tons: 10.5 full load
Dimensions, feet (metres): 40.7 × 13.0 × 2.3 (12.4 × 4.0 × 0.7)
Main machinery: 2 Cummins 6CTA8.3 diesels
Speed, knots: 30
Guns: 1—7.62 mm MG

Comment: Entered service in 2003.



HAWAR 1 6/2003, John Fidler / 0167903

1 SUPPORT CRAFT (YAG)

SAFRA 3

Displacement, tons: 165 full load
Dimensions, feet (metres): 85 × 25.9 × 5.2 (25.9 × 7.9 × 1.6)
Main machinery: 2 Detroit 16V-92TA diesels; 1,380 hp (1.03 MW); 2 shafts
Speed, knots: 13 **Range, n miles:** 700 at 12 kt
Complement: 6
Radars: Navigation: Racal Decca; I-band

Comment: Built by Halmatic, Havant and delivered in early 1992. Logistic support work boat equipped for towing and firefighting. Can carry 15 tons.



SAFRA 3 4/2003, A Sharma / 0568840

1 LANDING CRAFT (LCM)

SAFRA 2

Displacement, tons: 150 full load
Dimensions, feet (metres): 73.9 × 24.6 × 4 (22.5 × 7.5 × 1.2)
Main machinery: 2 General Motors 8V92N diesels; 780 hp (575 kW); 2 shafts
Speed, knots: 6
Complement: 8
Radars: Navigation: Furuno; I-band.

Comment: Fairey Marine Loadmaster II class which was delivered in 1981. Based at Bandar-Dar. Similar to craft in naval service.

52 Bahrain/Coast guard — Bangladesh/Submarines

3 WASP 11 METRE CLASS (WPB)

SAHAM 1-3

Displacement, tons: 7 full load
Dimensions, feet (metres): 36.1 × 10.5 × 2.6 (11 × 3.2 × 0.8)
Main machinery: 2 Yamaha outboards; 400 hp(m) (294 kW)
Speed, knots: 25
Complement: 3
Radars: Navigation: I-band.

Comment: Built by Souters, Cowes in 1983.



SAHAM 2

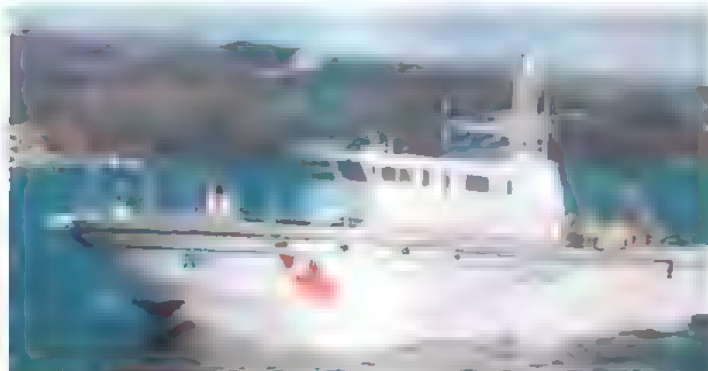
10/1997, Bahrain Coast Guard / 0012061

4 RODMAN 20 M CLASS (PB)

DERA'A 11-14

Displacement, tons: 33 full load
Dimensions, feet (metres): 67.2 × 16.2 × 7.4 (20.5 × 4.93 × 2.25)
Main machinery: 2 MTU 8V 2000 M92 diesels; 2,170 hp (1.6 MW), 2 shafts
Speed, knots: 30
Complement: 11
Guns: 1—12.7 mm MG 2—7.62 mm MGs
Radars: Navigation: I-band.

Comment: Built by Rodman, Spain, and delivered 2008-09.



DERA'A 11

11/2008, John Fidler / 1335638



Bangladesh

Country Overview

The People's Republic of Bangladesh, formerly East Pakistan, proclaimed independence in 1971. Situated in south Asia and with an area of 55,598 square miles, most of its land border is with India (cutting off north-east India from the rest). There is a short border with Myanmar to the south-east. Its 313 n mile coastline is with the Bay of Bengal on which the principal port of Chittagong is situated. The capital and largest city is Dhaka. Territorial waters (12 n miles) are claimed. An EEZ (200 n miles) has been claimed but the limits have not been defined.

Headquarters Appointments

Chief of Naval Staff:
 Vice Admiral Sarwar Jahan Nizam
Assistant Chief of Naval Staff (Operations):
 Rear Admiral Abu Sayed Mohammed Abdul Awal
Assistant Chief of Naval Staff (Personnel):
 Rear Admiral Mohammed Farid Habib
Assistant Chief of Naval Staff (Materials):
 Commodore Abul Khair Chowdhury
Assistant Chief of Naval Staff (Logistics):
 Commodore H Habibur Rahman Bhuiyan

Senior Appointments

Naval Administrative Authority, Dhaka:
 Commodore Mudasser Nasir
Commodore Commanding BN Flotilla:
 M Anwarul Islam
Commodore Commanding Chittagong:
 Commodore Zahir Uddin Ahmed
Commodore Commanding Khulna:
 Commodore M Mohiuddin Razib
Director General Coast Guard:
 Commodore M A K Azad
Commodore Superintendent, Dockyard:
 Commodore M M Jasimuddin Bhuiyan

Bases

Chittagong (BNS *Issa Khan*, BN Dockyard, Naval Stores Depot, Chittagong, BNS *Ulka*, Bangladesh Naval Academy, BNS *Patenga*, BNS *Bhatri*, Naval Units *Cox's Bazar*, *Chanua* and *St Martins*), Kaptai (BNS *Shaheed Moazzam*), Dhaka (NHQ, BNS *Hajj Mohsin* and Naval Unit *Paglia*), Khulna (BNS *Titumir*, BNS *Mongla*, BNS *Upasham*, Forward Bases *Khepupara* and *Hiron Point*).

Personnel

(a) 2009: 12,150 (1,300 officers)
 (b) Voluntary service

Strength of the Fleet

Type	Active	Building
Frigates	5	—
Fast Attack Craft (Missile)	9	—
Fast Attack Craft (Torpedo)	8	—
Fast Attack Craft (Gun)	13	—
Large Patrol Craft	7	—
Coastal Patrol Craft	9	—
Riverine Patrol Craft	5	—
Minesweepers	4	—
Training Ships	1	—
Repair Ship	1	—
Tankers	2	—
Survey Craft	4	—

Coast Guard

Formed on 19 December 1996 with two ships on loan from the Navy. Bases at Chittagong (East Zone) and Khulna (West Zone). Personnel 721 (54 officers). Colours thick red and thin blue diagonal stripes on hull with COAST GUARD on ships side.

Prefix to Ships' Names

Navy BNS
 Coast Guard: CGS

PENNANT LIST

Frigates

F 15 Abu Bakr
 F 16 Umar Farooq
 F 17 Ali Haider
 F 18 Osman
 F 25 Khalid Bin Walid

Patrol Forces

P 111 Pabna (CG)
 P 112 Noakhali (CG)
 P 113 Patuakhali (CG)
 P 114 Rangamati (CG)
 P 115 Bogra (CG)
 P 201 Ruposhi Bangla (CG)
 P 211 Meghna
 P 212 Jamuna
 P 311 Bishkhali
 P 312 Padma
 P 313 Surma
 P 314 Karnaphuli
 P 315 Tista

P 411 Shaheed Daulat
 P 412 Shaheed Fard
 P 413 Shaheed Mohibullah
 P 414 Shaheed Aktheruddin
 P 611 Tawheed (CG)
 P 612 Tawfiq (CG)
 P 613 Tamjeed (CG)
 P 614 Tanveer (CG)
 P 711 Barkat
 P 712 Salam
 P 713 Sangu
 P 714 Turag
 P 811 Nirbhoy
 P 811 Madhumati
 P 812 Kapatakshaya
 P 813 Karatoa
 P 814 Gomati
 P 1011 Titas
 P 1012 Kusiyara
 P 1013 Chitra
 P 1014 Dhansiri
 P 8111 Durbar
 P 8112 Durdanta

P 8113 Durdvya
 P 8114 Durdam
 P 8125 Durdharsha
 P 8126 Durdanta
 P 8128 Dordanda
 P 8131 Anirban
 P 8141 Uttal
 P 8221 TB 1
 P 8222 TB 2
 P 8223 TB 3
 P 8224 TB 4
 P 8235 TB 35
 P 8236 TB 36
 P 8237 TB 37
 P 8238 TB 38

Mine Warfare Forces

M 91 Sagar
 M 95 Shapla
 M 96 Saikat
 M 97 Surovi
 M 98 Shaibal

Auxiliaries

A 511 Shaheed Ruhul Amin
 A 512 Shahayak
 A 513 Shahjari
 A 515 Khan Jahan Ali
 A 516 Imam Gazzali
 A 581 Darshak
 A 582 Tallashi
 A 583 Agradoot
 A 584 LCT 101
 A 585 LCT-102
 A 587 LCT-104
 A 711 Sundarban
 A 721 Khodem
 A 722 Sebak
 A 723 Rupsha
 A 724 Shrubsha
 A 731 Betaban
 L 900 Shah Amanat
 L 901 Shah Paran
 L 902 Shah Makhdum

SUBMARINES

Notes: Plans to acquire a submarine service were announced by the Defence Minister in April 2004 but there has been little apparent development of the programme.

FRIGATES

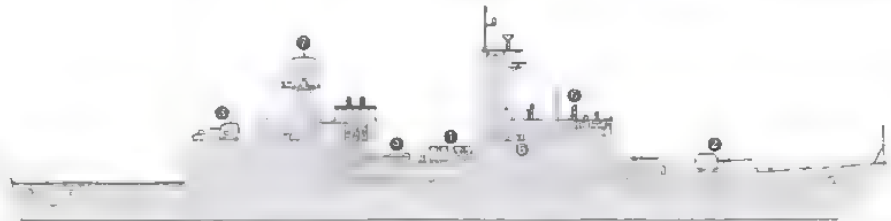
Notes: Replacement of the Salisbury and Leopard class frigates is a high priority although timescales have not been announced

1 MODIFIED ULSAN CLASS

Name	No	Builders	Laid down	Launched	Commissioned	Recommissioned
KHALID BIN WALID (ex: <i>Bangabandhu</i>)	F 25	Daewoo Heavy Industries	12 May 1999	29 Aug 2000	20 June 2001	12 July 2007

Displacement, tons: 2,170 standard; 2,370 full load
Dimensions, feet (metres): 340.3 x 41 x 12.5 (103.7 x 12.5 x 3.8)
Main machinery: CODAD: 4 SEMT-Pielstick 12V PA6V280 STC diesels; 22,501 hp (16.78 MW) sustained; 2 shafts
Speed, knots: 25
Range, n miles: 4,000 at 18 kt
Complement: 186 (16 officers)

Missiles: 4 Otomat Mk 2 ●, command guidance; active radar homing to 180 km (97.2 n miles), at 0.9 Mach; warhead 210 kg; sea-skimmer.
SAM: 1 HQ-7 (FM-90N); line of sight guidance to 13 km (7 n miles) at 2.4 Mach; warhead 14 kg
Guns: 1 Otobreda 3 in (76 mm) 62 Super Rapid ●, 120 rds/min to 16 km (8.7 n miles); weight of shell 6 kg.
 4 Otobreda 40 mm/70 (2 twin) compact ●, 300 rds/min to 12.5 km (6.8 n miles); weight of shell 0.96 kg
Torpedoes: 6—324 mm 8-515 (2 triple) tubes ●, Whitehead A244S; anti-submarine; active/passive homing to 7 km (3.8 n miles); warhead 34 kg (shaped charge).
Countermeasures: Decoys: 2 Super Barricade launchers ●. ESM: Racal Cutlass 242, intercept.
 ECM: Racal Scorpion; jammer.
Combat data systems: Thales TACTICOS



KHALID BIN WALID

(Scale 1 : 900), Ian Sturton / 0130076

Weapons control: Signaal Mirador optronic director ●
Radars: Air search: Signaal DA08 ●, F-band.
 Surface search: Thales Variant, G-band
Fire control: Signaal Lirod Mk 2; K-band.
Navigation: 2 KH-1007, I-band
Sonars: STN Atlas ASO 90; hull-mounted, active search, medium frequency.
Helicopters: Hangar and platform for operation of 'Lynx' sized helicopter.

Programmes: Modified Ulsan class ordered from Daewoo in March 1998. Arrived at Chittagong on 16 June 2001.
Operational: The ship was decommissioned on 13 February 2002 for design modification, warranty repairs and capability upgrades. This included installation of FM-90N, the export version of the Chinese HQ-7 SAM system. A period of uncertainty, during which the ship's future was kept under review, followed. This ended on 12 July 2007 when the ship was recommissioned.



KHALID BIN WALID

6/2001 / 0111771



KHALID BIN WALID

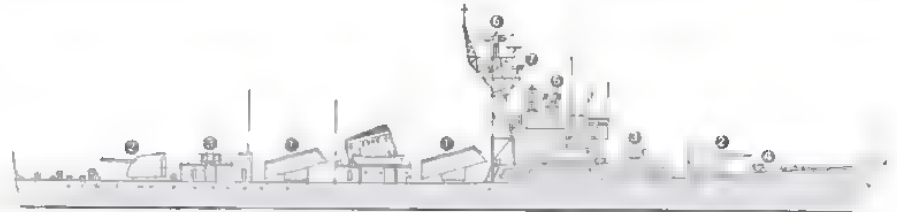
6/2001, Daewoo / 0094449

1 OSMAN (JIANGHU I) CLASS (TYPE 053 H1) (FFG)

Name	No	Builders	Laid down	Launched	Commissioned
OSMAN (ex-Xiangtan)	F 18 (ex-556)	Hudong Shipyard, Shanghai	1986	Dec 1988	4 Nov 1989

Displacement, tons: 1,425 standard; 1,702 full load
Dimensions, feet (metres): 338.6 × 35.4 × 10.2
 (103.2 × 10.7 × 3.1)
Main machinery: 2 Type 12 E 380V diesels; 16,000 hp(m)
 (11.9 MW) sustained; 2 shafts
Speed, knots: 26
Range, n miles, 2,700 at 18 kt
Complement: 300 (27 officers)

Missiles: SSM: 8 C-802 (YK-83 (CSS-N-8 Saccade)) ● mid-course guidance and active radar homing to 150 km (81 n miles) at 0.9 Mach; warhead 165 kg
Guns: 4 China 3.9 in (100 mm)/56 (2 twin) ●; 25 rds/min to 22 km (12 n miles); weight of shell 15.6 kg
 8 China 37 mm/76 (4 twin) ●; 180 rds/min to 8.5 km (4.6 n miles) anti-aircraft; weight of shell 1.42 kg.
A/S mortars: 2 RBU 1200 5-tubed fixed launchers ●, range 1,200 m; warhead 34 kg.
Depth charges: 2 BMB-2 projectors; 2 racks.
Mines: Can carry up to 60.
Countermeasures: Decoys: 2 Loral Hycor SRBOC Mk 36 6-barreled chaff launchers
ESM: Watchdog; radar warning.
Weapons control: Wok Won director (752A) ●



OSMAN (before conversion to C-802)

(Scale 1 : 900), Ian Sturton / 0130383

Radars: Air/surface search: MX 902 Eye Shield (922-1) ●; G-band.
 Surface search/fire control: Square Tie (254) ●; I-band.
 Navigation: Fin Curve (352); I-band.
 IFF: High Pole A.
Sonars: Echo Type 5; hull-mounted; active search and attack; medium frequency.

Modernisation: C-802 missiles replaced HY-2 (C-201) missiles in 2007.

Structure: This is a Jianghu Type I (version 4) hull with twin 100 mm guns (vice the 57 mm in the ships sold to Egypt), Wok Won fire-control system and a rounded funnel.

Operational: A test-firing of C-802 was carried out on 12 May 2008.

Programmes: Transferred 26 September 1989 from China, arrived Bangladesh 8 October 1989. Second order expected in 1991 was cancelled.



OSMAN (before conversion to C-802)

10/2003, Hartmut Ehlers / 0569148

1 SALISBURY CLASS (TYPE 61) (FF)

Name	No	Builders	Laid down	Launched	Commissioned
UMAR FAROOQ (ex-Llandaff)	F 15	Hawthorn Leslie Ltd	27 Aug 1953	30 Nov 1955	11 Apr 1958

Displacement, tons: 2,170 standard; 2,408 full load
Dimensions, feet (metres): 339.8 × 40 × 15.5 (screws)
 (103.6 × 12.2 × 4.7)
Main machinery: 8 16 VTS ASR 1 diesels; 14,400 hp
 (10.7 MW) sustained; 2 shafts
Speed, knots: 24. Range, n miles, 2,300 at 24 kt; 7,500 at 16 kt
Complement: 237 (14 officers)

Guns: 2 Vickers 4.5 in (115 mm)/45 (twin) Mk 6 ●; dual purpose; 20 rds/min to 19 km (10 n miles) anti-surface; 6 km (3.3 n miles) anti-aircraft; weight of shell 25 kg.
 2 Bofors 40 mm/60 Mk 9 ●; 120 rds/min to 3 km (1.6 n miles) anti-aircraft, 10 km (5.5 n miles) maximum.

A/S mortars: 1 triple-barrelled Squid Mk 4 ●; fires pattern of 3 depth charges to 300 m ahead of ship.

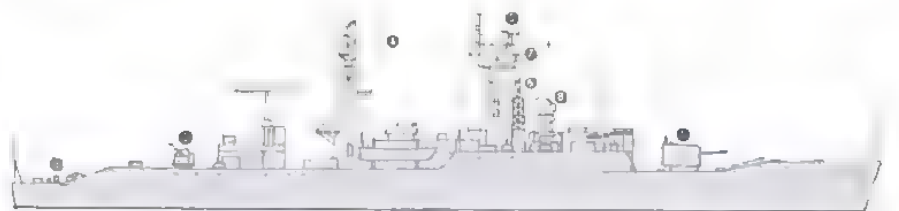
Countermeasures: Decoys: Corvus chaff launchers.

Weapons control: 1 Mk 6M gun director.

Radars: A r search, Marconi Type 965 with double AKE 2 array ●; A-band

Air/surface search: Plessey Type 993 ●; E/F-band.

Heightfinder: Type 278M ●; E-band.



UMAR FAROOQ

(Scale 1 : 900), Ian Sturton / 0508857

Surface search: Decca Type 978 ●; I-band.

Navigation: Decca Type 978, I-band.

Fire control: Type 275 ●; F-band.

Sonars: Type 174; hull-mounted; active search; medium frequency

Graseby Type 170B; hull-mounted; active attack; 15 kHz.

Programmes: Transferred from UK at Royal Albert Dock, London 10 December 1976.

Operational: The radar Type 982 aerial is still retained on the after mast but the set is non-operational. The ship has been modified as a training ship and is expected to remain in service for some years.



UMAR FAROOQ

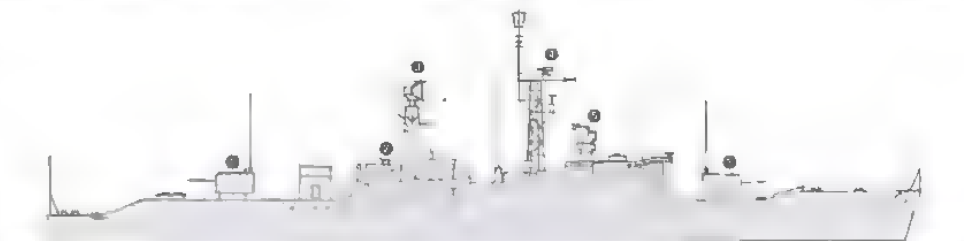
3/2007, Paul Daly / 1188506

2 LEOPARD CLASS (TYPE 41) (FF/FFT)

Name	No	Builders	Laid down	Launched	Commissioned
ABU BAKR (ex-Lynx)	F 15	John Brown & Co Ltd, Clydebank	13 Aug 1953	12 Jan 1955	14 Mar 1957
ALI HAIDER (ex-Jaguar)	F 17	Wm Donny & Bros Ltd, Dumbarton	2 Nov 1953	30 July 1957	12 Dec 1959

Displacement, tons: 2,300 standard; 2,520 full load
Dimensions, feet (metres) 339.8 x 40 x 15.5 (screws)
 (103.6 x 12.2 x 4.7)
Main machinery: 8 16 VTS ASR 1 diesels; 14,400 hp (10.7 MW) sustained; 2 shafts; F 17 fitted with cp props
Speed, knots: 24
Range, n miles: 2,300 at full power; 7,500 at 16 kt
Complement: 235 (15 officers)

Guns: 4 Vickers 4.5 in (115 mm)/45 (2 twin) Mk 6 ●, dual purpose, 20 rds/min to 18 km (10 n miles) anti-surface; 6 km (3.3 n miles) anti-aircraft; weight of shell 25 kg.
 1 Bofors 40 mm/60 Mk 9 ●, 120 rds/min to 3 km (1.6 n miles) anti-aircraft, 10 km (5.5 n miles).
 2—7.62 mm MGs
Countermeasures: Decoys; Corvus chaff launchers.
ESM: Radar warning.
Weapons control: Mk 6M gun director.
Radars: Air search: Marconi Type 966 with single AKE 1 array ●; A-band.
Air/surface search: Plessey Type 993 ●, E/F-band.



ABU BAKR
 Navigation: Decca Type 978, Kelvin Hughes 1007; I-band.
 Fire control: Type 275 ●, F-band
Programmes: *Ali Haider* transferred from UK 16 July 1978 and *Abu Bakr* on 12 March 1982. *Ali Haider* refitted at Vosper Thornycroft August-October 1978. *Abu Bakr* extensively refitted in 1982.
Structure: All welded. Fitted with stabilisers. Sonars removed while still in service with RN. Fuel tanks have a water compensation system to improve stability.
Operational: Both to remain in service until replacements have been acquired.
 (Scale 1 : 900), Ian Sturton / 0505958



ALI HAIDER 2/2001, Michael Nitz / 0529087

PATROL FORCES

Notes: (1) Plans to acquire an offshore patrol vessel, four missile-firing craft and further patrol craft were announced by the Defence Minister in April 2004. Five patrol craft are to be constructed at Khulna Shipyard. They are to be operated by the navy.
 (2) Six harbour patrol craft are being built at Khulna Shipyard for the Coast Guard. The first, *Atrai*, was commissioned in September 2007.

1 MADHUMATI (SEA DRAGON) CLASS (LARGE PATROL CRAFT) (PSO)

Name	No	Builders	Commissioned
MADHUMATI	P 911	Hyundai, Ulsan	18 Feb 1998

Displacement, tons: 635 full load
Dimensions, feet (metres): 199.5 x 26.2 x 8.9 (60.8 x 8 x 2.7)
Main machinery: 2 SEMT-Pielstick 12 PA6 diesels; 9,600 hp(m) (7.08 MW) sustained; 2 shafts
Speed, knots: 24
Range, n miles: 6,000 at 15 kt
Complement: 43 (7 officers)
Guns: 1 Bofors 57 mm/70 Mk 1; 220 rds/min to 17 km (9.3 n miles); weight of shell 2.4 kg.
 1 Bofors 40 mm/70. 2 Oerlikon 20 mm.
Weapons control: Optronic director.
Radars: Surface search: Kelvin Hughes KH 1007; I-band
Navigation: GEM Electronics SPN 753B; I-band.

Comment: Ordered in 1995 and delivered in October 1997. Very similar to the South Korean Coast Guard vessels, but with improved fire-control equipment, Vosper stabilisers.



MADHUMATI 2/1998, Bangladesh Navy / 0017589

6 ISLAND CLASS (COASTAL PATROL CRAFT/TRAINING CRAFT) (PBO/AX)

Name	No	Builders	Commissioned	Recommissioned
SHAHEED RUHUL AMIN (ex-Jersey)	A 511 (ex-P 295)	Hall Russell, Aberdeen	15 Oct 1976	1994
KAPATAKHAYA (ex-Shetland)	P 912 (ex-P 298)	Hall Russell, Aberdeen	14 July 1977	4 May 2003
KARATOA (ex-Alderney)	P 913 (ex-P 278)	Hall Russell, Aberdeen	6 Oct 1979	4 May 2003
GOMATI (ex-Anglesey)	P 914 (ex-P 277)	Hall Russell, Aberdeen	1 June 1979	3 Oct 2004
SANGU (ex-Guernsey)	P 713 (ex-P 297)	Hall Russell, Aberdeen	28 Oct 1977	3 Oct 2004
TURAG (ex-Lindisfarne)	P 714 (ex-P 300)	Hall Russell, Aberdeen	3 Mar 1978	3 Oct 2004

Displacement, tons: 925 standard; 1,260 full load
Dimensions, feet (metres): 176 wl; 195.3 oa x 36 x 15 (53.7, 59.5 x 11 x 4.5)
Main machinery: 2 Ruston 12RKC diesels; 5,640 hp (4.21 MW) sustained; 1 shaft, cp prop
Speed, knots: 16.5
Range, n miles: 7,000 at 12 kt
Complement: 39
Guns: 1 Bofors 40 mm/60 Mk 3. 2 FN 7.62 mm MGs.
Countermeasures: ESM: Orange Crop; intercept
Combat data systems: Racal CANE DEA-1 action data automation.
Radars: Navigation: Kelvin Hughes Type 1006; I-band.

Comment: *Shaheed Ruhul Amin* transferred as a training craft in 1993. Five further former UK Island class acquired as patrol craft. *Kapatakhaya* transferred 31 July 2002, *Karatoa* 31 October 2002, *Gomati* on 12 September 2003 and *Sangu* and *Turag* on 29 January 2004.



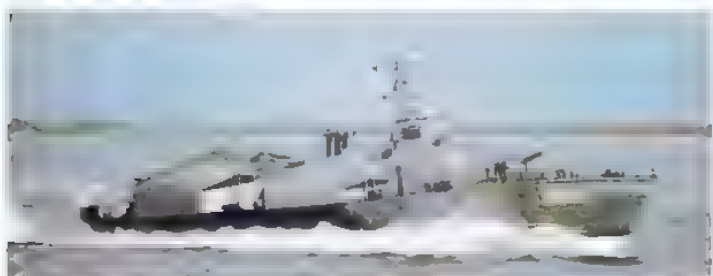
TURAG 3/2004, Derek Fox / 1042116

4 DURDHARSHA (HUANGFEN) CLASS (TYPE 021) (FAST ATTACK CRAFT—MISSILE) (PTFG)

DURDHARSHA P 8125 DURDANTA P 8126 DORDANDA P 8128 ANIRBAN P 8131

Displacement, tons: 171 standard, 205 full load
Dimensions, feet (metres): 126.6 × 24.9 × 8.9 (38.6 × 7.6 × 2.7)
Main machinery: 3 diesels, 12,000 hp(m) (8.8 MW); 3 shafts
Speed, knots: 35 **Range, n miles:** 800 at 30 kt
Complement: 35 (5 officers)
Missiles: SSM-4 HY-2; active radar or IR homing to 80 km (43.2 n miles) at 0.9 Mach; warhead 513 kg
Guns: 4 USSR 30 mm/85 (2 twin)
Radars: Surface search: SquareTie; I-band
IFF: High Pole A

Comment: Built in China. First four commissioned in Bangladesh Navy on 10 November 1988. Chinese equivalent of the Soviet Osa class which started building in 1985. All damaged in April 1991 typhoon but recovered and repaired (*Durnibar* was converted to a patrol craft). A fifth vessel *Anirban* was delivered in June 1992. Original main machinery replaced.



DORDANDA

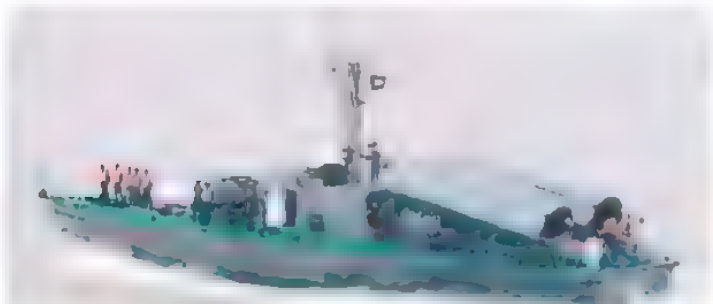
6/2003, Bangladesh Navy / 05/2413

5 DURBAR (HEGU) CLASS (TYPE 024) (FAST ATTACK CRAFT—MISSILE) (PTFG)

DURBAR P 8111 DURANTA P 8112 DURVEDYA P 8113 DURDAM P 8114 UTTAL P 8141

Displacement, tons: 68 standard; 79.2 full load
Dimensions, feet (metres): 88.6 × 20.7 × 4.3 (27 × 6.3 × 1.3)
Main machinery: 4 Type L-12V-180B diesels; 4,800 hp(m) (3.57 MW); 4 shafts
Speed, knots: 37.5 **Range, n miles:** 400 at 30 kt
Complement: 17 (4 officers)
Missiles: SSM-2 SY-1; active radar or IR homing to 46 km (24.3 n miles) at 0.9 Mach; warhead 513 kg
Guns: 2 -25 mm/80 (twin); 270 rds/min to 3 km (1.6 n miles); weight of shell 0.34 kg.
Radars: Surface search: SquareTie; I-band

Comment: Built in China. First pair commissioned in Bangladesh Navy on 6 April 1983, second pair on 10 November 1983. Two badly damaged in April 1991 typhoon but were repaired. *Uttal* was delivered in June 1992. Missiles are seldom embarked. All have been refitted with new versions of original engines.



UTTAL

3/1998 / 0017590

4 HUCHUAN CLASS (TYPE 026) (FAST ATTACK CRAFT—TORPEDO) (PTK)

TB 36 P 8235 TB 36 P 8236 TB 37 P 8237 TB 38 P 8238

Displacement, tons: 46 full load
Dimensions, feet (metres): 73.8 × 16.4 × 6.9 (foil) (22.5 × 5 × 2.1)
Main machinery: 3 Type L-12V-180 diesels; 3,600 hp(m) (2.64 MW); 3 shafts
Speed, knots: 50 **Range, n miles:** 500 at 30 kt
Complement: 23 (3 officers)
Guns: 4 China 14.5 mm (2 twin); 600 rds/min to 7 km (3.8 km)
Torpedoes: 2 -21 in (533 mm) China YU-1; anti-ship, to 9.2 km (5 n miles) at 39 kt or 3.7 km (2.1 n miles) at 51 kt; warhead 400 kg.
Radars: Surface search: China Type 763; I-band

Comment: Chinese Huchuan class. Two damaged in April 1991 typhoon but were repaired. All reported operational.



TB 38

6/2003, Bangladesh Navy / 05/2416

1 DURJOY (HAINAN) CLASS (TYPE 037) (LARGE PATROL CRAFT) (PC)

NIRBHOY P 812

Displacement, tons: 375 standard; 392 full load
Dimensions, feet (metres): 192.8 × 23.6 × 7.2 (58.8 × 7.2 × 2.2)
Main machinery: 4 diesels, 4,000 hp(m) (2.94 MW) sustained; 4 shafts
Speed, knots: 30.5 **Range, n miles:** 1,300 at 15 kt
Complement: 70
Guns: 4 China 57 mm/70 (2 twin), 120 rds/min to 12 km (6.5 n miles); weight of shell 6.31 kg.
 4 -25 mm/80 (2 twin); 270 rds/min to 3 km (1.6 n miles); anti-aircraft
A/S mortars: 4 RBU 1200 fixed 5-barralled launchers; range 1,200 m; warhead 34 kg
Depth charges: 2 racks; 2 throwers, 18 DCs.
Mines: Fitted with rails for 12 mines.
Radars: Surface search I-band.
IFF: High Pole.
Sonars: Tamir II; hull-mounted; short-range attack; high frequency.

Comment: Transferred from China and commissioned 1 December 1985. Forms part of Escort Squadron 81 at Chittagong. *Durjoy* damaged beyond repair by cyclone in 1991. *Nirbhoy* refitted with new main machinery.



NIRBHOY

6/2003, Bangladesh Navy / 05/2414

8 SHAHEED (SHANGHAI II) (TYPE 062) CLASS (FAST ATTACK CRAFT—GUN) (PC)

SHAHEED DAULAT P 411 SHAHEED AKTHERUDDIN P 414 TAMJEED P 613
 SHAHEED FARID P 412 SHAHEED P 611 TANVEER P 614
 SHAHEED MOHIBULLAH P 413 TAWFIQ P 612

Displacement, tons: 113 standard; 134 full load
Dimensions, feet (metres): 127.3 × 17.7 × 5.6 (38.8 × 5.4 × 1.7)
Main machinery: 4 Type L-12-180 diesels; 4,400 hp(m) (3.2 MW) sustained; 4 shafts
Speed, knots: 30 **Range, n miles:** 800 at 16.5 kt
Complement: 36 (4 officers)
Guns: 4 -37 mm/63 (2 twin); 180 rds/min to 8.5 km (4.6 n miles); weight of shell 1.4 kg.
 4 -25 mm/80 (2 twin); 270 rds/min to 3 km (1.6 n miles) anti-aircraft
Depth charges: 2 throwers; 8 charges.
Mines: 10 can be carried
Radars: Surface search, Skin Head/Pot Head; E-band
Sonars: Hull mounted; active; short range, high frequency. Some reported to have VDS

Comment: Transferred from China March 1982. Different engine arrangement from Chinese craft. P 411-414 form Patrol Squadron 41 based at Khulna. P 611 was handed over to the Coast Guard in March 2003 and P 612, P 613 and P 614 were lent to the Coast Guard 2005-2007. P 412 capsized in a storm on 20 September 2006 but is reported to have been salvaged.



TAMJEED

3/1998 / 0017591

4 SEA DOLPHIN CLASS (FAST ATTACK CLASS—GUN) (PTF)

TITAS P 1011 KUSIYARA P 1012 CHITRA P 1013 DHANSIRI P 1014

Displacement, tons: 143 full load
Dimensions, feet (metres): 107.9 × 22.6 × 7.9 (32.9 × 6.9 × 2.4)
Main machinery: 2 MTU MD 16V 538 TB90 diesels; 4,500 hp(m) (3.35 MW) sustained; 2 shafts
Speed, knots: 37 **Range, n miles:** 600 at 20 kt
Complement: 28 (4 officers)
Guns: 1 -40 mm
 2 -30 mm (1 twin).
 2 -20 mm
Weapons control: Optical director.
Radars: Surface search. Raytheon 1645; I-band.

Comment: Built by Korea SEC in the 1980s and transferred from South Korea as a gift. First pair (P 1011, 1012) recommissioned on 27 May 2000 and second pair (P 1013, 1014) on 3 October 2004. All form 101 Patrol Squadron based at Chittagong.



TITAS

6/2001, Bangladesh Navy / 05/2300b

1 RUPOSHI BANGLA CLASS (COASTAL PATROL CRAFT) (PB)

Name	No	Builders	Launched	Commissioned
RUPOSHI BANGLA	P 201	Hong Leong-Lürssen	28 June 1999	23 Jan 2000

Displacement, tons: 195 full load
Dimensions, feet (metres): 126.3 × 23 × 13.5 (38.5 × 7 × 4.1)
Main machinery: 2 Paxman 12VP 185 diesels; 6,729 hp(m) (4.95 MW) sustained; 2 shafts
Speed, knots: 30
Complement: 27 (5 officers)
Guns: 1 Oto Melara 25 mm KBA, 2—762 mm MGs.
Radars: Surface search, Furuno; I-band

Comment: Ordered in June 1998 and laid down 11 August 1998. Based on the PZ design for the Malaysian Police. Operated by the Coast Guard.



RUPOSHI BANGLA 10/1999, Hong Leong-Lürssen / 0064675

1 HAIZHUI (TYPE 062/1) CLASS (COASTAL PATROL CRAFT) (PC)

Name	No	Commissioned
BARKAT	P 711	4 Aug 1996

Displacement, tons: 139 full load
Dimensions, feet (metres): 134.5 × 17.4 × 5.9 (40.9 × 5.3 × 1.8)
Main machinery: 4 Chinese L12-180A diesels; 4,800 hp(m) (35.3 MW), 4 shafts
Speed, knots: 28
Range, n miles: 750 at 17 kt
Complement: 43 (4 officers)
Guns: 4 China 37 mm/63 (2 twin); 180 rds/min to 8.5 km (4.6 n miles); weight of shell 1.42 kg
 4 China 25 mm/80 (2 twin).
Depth charges: 2 rails
Radars: Surface search; Anitsu 726; I-band
Sonars: Stag Ear; active; high frequency.

Comment: Acquired from China in 1995. This is the Shanghai III, the larger and slower version of the Shanghai II which in Chinese service has anti-submarine mortars. An inclined pole mast and platform behind the bridge are distinguishing features.



BARKAT 3/1996 / 0017592

1 COASTAL PATROL CRAFT (PB)

Name	No	Builders	Commissioned
SALAM (ex-Durnibar)	P 712 (ex-P 8127)	Khulna Shipyard	19 Mar 2002

Displacement, tons: 185 standard; 216 full load
Dimensions, feet (metres): 126.6 × 24.9 × 8.9 (38.6 × 7.6 × 2.7)
Main machinery: 2 Paxman 12V 185 diesels; 4,800 hp (3.6 MW) sustained; 2 shafts
Speed, knots: 24
Range, n miles: 3,460 at 13 kt
Complement: 27 (5 officers)
Guns: 1 Bofors 40 mm/60; 120 rds/min to 3 km (1.6 n miles)
 2 GCM A02 30 mm (twin).
Radars: Surface search: Furuno HR 2010; E/F-band.
Navigation: Anritsu; I-band.

Comment: Former Huangfen class missile craft transferred from China in 1988. Sunk in River Karnaphuli in 1991 during cyclone and later recovered. Renovated and converted to patrol craft role and recommissioned in 2002.

2 KARNAPHULI (KRALJEVICA) CLASS (LARGE PATROL CRAFT) (PC)

Name	No	Builders	Commissioned
KARNAPHULI (ex-PBR 502)	P 314	Yugoslavia	1956
TISTA (ex-PBR 505)	P 315	Yugoslavia	1956

Displacement, tons: 195 standard; 245 full load
Dimensions, feet (metres): 141.4 × 20.7 × 5.7 (43.1 × 6.3 × 1.8)
Main machinery: 2 Paxman 12V P185 (P 314); 2 MTU 12V 396TE84 (P 315); 2 shafts
Speed, knots: 24
Range, n miles: 1,500 at 12 kt
Complement: 44 (4 officers)
Guns: 2 Bofors 40 mm/70, 2 Oerlikon 20 mm, 2—128 mm rocket launchers (5 barrels per mounting).
Depth charges: 2 racks; 2 Mk 6 projectors.
Radars: Surface search Decca 1229, I-band
Sonars: QCU 2; hull-mounted; active; high frequency

Comment: Transferred and commissioned 6 June 1975. Karnaphuli re-engined in 1995. Tista in 1998.



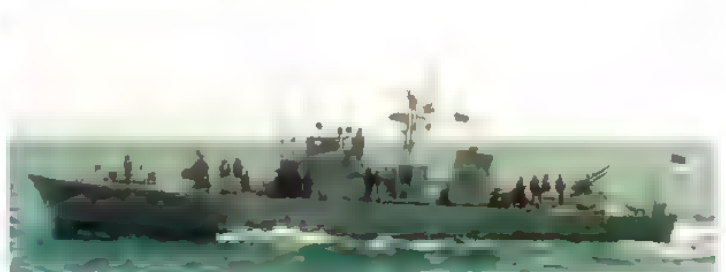
TISTA 6/1995, Bangladesh Navy / 0058550

2 AKSHAY CLASS (COASTAL PATROL CRAFT) (PB)

Name	No	Builders	Commissioned
PADMA (ex-Akshay)	P 312	Hooghly D & E Co, Calcutta	4 Apr 1973
SURMA (ex-Ajay)	P 313	Hooghly D & E Co, Calcutta	26 July 1974

Displacement, tons: 120 standard, 150 full load
Dimensions, feet (metres): 117.2 × 20 × 5.5 (35.7 × 6.1 × 1.7)
Main machinery: 2 Paxman YHAXM diesels; 1,100 hp (820 kW); 2 shafts
Speed, knots: 18
Range, n miles: 500 at 12 kt
Complement: 35 (3 officers)
Guns: 4 or 8 Oerlikon 20 mm 1 or (2 quad), 2 Bofors 40 mm/60 (twin) (Surma).
Radars: Surface search: Racal Decca, I-band

Comment: Built in 1962 and transferred from India in 1973-4. Surma has a 40 mm gun aft vice the second quad 20 mm.



PADMA 6/1997, Bangladesh Navy / 0012065

2 MEGHNA CLASS (COASTAL PATROL CRAFT) (PB)

Name	No	Builders	Launched
MEGHNA	P 211	Vosper Private, Singapore	6 May 1984
JAMUNA	P 212	Vosper Private, Singapore	25 Sep 1984

Displacement, tons: 410 full load
Dimensions, feet (metres): 152.5 × 24.6 × 6.6 (46.5 × 7.5 × 2)
Main machinery: 2 Paxman Valenta 12CM diesels; 5,000 hp (3.73 MW) sustained; 2 shafts
Speed, knots: 20
Range, n miles: 2,000 at 16 kt
Complement: 47 (3 officers)
Guns: 1 Bofors 57 mm/70 Mk 1; 200 rds/min to 17 km (9.3 n miles); weight of shell 2.4 kg.
 1 Bofors 40 mm/70; 300 rds/min to 12 km (6.5 n miles); weight of shell 0.96 kg.
 2—762 mm MGs; launchers for illuminants on the 57 mm gun.
Weapons control: Selenia NA 18 B optronic system.
Radars: Surface search: Decca 1229, I-band

Comment: Built for EEZ work under the Ministry of Agriculture. Both completed late 1984. Both damaged in April 1991 typhoon but have been repaired. P 212 damaged by container ship at Chittagong in September 2003.



MEGHNA 6/2003, Bangladesh Navy / 0572416

58 Bangladesh/Patrol forces — Mine warfare forces

4 TYPE 123K (CHINESE P4) CLASS (FAST ATTACK CRAFT—TORPEDO) (PTL)

TB 1 P 8221 TB 2 P 8222 TB 3 P 8223 TB 4 P 8224

Displacement, tons: 25 full load
Dimensions, feet (metres): 62.3 × 10.8 × 3.3 (19 × 3.3 × 1)
Main machinery: 2 Typo L-12V-180 diesels; 2,400 hp(m) (1.76 MW); 2 shafts
Speed, knots: 50. **Range, n miles:** 410 at 30 kt
Complement: 12 (1 officer)
Guns: 2—14.5 mm (twin) MG.
Torpedoes: 2—127 in (450 mm); anti-ship.
Radars: Surface search: Pot Head; I-band

Comment: Transferred from China 6 April 1983. Three reported to be operational



TB 4 6/2003, Bangladesh Navy / 0577417

1 RIVER CLASS (COASTAL PATROL CRAFT) (PB)

Name	No	Builders	Commissioned
BISHKHALI (ex-Jessora)	P 311	Brooke Marine Ltd	20 May 1965

Displacement, tons: 115 standard; 143 full load
Dimensions, feet (metres): 107 × 20 × 6.9 (32.6 × 6.1 × 2.1)
Main machinery: 2 MTU 12V 538TB90 diesels; 4,500 hp(m) (3.3 MW) sustained; 2 shafts
Speed, knots: 24
Complement: 30
Guns: 2 Breda 40 mm/70; 300 rds/min to 12.5 km (6.8 n miles); weight of shell 0.96 kg
Radars: Surface search: Racal Decca; I-band.

Comment: PNS *Jessora*, which was sunk during the 1971 war, was salvaged and extensively repaired at Khulna Shipyard and recommissioned as *Bishkhali* on 23 November 1978.



BISHKHALI 6/1996, Bangladesh Navy / 0056554

5 PABNA CLASS (RIVERINE PATROL CRAFT) (PBR)

Name	No	Builders	Commissioned
PABNA	P 111	DEW Narayangonj, Dhaka	12 June 1972
NOAKHALI	P 112	DEW Narayangonj, Dhaka	10 July 1972
PATUAKHALI	P 113	DEW Narayangonj, Dhaka	27 Mar 1975
RANGAMATI	P 114	DEW Narayangonj, Dhaka	12 Feb 1977
BOGRA	P 115	DEW Narayangonj, Dhaka	15 July 1977

Displacement, tons: 69.5 full load
Dimensions, feet (metres): 75 × 20 × 3.5 (22.9 × 6.1 × 1.1)
Main machinery: 2 Cummins diesels; 2 shafts
Speed, knots: 10.8. **Range, n miles:** 700 at 8 kt
Complement: 33 (3 officers)
Guns: 1 Bofors 40 mm/60 or Oerlikon 20 mm

Comment: The first indigenous naval craft built in Bangladesh. Form River Patrol Squadron 11 at Mongla. All operated by the Coast Guard from 2003.



PABNA 6/2003, Bangladesh Navy / 0572418

2 PATROL CRAFT (PB)

SHETGANG P 102 PORTE GRANDE

Dimensions, feet (metres): 102.3 × 17.7 × 4.6 (31.2 × 5.4 × 1.4)
Main machinery: 2 MTU diesels; 3,000 hp (2.2 MW), 2 shafts
Speed, knots: 25
Complement: To be announced
Guns: To be announced
Radars: To be announced.

Comment: Both ships constructed by Chittagong Port Authority and commissioned on 29 May 2006. Operated by the Coast Guard.

6 HIGH-SPEED INTERCEPTION CRAFT (HSIC)

Displacement, tons: 3.4 full load
Dimensions, feet (metres): 34.1 × 9.2 × 2.0 (10.4 × 2.8 × 0.6)
Main machinery: 2 VM diesels; 640 hp (480 kW); 2 shafts
Speed, knots: 54. **Range, n miles:** 200 at 35 kt
Complement: 2 plus 8
Guns: 1—762 mm MG

Comment: RIB33SC design by FB Design, Italy. Funded by UN for riverine and coastal patrol in southern Sudan. Craft in UN livery but commissioned in Bangladesh Navy in 2005.



INTERCEPTION CRAFT 6/2007, Massimo Anneti / 1166507

MINE WARFARE FORCES

4 SHAPLA (RIVER) CLASS (MINESWEEPERS/PATROL CRAFT/ SURVEY SHIPS) (MHSC/PBO/AGS)

Name	No	Builders	Commissioned
SHAPLA (ex-Wavanday)	M 96	Richards, Lowestoft	12 July 1984
SAIKAT (ex-Carron)	M 96	Richards, Great Yarmouth	30 Sep 1984
SUROVI (ex-Dovey)	M 97	Richards, Great Yarmouth	30 Mar 1985
SHAIBAL (ex-Helford)	M 98	Richards, Great Yarmouth	7 June 1985

Displacement, tons: 690 full load
Dimensions, feet (metres): 156 × 34.5 × 9.5 (47.5 × 10.5 × 2.9)
Main machinery: 2 Ruston BRKC diesels; 3,100 hp (2.3 MW) sustained; 2 shafts; cp props
Speed, knots: 14. **Range, n miles:** 4,500 at 10 kt
Complement: 30 (7 officers)
Guns: 1 Bofors 40 mm/60 Mk 3.
Radars: Navigation: 2 Racal Decca TM 1226C; I-band.

Comment: These ships are four of a class of 12 of which seven are in service with Brazil. Transferred from the UK on 3 October 1994 and recommissioned on 27 April 1995. Steel hulled for deep-armed team sweeping with wire sweeps, and intended for use both as minesweepers and as patrol craft. Fitted with Racal Integrated Minehunting System. *Shaibal* converted for hydrographic survey duties but retains minesweeping gear. Fitted with echo sounders, side-scan sonar and a laboratory.



SUROVI 3/1998 / 0017593

1 SAGAR (T 43) CLASS (MINESWEEPER) (MSO)

Name	No	Builders	Commissioned
SAGAR	M 91	Wuhan Shipyard	27 Apr 1995

Displacement, tons: 520 standard; 590 full load
Dimensions, feet (metres): 196.8 × 27.6 × 6.9 (60 × 8.8 × 2.3)
Main machinery: 2 CXZ MAN B&W Type 9L 20-27 diesels; 2,400 hp (1.8 MW) sustained; 2 shafts; cp props
Speed, knots: 14. **Range, n miles:** 3,000 at 10 kt
Complement: 70 (10 officers)

Guns: 4 China 37 mm/63 (2 twin); 180 rds/min to 8.5 km (4.6 n miles); weight of shell 1.42 kg.

4—25 mm/60 (2 twin); 270 rds/min to 3 km (1.6 n miles).

4 China 14.5 mm/93 (2 twin); 600 rds/min to 7 km (3.8 n miles).

Depth charges: 2 BMB-2 projectors; 20 depth charges.

Mines: Can carry 12-16.

Countermeasures: MCMV; MPT-1 paravanes; MPT-3 mechanical sweep; acoustic and magnetic gear.

Radars: Surface search: Fin Curve; I-band.

Sonars: Celcius Tech CMAS 36/39, active high frequency mine detection.

Comment: Ordered from China in 1993. Based on Type 010G minesweeper design. Used mostly as a patrol ship. New sonar fitted in 1998.



SAGAR 3/1998 / 0017594

SURVEY AND RESEARCH SHIPS

1 SURVEY SHIP (AGS)

Name	No	Builders	Commissioned
AGRADOOT (ex-Kadan)	A 583	Khulna Shipyard	19 Mar 2002

Displacement, tons: 687 full load
 Dimensions, feet (metres): 157.0 × 25.6 × 11.5 (478 × 78 × 3.5)
 Main machinery: 2 Baudouin diesels
 Speed, knots: 12.5
 Complement: 70 (8 officers)
 Guns: 1 Oerlikon 20 mm.
 Radars: Furuno HR 2110, Kelvin Hughes HR-3000A.

Comment: Former Thai trawler converted into a Survey vessel by Khulna shipyard. Fitted with two dual frequency digital hydrographic echo sounders, side-scan sonar and laboratories. Carries a survey launch.



AGRADOOT 6/2003, Bangladesh Navy / 05/2419

1 REPAIR SHIP (YR)

SHAHAYAK A 512

Displacement, tons: 477 full load
 Dimensions, feet (metres): 146.6 × 26.2 × 6.6 (44.7 × 8 × 2)
 Main machinery: 1 Cummins 12 VTS 6 diesel; 425 hp (317 kW); 1 shaft
 Speed, knots: 11.5
 Range, n miles: 3,800 at 11.5 kt
 Complement: 45 (1 officer)
 Guns: 1 Oerlikon 20 mm.

Comment: Re-engined and modernised at Khulna Shipyard and commissioned on 23 November 1978 to act as repair vessel.



SHAHAYAK 6/1996, Bangladesh Navy / 0056657

1 TENDER (AG)

SHAHJALAL A 513

Displacement, tons: 600 full load
 Dimensions, feet (metres): 131.8 × 29.7 × 12.6 (40.2 × 9.1 × 3.8)
 Main machinery: 1 V 16-cyl type diesel; 1 shaft
 Speed, knots: 12
 Range, n miles: 7,000 at 12 kt
 Complement: 55 (3 officers)
 Guns: 1 Oerlikon 20 mm.

Comment: Ex-Thai fishing vessel SMS *Gold 4*. Probably built in Tokyo. Commissioned on 15 January 1987 and used as a diving/salvage tender.



SHAHJALAL 6/1996, Bangladesh Navy / 0056658

AUXILIARIES

Notes: Floating Dock A 711 (*Sundarban*) acquired from Brodogradiliste Joso Lozovina-Mosor, Trogir, Yugoslavia in 1980, capacity 3,600 tons. Has a complement of 85 (5 officers). Floating crane A 731 (*Balaban*) is self-propelled at 9 kt and has a lift of 70 tons; built at Khulna Shipyard and commissioned 18 May 1988, she has a complement of 29 (two officers)

1 TANKER (AOTL)

Name	No	Commissioned
KHAN JAHAN ALI	A 515	14 July 1987

Displacement, tons: 2,900 full load
 Measurement, tons: 1,343 gross
 Dimensions, feet (metres): 250.8 × 37.5 × 18.4 (76.4 × 11.4 × 5.6)
 Main machinery: 1 diesel; 1,350 hp(m) (992 kW); 1 shaft
 Speed, knots: 12
 Complement: 28 (3 officers)
 Cargo capacity: 1,500 tons
 Guns: 2 Oerlikon 20 mm.

Comment: Completed in Japan in 1983. Can carry out stern replenishment at sea but is seldom used in this role. Replacement is under consideration.



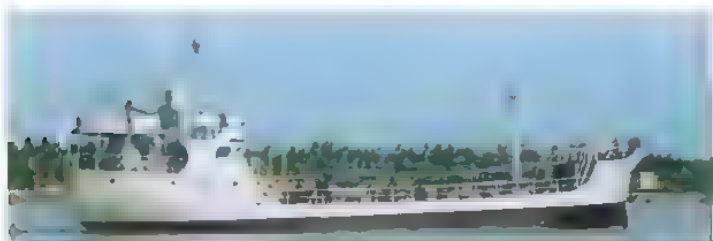
KHAN JAHAN ALI 3/1998 / 0017595

1 TANKER (AOTL)

IMAN GAZZALI A 516

Displacement, tons: 213 full load
 Dimensions, feet (metres): 146.8 × 23 × 11.2 (44.8 × 7 × 3.4)
 Main machinery: 1 Cummins diesel; 1 shaft
 Speed, knots: 8
 Complement: 30 (2 officers)

Comment: An oil tanker of some 600,000 litres capacity acquired in 1994 and commissioned 6 May 1997



IMAN GAZZALI 6/1999, Bangladesh Navy / 0056656

1 HARBOUR TENDER (YAG)

SANKET

Displacement, tons: 80 full load
 Dimensions, feet (metres): 96.5 × 20 × 5.9 (29.4 × 6.1 × 1.8)
 Main machinery: 2 Deutz diesels, 2,400 hp(m) (1.76 MW); 2 shafts
 Speed, knots: 16
 Range, n miles: 1,000 at 16 kt
 Complement: 18 (1 officer)
 Guns: 1 Oerlikon 20 mm

Comment: Former harbour craft of the Chittagong Port Authority taken over by the navy in 1984. It is used as a utility harbour craft. No pennant number has been allocated.



SANKET 3/1996 / 0056659

1 LANDING CRAFT LOGISTIC (LSL)

SHAH AMANAT L 900

Displacement, tons: 366 full load
Dimensions, feet (metres): 154.2 × 34.1 × 8 (47 × 10.4 × 2.4)
Main machinery: 2 Caterpillar D 343 diesels; 730 hp (544 kW) sustained; 2 shafts
Speed, knots: 9.5
Complement: 31 (3 officers)
Military lift: 150 tons
Guns: 2—12.7 mm MGs.

Comment: Australian civil vessel confiscated by the Navy while engaged in smuggling in 1988. Transferred to the Navy and commissioned in 1990.



SHAH AMANAT

6/1996, Bangladesh Navy / 0056567

2 LCU 1512 CLASS (LCU)

SHAH PORAN (ex-Cerro Gordo) L 901

SHAH MAKHDUM (ex-Cadge) L 902

Displacement, tons: 375 full load
Dimensions, feet (metres): 134.9 × 29 × 6.1 (41.1 × 8.8 × 1.9)
Main machinery: 4 Detroit 6-71 diesels, 696 hp (508 kW) sustained; 2 shafts
Speed, knots: 11. **Range, n miles:** 1,200 at 8 kt
Complement: 14 (2 officers)
Military lift: 170 tons
Guns: 2—12.7 mm MGs
Radars: Navigation: LN 66; I-band.

Comment: Ex-US Army landing craft transferred in April 1991 and commissioned 30 January 1993 after refit.



SHAH MAKHDUM

6/1996, Bangladesh Navy / 0056563

5 YUCH'IN CLASS (TYPE 068/069) (LCU/LCP)

DARSHAK A 581

LCT 101 A 584

LCT 104 A 587

TALLASHI A 582

LCT 102 A 585

Displacement, tons: 85 full load
Dimensions, feet (metres): 81.2 × 17.1 × 4.3 (24.8 × 5.2 × 1.3)
Main machinery: 2 Type 12V 150 diesels, 600 hp(m) (440 kW); 2 shafts
Speed, knots: 11.5. **Range, n miles:** 450 at 11.5 kt
Complement: 23
Military lift: Up to 150 troops (L 101-104)
Guns: 4 China 14.5 mm (2 twin) MGs can be carried

Comment: Named craft transferred from China in 1983 fitted with survey equipment and used as inshore survey craft. Second pair transferred 4 May 1986, third pair 1 July 1986. Probably built in the late 1960s. Two badly damaged in April 1991 typhoon and LCT 103 was subsequently scrapped.



TALLASHI (survey)

6/2003, Bangladesh Navy / 0572421



LCT 101

2/1992, Bangladesh Navy / 0056561

3 LCVP

L 011

L 012

L 013

Displacement, tons: 83 full load
Dimensions, feet (metres): 69.9 × 17.1 × 4.9 (21.3 × 5.2 × 1.5)
Main machinery: 2 Cummins diesels; 730 hp (544 kW); 2 shafts
Speed, knots: 12
Complement: 10 (1 officer)

Comment: First two built at Khulna Shipyard and 013 at DEW Narayangong, all completed in 1984.



L 011

6/1996, Bangladesh Navy / 0056564

TUGS

1 HUJIU CLASS (OCEAN TUG) (ATA)

KHADEM A 721

Displacement, tons: 1,472 full load
Dimensions, feet (metres): 197.5 × 38 × 16.1 (60.2 × 11.6 × 4.9)
Main machinery: 2 LVP 24 diesels; 1,800 hp(m) (1.32 MW); 2 shafts
Speed, knots: 14
Range, n miles: 7,200 at 14 kt
Complement: 56 (7 officers)
Guns: 2—12.7 mm MGs
Radars: Navigation: China Type 756; I-band

Comment: Commissioned 6 May 1984 after transfer from China.



KHADEM

6/1996, Bangladesh Navy / 0056565

3 COASTAL TUGS (YTM)

SEBAK A 722

RUPSHA A 723

SHIBSHA A 724

Displacement, tons: 330 full load
Dimensions, feet (metres): 99.9 × 28.1 × 1.8 (30.0 × 8.4 × 3.5)
Main machinery: 2 Caterpillar 12V 3512B diesels, 2,700 hp (2.0 MW); 2 shafts
Speed, knots: 12
Range, n miles: 1,800 at 12 kt
Complement: 23 (3 officers)
Guns: 2—7.62 mm MGs (fitted for).

Comment: Details are for *Rupsha* and *Shibsha* built to a Damen Stan Tug 3008 design by Khulna Shipyard. Construction started in 2001, completed in 2003 and commissioned on 3 October 2004. *Sebak* built in Narayangang Dockyard in 1993 and commissioned on 23 December 1993.



SHIBSHA

6/2003, Bangladesh Navy / 0572427

Barbados



Country Overview

Barbados gained independence in 1966; the British monarch, represented by a governor-general, is head of state. The easternmost island of the Windward Islands of the Lesser Antilles chain, it consists of a single island of 166 square miles. The capital, largest town and principal port is Bridgetown, located on the southwestern coast. Territorial seas (12 n miles) are claimed. A 200 n mile Exclusive Economic Zone (EEZ) has also been claimed but the limits are not defined. A Coast Guard was formed in 1973 and became the naval arm of the Barbados Defence Force in 1978.

Headquarters Appointments

Chief of Staff, Barbados Defence Force:
Colonel Alvin Quintyne
Commanding Officer Coast Guard Squadron:
Lieutenant Commander Errington Shurland

Personnel

2009
(a) 96 (11 officers)
(b) Voluntary service

Bases

Spring Garden, Bridgetown (HMBS *Pelican*).

Prefix to Ships' Names

HMBS

COAST GUARD

Notes: (1) Three 10 m Damen RIB 1000 capable of 35 kt were delivered in June 2007.
(2) A Zodiac 920 RHIB was donated by the US in 2004

1 KEBIR CLASS (LARGE PATROL CRAFT) (PB)

Name	No	Builders	Launched	Commissioned
TRIDENT	P 01	Brooke Marine	14 Apr 1981	Nov 1981

Displacement, tons: 155.5 standard; 190 full load
Dimensions, feet (metres): 123 x 22.6 x 5.6 (375 x 6.9 x 1.7)
Main machinery: 2 Paxman Valenta 12CM diesels; 5,000 hp (3.73 MW) sustained; 2 shafts
Speed, knots: 29
Range, n miles: 3,000 at 12 kt
Complement: 18
Guns: 2–12.7 mm MGs 2–7.62 mm MGs
Radars: Surface search: Racal Decca Bridgemaster; I-band.

Comment: Refitted by Bender Shipyard in 1990 when the old guns were removed. Refitted again by Cable Marine in 1988 after a main engine seized. Same hull as Algerian Kobir class. To be decommissioned when third Damen 4207 enters service.



TRIDENT 4/2008*, Marco Ghiglino / 1335332

3 DAMEN STAN PATROL 4207 (PB)

Name	No	Builders	Commissioned
LEONARD C BANFIELD	P 02	Damen Shipyard, Gorinchem	14 Sep 2007
RUDYARD LEWIS	P 03	Damen Shipyard, Gorinchem	13 Sep 2008
-	P 04	Damen Shipyard, Gorinchem	Apr 2009

Displacement, tons: 205
Dimensions, feet (metres): 140.4 x 23.3 x 8.3 (42.8 x 7.11 x 2.52)
Main machinery: 2 Caterpillar 3516B DI-TA; 5,600 hp (4.17 MW); 2 cp props
Speed, knots: 26
Complement: 14
Guns: To be announced.

Comment: Contract signed with Damen Shipyards, Gorinchem for construction of a Damen Stan Patrol 4207 offshore patrol craft. *Leonard C Banfield* arrived Barbados on 6 September 2007. Steel hull with aluminium superstructure. Capable of carrying a 7 m RIB. Similar craft in service in Jamaica Coast Guard.



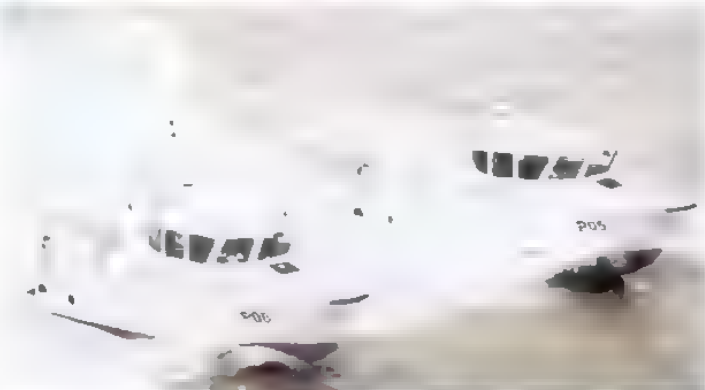
RUDYARD LEWIS 3/2008*, Marco Ghiglino / 1335331

2 DAMEN STAN PATROL 1204 (PB)

Name	Commissioned
ENTERPRISE P 05	EXCELLENCE P 06

Displacement, tons: To be announced
Dimensions, feet (metres): 39.3 x 12.1 x 2.2 (11.98 x 3.7 x 0.66)
Main machinery: 2 Caterpillar C7 diesels; 740 hp (550 kW); 2 Hamilton waterjets
Speed, knots: 24
Complement: 4

Comment: Contract signed with Damen Shipyards, Gorinchem for construction of three Damen Stan Patrol 1204 patrol craft. Both commissioned on 13 September 2008. Aluminium hull with GRP superstructure



EXCELLENCE 2/2008*, Damen Shipyards / 1316301

Belgium



Country Overview

The Kingdom of Belgium is situated in north-western Europe. With an area of 11,787 square miles, it is bordered to the north by the Netherlands and to the south by France. It has a 35 n mile coastline with the North Sea. The capital and largest city is Brussels while the principal port is Antwerp which is accessible via the Scheldt and Meuse estuaries, which lie within the Netherlands. Antwerp is also connected to an extensive canal system. Territorial seas (12 n miles) are claimed and an EEZ has also been claimed.

Headquarters Appointments

Commander, Maritime Command:
Rear Admiral Jean Paul Robyns

Headquarters Appointments — continued

Deputy Commander, Maritime Command:
Captain Georges Heeren

Personnel

(a) 2009: 2,566
(b) Voluntary service

Bases

Zeebrugge: Frigates, MCMV, Reserve Units, Training Ships, Logistics, Diving Centre. Mine Warfare Operational Sea Test centre (MOST)
Oostende: Belgium-Netherlands Mine-warfare school (EGUERMIN)

Koksijde: Naval aviation.
Brugge: Naval training centre

Fleet Disposition

Operational control of Belgian and Netherlands surface forces is under Admiral Benelux Command at Den Helder

DELETIONS

Frigates

2006	<i>Wielingen</i> (to Bulgaria)
2007	<i>Westdorp</i> (to Bulgaria)

FRIGATES

2 KAREL DOORMAN CLASS (FFGHM)

Name	No	Builders	Laid down	Launched	Commissioned	Recommissioned
LEOPOLD 1 (ex-Karel Doorman)	F 930 (ex-F 827)	Koninklijke Maatschappij De Scheide, Flushing	26 Feb 1985	20 Apr 1988	31 May 1991	26 Mar 2007
LOUISE-MARIE (ex-Willem Van Der Zaan)	F 931 (ex-F 829)	Koninklijke Maatschappij De Scheide, Flushing	6 Nov 1985	21 Jan 1989	28 Nov 1991	4 Apr 2008

Displacement, tons: 3,320 full load
Dimensions, feet (metres): 401.2 oa; 374.7 wl × 47.2 × 14.1 (122.3, 114.2 × 14.4 × 4.3)
Flight deck, feet (metres): 72.2 × 47.2 (22 × 14.4)
Main machinery: CODOG; 2 RR Spey SM1C; 33,800 hp (25.2 MW) sustained; 2 Stork-Wartsilä 12SW280 diesels, 9,790 hp(m) (7.2 MW) sustained, 2 shafts; LIPS cp props
Speed, knots: 30 (Speys); 21 (diesels)
Range, n miles: 5,000 at 18 kt
Complement: 155 (16 officers) (accommodation for 163)

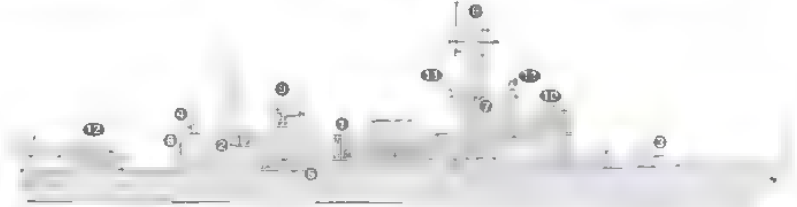
Missiles: SSM: 8 McDonnell Douglas Harpoon Block 1C (2 quad) launchers ●; active radar homing to 124 km (67 n miles) at 0.9 Mach; warhead 227 kg.
SAM: Raytheon Sea Sparrow RIM 7P Mk 48 vertical launchers ●; semi-active radar homing to 16 km (8.5 n miles) at 2.5 Mach; warhead 38 kg, 16 missiles. Canisters mounted on port side of hangar
Guns: 1–3 in (76 mm)/62 OTO Melara compact Mk 100 ●; 100 rds/min to 16 km (8.6 n miles) anti-surface; 12 km (6.5 n miles) anti-aircraft; weight of shell 6 kg. 1 Signaal SGE-30 Goalkeeper with General Electric 30 mm 7-barrelled ●; 4,200 rds/min combined to 2 km. 2 Oerlikon 20 mm, 800 rds/min to 2 km.
Torpedoes: 4–324 mm US Mk 32 Mod 9 (2 twin) tubes (mounted inside the after superstructure) ● Honeywell Mk 46 Mod 5, anti-submarine; active/passive homing to 11 km (5.9 n miles) at 40 kt; warhead 44 kg
Countermeasures: Decoys: 2 Loral Hycor SRBOC 6-tubed fixed Mk 36 quad launchers, IR flares and chaff to 4 km (2.2 n miles). SLQ-25 Nixie towed torpedo decoy.

LEOPOLD I

ESM/ECM: Argo APECS II (includes AR 700 ESM) ●; intercept and jammers.
Combat data systems: Signaal SEWACO VIIIB action data automation, Link 11. SATCOM ● WSC 6 twin aeriels.
Radars: Air/surface search: Signaal SMART ●; 3D; F-band Air search: Signaal LW08 ●; D-band Surface search: Signaal Scout ●; I-band Navigation: Rascal Decca 1226; I-band.
Fire control: 2 Signaal STIR ●; I/J/K-band; range 140 km (76 n miles) for 1 m target
Sonars: Signaal PHS-36, hull-mounted, active search and attack; medium frequency Thomson Sintra Anaconda DSBV 61, towed array; passive low frequency.

Helicopters. 1 NH 90 ●

Programmes: The purchase of two ex-Netherlands frigates was approved by Belgium's Council of Ministers on



(Scale 1 : 1,200), Ian Sturton / 1335443

20 July 2005 and a contract for their supply, a support package, weapons transfer, joint upgrades and crew training was signed on 21 December 2005.
Modernisation: Modification of flight decks to operate the NH90 helicopter has been completed in F 931 and is to be undertaken in F 930 by 2008. In conjunction with the Netherlands programme, both ships are to undergo a mid-life modernisation period 2010–2012. Upgrades are to include replacement of the combat data system by Guardian MRF, addition of a Thales Seastar radar, installation of a low-frequency active sonar and replacement of SATCOM systems. Platform systems are also to be upgraded.
Structure: The VLS SAM is similar to Canadian Halifax and Greek MEKO classes. The ship is designed to reduce radar and IR signatures and has extensive NBCD arrangements. Full automation and roll stabilisation fitted. The APECS jammers are mounted starboard forward of the bridge and port aft corner of the hangar.



LEOPOLD 1

5/2008, A A de Kruijf / 1335244



LEOPOLD I

10/2008, M Declerck / 1335447



LOUISE-MARIE

1/2008*, Piet Cornelis / 1335243

SHIPBORNE AIRCRAFT

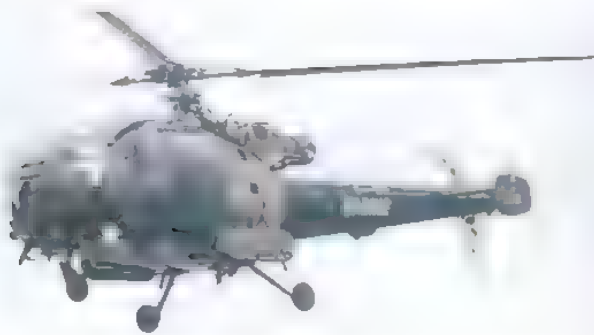
Numbers/Type: 3 Aerospatiale SA 316B Alouette III.

Operational speed: 113 kt (210 km/h).

Service ceiling: 10,500 ft (3,200 m).

Range: 290 n miles (540 km).

Role/Weapon systems: CG helicopter; used for close-range search and rescue and support for commando forces. Sensors: Carriesthompson-CSF search radar. Weapons: Unarmed. It is planned to upgrade these aircraft with new navigation and communications systems.



ALOUETTE III

7/2008*, Maritime Photographic / 1335242

Numbers/Type: 10 NHIndustries NH90.

Operational speed: 157 kt (291 km/h).

Service ceiling: 13,940 ft (4,250 m).

Range: 621 n miles (1,150 km).

Role/Weapon systems: Two NFH shipborne aircraft, three SAR helicopters and five TTH (troop transport) to start entering service in mid-2011. Sensors and weapons to be announced



NH90

6/2001, NHIndustries / 0094462

LAND-BASED MARITIME AIRCRAFT

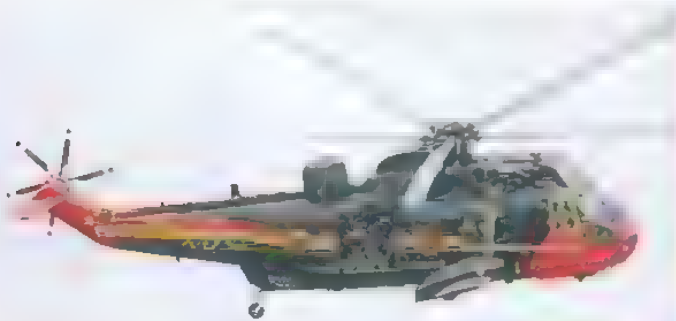
Numbers/Type: 4 Westland Sea King Mk 48

Operational speed: 140 kt (260 km/h).

Service ceiling: 10,500 ft (3,200 m).

Range: 630 n miles (1,165 km).

Role/Weapon systems: SAR helicopter; operated by air force; used for surface search and combat rescue tasks. Upgraded in 1995 with new radar, FLIR and GPS. One decommissioned in 2005 and two reported operational. Sensors: Bendix RDR 1500B search radar. FLIR 2000F Weapons: Unarmed.



SEA KING

6/2008*, Michael Nitz / 1335241

PATROL FORCES

Notes: (1) Three 7 m RIC were acquired in May 1994 from RIBTEC, Swanwick

(2) A range safety craft A 998 has replaced the hovercraft *Barbara A 999*

(3) There are plans to acquire three new Ready Duty Ships which are also to be used as training platforms. Their duties are to include fishery protection, immigration control, surveillance and SAR.



A 998

6/2005, M Declerck / 1151239

For details of the latest updates to *Jane's Fighting Ships* online and to discover the additional information available exclusively to online subscribers please visit jfs.janes.com

64 Belgium/Patrol forces — Training ships

1 RIVER PATROL CRAFT (PBR/YFLB)

Name	No	Builders	Launched	Commissioned
LIBERATION	P 902	Hitzler, Regensburg	29 July 1954	4 Aug 1954

Displacement, tons: 45 full load
Dimensions, feet (metres): 85.5 × 13.1 × 3.2 (26.1 × 4 × 1)
Main machinery: 2 MWM diesels; 440 hp(m) (323 kW); 2 shafts
Speed, knots: 10
Complement: 7
Guns: 2—12.7 mm MGs
Radars, Navigation: Racal Decca; I-band.

Comment: Laid down 12 March 1954. Paid off 12 June 1987 but put back in active service 15 September 1989 after repairs. Last of a class of 10 used for patrol and personnel transport. Replacement planned when funds are available



LIBERATION 6/2005, M Declerck / 1151237

MINE WARFARE FORCES

6 FLOWER CLASS (TRIPARTITE) (MINEHUNTERS—COASTAL) (MHC/AEL)

Name	No	Builders	Launched	Commissioned
ASTER	M 915	Beliard, Ostend	6 June 1985	17 Dec 1985
BELLIS	M 916	Beliard, Ostend	14 Feb 1986	14 Aug 1986
CROCUS	M 917	Beliard, Ostend	6 Aug 1986	5 Feb 1987
LOBELIA	M 921	Beliard, Ostend	6 Jan 1988	9 May 1989
NARCIS	M 923	Beliard, Ostend	30 Mar 1990	27 Sep 1990
PRIMULA	M 924	Beliard, Ostend	17 Dec 1990	29 May 1991

Displacement, tons: 620 standard; 650 full load
Dimensions, feet (metres): 168.9 × 29.2 × 8.2 (51.5 × 8.9 × 2.5)
Main machinery: 1 Stork Wärtsilä A-RUB 215W-12 diesel; 1,860 hp(m) (1.37 MW) sustained;
 1 shaft; LIPS cp prop; 2 motors; 240 hp(m) (176 kW); 2 active rudders; 2 bow thrusters
Speed, knots: 15
Range, n miles: 3,000 at 12 kt
Complement: 46 (5 officers)

Guns: 1 DCN 20 mm/20, 720 rds/min to 10 km (5.5 n miles). 2—12.7 mm MGs.
Countermeasures: MCM: 2 PAP 104 remote-controlled mine locators; 39 charges.
 Mechanical sweep gear (medium depth).

Combat data systems: Atlas Elektronik IMCMS

Radars, Navigation: Racal Decca 1229; I-band.

Sonars: Thales TSM 2022 Mk III; hull-mounted; active minehunting; 100, 200 and 400 kHz.

Programmes: Developed in co-operation with France and the Netherlands. A 'ship factory' for the hulls was built at Ostend and the hulls were towed to Rupelmonde for fitting out. Each country built its own hulls but France provided all MCM gear and electronics, Belgium electrical installation and the Netherlands the engine room equipment.

Modernisation: Propulsion system upgrade completed in 1999 for all of the class. Capability upgrade to extend service life of six ships to 2020 is in progress at Zeebrugge. Modifications include an MCM command and control system, an Integrated Mine Countermeasures System (comprising hull-mounted and self-propelled variable-depth sonar (installed in Double Eagle Mk III Mod 1 ROV)) and a Mine-Identification and Disposal System (MIDS) based on the STN Atlas Seafox. Linked to the ship by a 3,000 m fibre optic tether, one variant (Seafox-C) is used for mine disposal and another (Seafox-I) is used for identification. The equipment was first installed in HrMS *Hellevoetsluis*. Completion dates for capability upgrades were: *Primula* (February 2006), *Aster* (October 2006), *Lobelia* (October 2007), *Bellis* (February 2008), *Crocus* (October 2008) and *Narcis* (February 2009).

Structure: GRP hull fitted with active tank stabilisation, full NBC protection and air conditioning. Has automatic pilot and buoy tracking.

Operational: A 5 ton container can be carried, stored for varying tasks—HQ support, research, patrol, extended diving, drone control. The ship's company varies from 33 to 46 depending on the assigned task. Six divers are carried when minehunting. All of the class are based at Zeebrugge

Sales: Three of the class paid off for sale in July 1993 and were bought by France in 1997



PRIMULA 6/2008, Harald Carstens / 1335240



BELLIS 7/2008, Maritime Photographic / 1335239

SURVEY SHIPS

Notes: In addition to *Belgica* there are five small civilian manned survey craft. *Ter Streep*, *Scheldewacht II*, *De Parel II*, *Veremans* and *Prosper*.

1 SURVEY SHIP (AGOR/PBO)

Name	No	Builders	Launched	Commissioned
BELGICA	A 962	Boelwerf, Temse	6 Jan 1984	5 July 1984

Displacement, tons: 1,085 full load
Dimensions, feet (metres): 167.8 × 32.8 × 14.4 (51.1 × 10 × 4.4)
Main machinery: 1 ABC 6M DZC diesel; 1,600 hp(m) (1.18 MW) sustained; 1 Kort nozzle prop
Speed, knots: 13.5
Range, n miles: 5,000 at 12 kt
Complement: 26 (11 civilian)
Radars, Navigation: Racal Decca 1229; I-band.

Comment: Ordered 1 December 1982. Laid down 17 October 1983. Used for hydrography, oceanography, meteorology and fishery control. Marisat fitted. Based at Zeebrugge. Painted white.



BELGICA 6/2004, B Prézellen / 1044079

TRAINING SHIPS

1 SAIL TRAINING VESSEL (AXS)

Name	No	Builders	Commissioned
ZENOBE GRAMME	A 958	Boal and Zonen, Temse	27 Dec 1961

Displacement, tons: 149 full load
Dimensions, feet (metres): 92 × 22.5 × 7 (28 × 6.8 × 2.1)
Main machinery: 1 MWM diesel, 200 hp(m) (147 kW); 1 shaft
Speed, knots: 10
Complement: 14 (2 officers)
Radars, Navigation: Racal Decca; I-band.

Comment: Auxiliary sail ketch. Laid down 7 October 1960 and launched 23 October 1961. Designed for scientific research but now only used as a training ship.



ZENOBE GRAMME 7/2007, Adolfo Ortigueira Gil / 1167854

AUXILIARIES

Notes: It is planned to acquire a Command and Support Ship (MCS) to replace BNS *Godetia* in about 2015.

1 COMMAND AND SUPPORT SHIP (AGFH)

Name	No	Builders	Launched	Commissioned
GODETIA	A 960	Boelwerf, Ternse	7 Dec 1965	23 May 1966

Displacement, tons: 2,000 standard; 2,260 full load
Dimensions, feet (metres): 301 × 46 × 11.5 (91.8 × 14 × 3.5)
Main machinery: 4 ACEC-MAN diesels; 5,400 hp(m) (3.97 MW); 2 shafts; cp props
Speed, knots: 19
Range, n miles: 8,700 at 12.5 kt
Complement: 105 (8 officers)
Guns: 6 — 12 7 mm MGs.
Radars: Surface search: Racal Decca 1229; I-band
Helicopters: 1 Alouette III.

Comment: Laid down 15 February 1965. Rated as Command and Logistic Support Ship. Refit (1979-80) and mid-life conversion (1981-82) included helicopter deck and replacement cranes. Refitted in 1992 and again in 2006. To be equipped with a mine-avoidance sonar in 2009. Minesweeping cables fitted either side of helo deck have been removed. Can also serve as a Royal Yacht. To be replaced by new ship in about 2015.



GODETIA 5/2007, M Declerck / 1167853

1 SUPPORT SHIP (AGFH)

Name	No	Builders	Commissioned
STERN (ex-KBV 171)	A 963	Karliskronavarvet	3 Sep 1980

Displacement, tons: 375 full load
Dimensions, feet (metres): 164 × 279 × 7.9 (50 × 8.5 × 2.4)
Main machinery: 2 Hedemora V16A diesels; 4,480 hp(m) (3.28 MW) sustained; 2 shafts; cp props
Speed, knots: 18
Range, n miles: 3,000 at 12 kt
Complement: 13
Guns: 1 — 20 mm.
Radars: Navigation: 2 Kelvin Hughes; E/F- and I-band.
Helicopters: Platform for 1 light.

Comment: Transferred from Swedish Coast Guard on 6 October 1998. GRP hull identical to Landsort class. In Swedish service the ship carried a 20 mm gun, and had a Subsea sonar. Known as a Ready Duty Ship and used for fishery protection and SAR duties



STERN 6/2008, Herald Carstens / 1335238

TUGS

2 COASTAL TUGS (YTM)

Name	No	Launched
VALCKE (ex-Steenbank, ex-Astroloog)	A 950	1960
ALBATROS (ex-Wastgat)	A 996	1967

Displacement, tons: 183 full load
Dimensions, feet (metres): 89.7 × 24.9 × 11.8 (30.4 × 7.6 × 3.6)
Main machinery: Diesel-electric; 2 Deutz diesel generators; 1,240 hp(m) (911 kW); 1 shaft; 1 bow thruster
Speed, knots: 11
Complement: 8

Comment: Known as Ready Duty Ships. Details given are for A 950 which was launched in 1960. A 996 is 206 tons and was launched in 1967



ALBATROS 5/2008, A A de Kruif / 1335231



VALCKE 10/2006, M Declerck / 1164728

3 HARBOUR TUGS (YTL)

WESP A 952	ZEEMEEUW A 954	MIER A 955
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Displacement, tons: 195 full load
Dimensions, feet (metres): 86.5 × 24.7 × 10.7 (26.23 × 7.5 × 3.25)
Main machinery: 2 ABC 6 MDUS diesels; 1,000 hp (746 kW)
Speed, knots: 11
Complement: 4

Comment: Details given are for A 952 and A 955. A 954 is 146 tons.



WESP 7/2008, Maritime Photographic / 1335236



ZEEMEEUW 10/2006, M Declerck / 1164725



Belize

Country Overview

Formerly known as British Honduras, Belize became an independent state in 1981. The British monarch, represented by a governor-general, is head of state. With an area of 8,867 square miles, it has borders with Mexico to the north and Guatemala to the west; its 208 n mile coastline is on the Caribbean Sea and fringed by numerous coral barrier reefs and cays. The capital city is Belmopan while

the largest city and major port is Belize City. Territorial seas (12 n miles) are claimed. A 200 n mile Exclusive Economic Zone (EEZ) has been claimed but the limits are not defined. The Belize National Coast Guard Service was formed on 29 November 2005.

Headquarters Appointments

Commander of the Coast Guard: Brigadier Cedric Borland

Personnel

- (a) 2009: 152 (2 officers)
- (b) The Maritime Wing of the Belize Defence Force comprises volunteers from the Army

Bases

Ladyville, Hunting Cay, Calabash Cay (Turneffe Atoll) (planned)

Maritime Patrol

Two Air Force operated Pilatus Britton-Norman Defenders are used for maritime surveillance.

PATROL FORCES

Notes: Current assets include

1. Two Helmatic 22 ft RIBs with twin Yamaha 115 hp outboards. Names *Stingray Commando* and *Blue Marlin Ranger*.
2. Two Pelikan 35 ft craft with twin Yamaha 200 hp outboards. Built at Bradloys Boatyard in 1996 and called *Ocean Sentinel* and *Reef Snipor*.
3. Six Colombian 32 ft skiffs with twin Yamaha 200 hp outboards, confiscated and commissioned in service 1995–97.
4. One 36 ft skiff.
5. Two US donated craft *Stinger I* and *Stinger II*.



PELIKAN CRAFT

6/2001, Belize Defence Force / 0109932



Benin FORCES NAVALES

Country Overview

Formerly part of French West Africa, the republic gained full independence in 1960 as the Republic of Dahomey; it was renamed The Republic of Benin in 1975. With an area of 43,484 square miles it has borders to the east with Nigeria and to the west

with Togo. Benin has a short coastline of 65 n miles with the Gulf of Guinea. The capital is Porto-Novo while Cotonou is the largest city and principal port. Benin has not claimed an Exclusive Economic Zone (EEZ) but is one of a few coastal states which claims a 200 n mile territorial sea. The naval force was established in 1978.

Headquarters Appointments

Commander of the Navy:
Commander Maxime Ahoyo

Aircraft

Dornier Do 128 and a DHC-6 Twin Otter reconnaissance aircraft are used for surveillance.

Bases

Cotonou

Personnel

2009: 220 (30 officers)

PATROL FORCES

Notes: There are two French-built 6 m river patrol craft with hydrojet propulsion.

2 CHINESE 27 METRE CLASS (PATROL CRAFT) (PB)

MATELOT BRICE KPOMASSE 798 LA SOTA 799

Displacement, tons: 80 full load
Dimensions, feet (metres): 88.6 × 13.4 × 4.6 (27 × 4.1 × 1.4)
Main machinery: 2 diesels; 1,000 hp (746 kW)
Complement: 13
Guns: 4—14.5 mm (2 twin) MGs
Radars: Navigation: I-band.

Comment: Understood to have been transferred from China in 2000. A similar craft is in service in Cape Verde.



KPOMASSE and SOTA
2001, Benin Navy
0114348

Bermuda



Country Overview

A British self-governing dependency, a Governor, appointed by the British Crown, is responsible for external affairs, internal security, defence, and the police. Situated in the north Atlantic Ocean some 650 n miles southeast of Cape Hatteras, the country consists

of six principal islands, of which the largest is 14 miles long, linked by bridges and a causeway; there are some 150 other small islands, islets, and rocks, of which about 20 are inhabited. Hamilton is the capital, chief port and largest town. Territorial seas (12 n miles) and an Exclusive Economic Zone (EEZ) (200 n miles) are claimed.

Headquarters Appointments

Commanding Officer: Sergeant Keith Senior

Bases

Hamilton

POLICE

Notes: In addition to patrol craft, three tugs, *Powerful*, *Faithful* and *Refit* are operated by the Department of Marine and Port Services.

1 AUSTAL PATROL CRAFT (PB)

GUARDIAN

Displacement, tons: To be announced
Dimensions, feet (metres): 53.5 x 16.1 x 3.9 (16.3 x 4.9 x 1.2)
Main machinery: 2 Caterpillar C12 diesels; 1,300 hp (970 kW); 2 shafts
Speed, knots: 28
Range, n miles: 400 at 25 kt
Complement: 3 plus 8 passengers

Comment: Contract with Austal Ships in August 2005 to build aluminium hull craft for operations up to 200 n miles from shore. Similar to craft operated by the New South Wales police. Delivery was made on 25 September 2006.



GUARDIAN

9/2006, Austal / 1335333

4 PATROL CRAFT (PBI)

HERON IV

Comment: *Heron I*, delivered in July 1997 to replace the previous craft of the same name, and *Heron III* delivered in June 1992 are 22 ft Boston Whalers fitted with twin Yamaha 225 hp and twin Yamaha 115 hp outboards, respectively. *Heron II* delivered in August 1996 to replace the previous craft of the same name, is a 27 ft Boston Whaler with twin Yamaha 250 hp(m) outboard engines. *Heron IV*, delivered in 2001, is a further 22 ft Boston Whaler with twin 115 hp outboards.



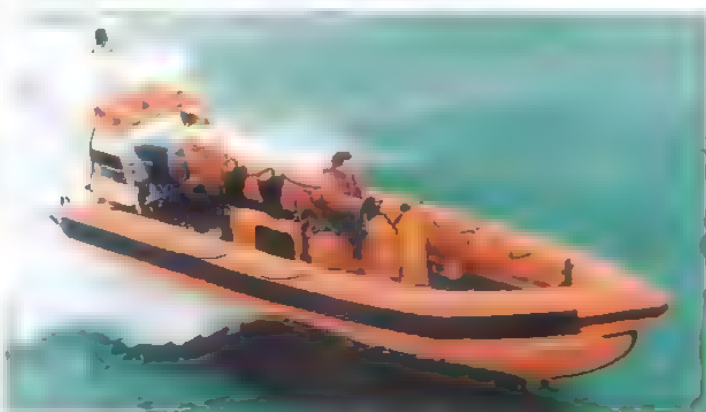
HERON II

6/1997, Bermuda Police / 0012079

2 SAR CRAFT (SAR)

RESCUE I RESCUE II

Comment: *Rescue I* replaced the craft of the same name in November 1998 and *Rescue II* replaced the craft of the same name in 2001. Both are Halmatic 24 ft Arctic RIBs with twin 200 hp Yamaha outboards and a complement of three.



HALMATIC ARCTIC RIB

2001, Bermuda Police / 0108933

Bolivia

ARMADA BOLIVIANA



Country Overview

The Republic of Bolivia is one of two landlocked countries in South America; Paraguay is the other. With an area of 424,165 square miles, it has borders to the north and east with Brazil, to the southeast with Paraguay, to the south with Argentina, and to the west with Chile and Peru. It has a 211 n mile shoreline with Lake Titicaca. The constitutional capital is Sucre while the administrative capital and seat of government is La Paz which is connected by railway to the Chilean port of Antofagasta.

The Bolivian Navy was founded in 1963 and received its present name in 1982. Its purpose is to patrol some 10,000 miles in three geographical areas. The Amazon basin includes the rivers Ichilo, Mamore, Itenez, Yacuma, Orthon, Abuna, Beni and Madre de Dios. The central basin comprises Lake Titicaca while the Del Plata basin includes the rivers Paraguay and Bermejo. Most advanced training is carried out in Argentina and Peru.

Headquarters Appointments

Commandant General of the Navy:
 Vice Admiral José Luis Cabas V

Headquarters Appointments — continued

Chief of the Naval Staff:
 Rear Admiral Rafael Bandeira Arza
Inspector General:
 Rear Admiral Armando Pacheco Gutierrez

Personnel

- (a) 2009: 6,658 (including Marines)
 (b) 12 months' selective military service

Organisation

The country is divided into six naval districts, three naval areas and a Fuerza de Tareas Especiales.
 1st Naval District (Beni) (HQ Riberaita). Rivers Beni.
 2nd Naval District (Mamore) (HQ Trinidad). Rivers Ichilo and Mamore.
 3rd Naval District (Madera) (HQ Puerto Guayamerin). Rivers Madera and Itenez.
 4th Naval District (Titicaca) (HQ San Pedro de Tiquina). Lake Titicaca.

5th Naval District (Santa Cruz de la Sierra) (HQ Puerto Quijarro). River Paraguay.
 6th Naval District (Pando) (HQ Cobija). Rivers Acre, Madre dos Dios and Tahuamanu.
 1st Naval Area (Cochabamba) (Puerto Villarreal). Naval yard and oil transport.
 2nd Naval Area (Santa Cruz). Support duties.
 3rd Naval Area (Bermejo)
 4th Naval Area (La Paz).
 Fuerza de Tareas Especiales consists of five task groups (based at Guayamerin, Cobija, Riberaita, Puerto Suarez and Copacabana) to provide support in counter-drug operations.

Marine Corps

The Bolivian Navy has seven marine corps battalions (BIM I-VII). Two are located in 4th Naval District and one in each of the remainder.

Prefix to Ships' Names

ARB

PATROL FORCES

Notes: It is reported that an unknown number of assault craft were donated by China in 2007-08 and 18 RHIBs by Chile in 2008.

3 RIVER PATROL CRAFT (PBR)

CAPITÁN PALOMEQUE PR 221 ANTOFAGASTA PR 302 GENERAL BANZER PR 301

Displacement, tons: 8 full load
Dimensions, feet (metres): 42.7 × 10.5 × 1.6 (13.8 × 3.2 × 0.6)
Main machinery: 2 diesels; 2 shafts
Speed, knots: 27
Complement: 4
Guns: 1 – 7.62 mm MG

Comment: Details given are for *Capitán Palomeque* acquired in 1993. The others are similar in appearance and all are less than ten years old. Operate in the 2nd and 3rd Districts



CAPITÁN PALOMEQUE

1996, Bolivian Navy / 0056585

1 SANTA CRUZ CLASS (PBR)

SANTA CRUZ DE LA SIERRA PR 501

Displacement, tons: 46 full load
Dimensions, feet (metres): 68.9 × 19 × 3.9 (21 × 5.8 × 1.2)
Main machinery: 2 Detroit diesels; 2 shafts
Speed, knots: 20
Range, n miles: 800 at 16 kt
Complement: 10
Guns: 2 – 12.7 mm MGs
Radars: Surface search: Furuno; I-band.

Comment: Built by Hope Shipyards, Louisiana, in 1985. Used both as a patrol craft and supply ship. Operates in the 5th District on the river Paraguay.



SANTA CRUZ DE LA SIERRA (old number)

1996, Bolivian Navy / 0056584

8 RIVER PATROL CRAFT (PBR)

PAZ ZAMORA LP 101 MARISCAL DE ZAPATA LP 409 GUAQUI LA 414
 RAIDER LP 351 CAPITAN BRETTEL LP 410 INDEPENDENCIA LP 416
 GENERAL BEJAR LP 406 TENIENTE SOLIZ LP 411

Displacement, tons: 5 full load
Dimensions, feet (metres): 42.3 × 12.7 × 3.3 (13.9 × 3.9 × 1)
Main machinery: 2 diesels; 2 shafts
Speed, knots: 15
Complement: 5
Guns: 1 – 12.7 mm MG
Radars: Surface search: Raytheon; I-band.

Comment: Details given are for *Capitán Bretel*, *Teniente Soliz* and *Guaqui* which is used as a logistic craft. The remainder are Boston Whaler types. All operate in the 4th District except *Paz Zamora* (1st) and *Raider* (5th).



CAPITÁN BRETTEL alongside TENIENTE SOLIZ

1996, Bolivian Navy / 0056581

42 RIVER PATROL CRAFT (PBR)

LP 01-42

Comment: Thirty-two Piranas were delivered from 1992-96. Fitted with one 12.7 mm MG and has twin outboards. Ten more craft delivered by the US 1998-99.



PIRANA Mk II

1996, Bolivian Navy / 0056588

LAND-BASED MARITIME AIRCRAFT

Notes: (1) One Cossne 402C is based at La Paz-El Alto
 (2) An agreement was reached in 2006 to acquire three ex-Spanish Army CASA C-212-100 aircraft. These are probably used as transport aircraft and/or for medevac.
 (3) Two Cougar AS 532AC helicopters are on extended loan from Venezuela. They are used for transport and VIP purposes.

AUXILIARIES

Notes: (1) Approximately 30 Rodman craft are used for transport and logistic support. A mixture of craft was acquired from Spain in 1998. These include 15 craft of 6-8 m with pennant numbers BA 401-415. They are capable of carrying 20 troops or one medium tracked vehicle. There are five 11 m craft with pennant numbers FNM 400-404. There are two 17 m catamaran craft with pennant numbers FNM 342-343
 (2) *Guayamerín* (TNTB-01) is an LCM used as a transport vessel on Lake Titicaca. Built in Bolivia she was commissioned on 22 July 1998.
 (3) A dredger *Pirai II* (FNDR-01) was commissioned on 11 August 2001.

11 RIVER TRANSPORTS (YFL)

ALMIRANTE GRAU M 101 INGENIERO GUMUCIO M 341
 COMANDANTE ARANDIA M 103 JORGE VILLARROEL M 342
 GERMAN BUSCH M 107 COATI M 401
 LIBERTADOR M 223 COBIJA M 402
 TRINIDAD M 224 SUAREZ ARANA M 528 (ex-M 501)
 RIO GUAPORÉ M 301

Displacement, tons: 70 full load
Dimensions, feet (metres): 78.7 × 21.3 × 4.6 (24 × 6.5 × 1.4)
Speed, knots: 12
Range, n miles: 500 at 12 kt
Complement: 11
Radars: Navigation: Raytheon; I-band.

Comment: Details given are for *Ingeniero Gumucio* which is a troop transport and supply ship. The remainder are craft of various types, some acquired from China. *Suarez Arana* (M 528) sank in the Paraguay River in September 2006 but was salvaged on 4 October 2006.



INGENIERO GUMUCIO

1996, Bolivian Navy / 0056589

6 LOGISTIC VESSELS (YAG)

JOSE MANUEL PANDO TNR 01
 NICOLAS SUAREZ TNR 02
 MAX PAREDES TNR 04
 JULIO OLMOS TNR 05
 HORACIO UGARTECHE TNBTL-06
 THAMES CRESPO TNR 07

Comment: TNR-01 is a tug. The remainder are pusher/lighter combinations. There are eight lighters TNBTL-02A, -02B, -04A, -04B, -06A, -06A, -06B and -07A.



MAX PAREDES 6/2000, Bolivian Navy / 0104222



TELLERIA 6/2000, Bolivian Navy / 0104773

2 HOSPITAL SHIPS

Name	No	Tonnage
JULIAN APAZA	TNBH 401	150
XAVIER PINTO TELLERIA	TNBH 01	-

Comment: Julian Apaza given by the US; assembled in 1972 and based at Lake Titicaca. Telleria was built in 1997 and is based at Puerto Villarród.

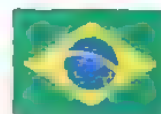
1 TRAINING VESSEL

BUQUE ESCUELA NAVAL MILITAR

Displacement, tons: 80 full load
Dimensions, feet (metres): 117.3 x 29.5 x 3.9 (35.7 x 9.0 x 1.2)
Main machinery: 2 diesels; 1,300 hp (969 kW)
Speed, knots: 18
Complement: 15 plus 50 trainees

Comment: Catamaran design. Launched at Tiquina, Lake Titicaca on 9 May 2001. Following a donation by the Venezuelan government in 2007, the ship was launched in 2008 and is expected to be completed in 2009.

Brazil



MARINHA DO BRASIL

Country Overview

The Federal Republic of Brazil is the largest country in South America. With an area of 3,286,500 square miles it has borders to the north with Colombia, Venezuela, Guyana, Suriname and French Guiana, to the south with Uruguay and to the west with Argentina, Paraguay, Bolivia, and Peru. It has a coastline of 4,045 n miles with the south Atlantic Ocean. There are some 23,220 n miles of internal waterways that consist primarily of the Amazon and its tributaries; the river is navigable by ocean-going ships from its mouth to Iquitos in Peru. The capital is Brasilia while the largest city is São Paulo. The principal ports are the former capital, Rio de Janeiro, Santos, Paranaguá, Recife, and Vitória. Manaus is an important river port. Territorial seas (12 n miles) are claimed. An EEZ (200 n miles) is claimed and its limits have been partly defined by boundary agreements.

Headquarters Appointments

Commander of the Navy:
 Admiral Júlio Soares de Moura Neto
Chief of Naval Staff:
 Admiral Aurélio Ribeiro da Silva Filho
Commandant General Brazilian Marine Corps:
 Admiral (Marine Corps) Alvaro Augusto Dias Monteiro
General Director of Personnel:
 Admiral José Antonio de Castro Leal
General Director of Material:
 Admiral Marcus Vinicius Oliveira dos Santos
General Secretary of Navy:
 Admiral Marcus Martins Torres
Vice Chief of Naval Staff:
 Vice Admiral Rodrigo Otávio Fernandes de Hônkis

Senior Officers

Commander-in-Chief, Fleet:
 Vice Admiral Fernando Edoardo Studart Wiemer
Commander, Fleet Marine Force:
 Vice Admiral (Marine Corps) Paulo César Stingelím Guimarães
Commander, I Naval District:
 Vice Admiral Gilberto Max Roffé Hirschfeld
Commander, II Naval District:
 Vice Admiral Amon Lima Barbosa
Commander, III Naval District:
 Vice Admiral Edison Lawrence Maristh Dantas
Commander, IV Naval District:
 Vice Admiral Eduardo Monteiro Lopes
Commander, V Naval District:
 Vice Admiral Arthur Pires Ramos
Commander, VI Naval District:
 Rear Admiral Cesar Sidonio Daihs Moreira de Souza
Commander, VII Naval District:
 Rear Admiral Edouardo Bacellar Leal Ferreira
Commander, VIII Naval District:
 Vice Admiral Terenilton Sousa Santos

Senior Officers – continued

Commander, IX Naval District:
 Vice Admiral Pedro Fava

Personnel

- a) 2009. 38,800 (5,800 officers) Navy; (including 2,100 naval air)
 15,800 (800 officers) Marincs
- b) One year's national service

Bases

Arsenal de Marinha do Rio de Janeiro – Rio de Janeiro (Nava shipyard with three dry docks and one floating dock with graving docks of up to 70,000 tons capacity)
 Base Naval do Rio de Janeiro – Rio de Janeiro (Main Naval Base with two dry docks)
 Base Almirante Castro e Silva – Rio de Janeiro (Naval Base for submarines)
 Base Naval de Aratu – Bahia (Naval Base and repair yard with one dry dock and synchrolift)
 Base Naval de Val-de-Côes – Pará (Naval River and repair yard with one dry dock)
 Base Naval de Natal – Rio Grande do Norte (Small Naval Base and repair yard with one floating dock)
 Base Fluvial de Ladário – Mato Grosso do Sul (Small Naval River Base and repair yard with one dry dock)
 Base Aérea Naval de São Pedro d’Aldeia – Rio de Janeiro (Naval Air Station)
 Estação Naval do Rio Negro – Amazonas (Small Naval River Station and repair yard with one floating dock)
 Estação Naval do Rio Grande – Rio Grande do Sul (Small Naval Station and repair yard)

Organisation

Naval Districts as follows:
 I Naval District (HQ Rio de Janeiro)
 II Naval District (HQ Salvador)
 III Naval District (HQ Natal)
 IV Naval District (HQ Belém)
 V Naval District (HQ Rio Grande)
 VI Naval District (HQ Ladário)
 VII Naval District (HQ Brasília)
 VIII Naval District (HQ São Paulo)
 IX Naval District (HQ Manaus)

Naval Aviation

Squadrons: São Pedro da Aldeia; HA-1 Super Lynx; HS-1 Sea King; HI-1 JetRanger; HU-1 Ecureuil 1 and 2; HU-2 Super Puma/Cougar; VF 1 Skyhawk AF1
 Manaus; HU-3 Ecureuil.
 Ladário; HU-4 Jat Ranger.
 Rio Grande; HU-5 Ecureuil.

Prefix to Ships’ Names

These vary, indicating the type of ship for example, N Ae = Aircraft Carrier; CT = Destroyer.

Marines (Corpo de Fuzileiros Navais)

Headquarters at Fort São José, Rio de Janeiro.
 Divisão Anfíbia: 3 Infantry Battalions (Riachuelo, Humaitá and Paissandu), 1 Artillery Battalion, 1 C^o Battalion, 1 Air Control and Air Defence Battalion, 1 Tank Battalion, Tropa de Reforço: 1 Engineer Battalion, 1 Amphib Vehicles Battalion, 1 Logistic Battalion, 1 Police Company, 1 Disembarkation Support Company.
 Special Forces Battalion (Tonelero).
 Grupamentos Regionais: One security group in each naval district and command (Rio de Janeiro, Salvador, Natal, Belem, Rio Grande and Ladário). There is an amphibious river group at Manaus.

Strength of the Fleet

Type	Active	Building (Planned)
Submarines (Patrol)	5	(6)
Aircraft Carrier	1	-
Frigates	9	(6)
Corvettes	5	-
Patrol Forces	31	7 (13)
LSD/LST	4	1
Minesweepers (Coastal)	6	-
Survey and Research Ships	7	1
Buoy Tenders	17	-
S/M Rescue Ship	1	-
Tankers	2	-
Hospital Ships	3	-
Training Ships	8	-

DELETIONS

Frigates
 2006 *Dodsworth*
 2008 *Pará*

Patrol Forces

2006 *Piratini, Pirajé, Pampeiro, Parati, Penedo, Pot*

Auxiliaries

2008 *Trindade*

PENNANT LIST

Submarines		Amphibious Forces		Patrol Forces		Mine Warfare Forces		Auxiliaries	
S 30	Tupi	G 25	Almirante Sabaia	V 15	Imperial Marinheiro	M 15	Aratú	G 15	Paraguassú
S 31	Tamolo	G 28	Mattoso Maia	V 19	Caboclo	M 18	Anhatomirim	G 17	Potengi
S 32	Timbira	G 29	Garcia d'Avila	P 01	Marlim	M 18	Atalaia	G 21	Ary Parreiras
S 33	Tapajó	G 30	Ceará	P 10	Piratini	M 17	Araçatuba	G 23	Almirante Gastao Motta
S 34	Tikuna	G 31	Rio de Janeiro	P 11	Pirajá	M 18	Albardão	G 27	Maraço
Aircraft Carriers		L 10	Guarapari	P 12	Pampeliro	M 19	Abrolhos	K 11	Felinto Perry
A 12	São Paulo	L 11	Tambau	P 13	Parati	M 20	Albardão	R 21	Tritão
Destroyers/Frigates		L 12	Camboriú	P 14	Penedo	Survey Ships and Tenders		R 22	Tridente
F 40	Niterói	Patrol Forces		P 15	Poti	H 18	Comandante Varella	R 23	Trunfo
F 41	Defensora	V 15	Imperial Marinheiro	P 20	Pedro Teixeira	H 19	Tenente Castelo	R 24	Almirante Guilhem
F 42	Constituição	P 01	Marlim	P 21	Raposo Tavares	H 20	Comandante Manhães	R 25	Almirante Guillobet
F 43	Liberal	P 10	Piratini	P 30	Roraima	H 21	Sírius	U 10	Aspirante Nascimento
F 44	Independência	P 11	Pirajá	P 31	Rondônia	H 25	Tenente Boanerges	U 11	Guarda Marinha Jansen
F 45	União	P 12	Pampeliro	P 32	Amapá	H 26	Faroleiro Mário Seixas	U 12	Guarda Marinha Brito
F 46	Greenhalgh	P 13	Parati	P 40	Grajaú	H 34	Almirante Graça Aranha	U 15	Para
F 48	Bosisio	P 14	Penedo	P 41	Guaíba			U 16	Doutor Montenegro
F 49	Rademaker	P 15	Poti	P 42	Grauna			U 17	Parnaíba
Corvettes		P 20	Pedro Teixeira	P 43	Goiana			U 18	Oswaldo Cruz
V 30	Inhaúma	P 21	Raposo Tavares					U 19	Carlos Chagas
V 31	Jacaguai	P 30	Roraima					U 20	Clsne Branco
V 32	Julio de Noronha	P 31	Rondônia					U 27	Brasil
V 33	Frontin	P 32	Amapá					U 29	Piraim
V 34	Barroso	P 40	Grajaú						

SUBMARINES

Notes: (1) Following the revival by President Lula in June 2007 of plans to acquire a nuclear-powered submarine, the programme was formally re-launched on 26 September 2008 by the Commander of the Brazilian Navy. The co-ordination office COGESN is to be based in Rio de Janeiro and is to be headed by Fleet

Admiral (Reserve) José Alberto Accioli Fragelli who is to administer an annual budget of USD250 million. The 6,000 ton submarine is to enter service in 2020. A 11 MW prototype nuclear reactor is under development at the Aramar Experimental Centre in Sao Paulo state. A co-operative agreement with the French shipbuilder

DCNS is expected to facilitate French design support on the hull and propulsion.

(2) As part of the Franco-Brazilian arms package signed between the Presidents of France and Brazil on 12 February 2008, it is likely that agreement will be reached to build up to four Marlin-class conventional submarines. The first boat is likely to be built

in France while the remainder may be built at a new Brazilian Navy shipyard at Sepetiba Bay, Rio de Janeiro State. The existing submarine building shipyard at Arsenal de Marinha, Rio de Janeiro, is to remain available for the support and upgrade of the Tupi and Tikuna classes, both based on the Gorman Type 209/1400 class.

1 TIKUNA (TYPE 209/1450) CLASS (SSK)

Name	No	Builders	Laid down	Launched	Commissioned
TIKUNA	S 34	Arsenal de Marinha, Rio de Janeiro	11 June 1986	9 Mar 2005	16 Dec 2005
Displacement, tons: 1,454 surfaced; 1,586 dived		A/S torpedoes may also be carried, 18 km (9.7 n miles) at 45 kt. Total of 16 torpedoes		Directorate. Contract effective with HDW in October 1995. Plans for a second of class have been cancelled	
Dimensions, feet (metres): 203.4 × 20.3 × 18 (62.0 × 6.2 × 5.5)		Mines: 32 IPQM/Consub MCF-01/100 carried in lieu of torpedoes		Modernisation: Tigerfish torpedoes are likely to be replaced by Mk 48 Mod 6 and a Lockheed Martin integrated combat system AN/BYG-501 Mod 1D is to be installed. The upgrade is also likely to include a new flank array. Work is to be completed by 2011	
Main machinery: Diesel-electric; 4 MTU 12V 396 diesels; 3,760 hp (m) (2.76 MW); 4 Siemens alternators; 1 Siemens motor; 1 shaft		Countermeasures: ESM. Argos AR-900, radar warning.		Structure: Improved Tupi design similar to Turkish Gur class. Diving depth, 300 m (985 ft). Very high-capacity batteries with GRP lead-acid cells by Microrite. More powerful engines than Tupi. Fitted with two Kollmorgen Mod 76 non penetrative optronic masts.	
Speed, knots: 11 surfaced/snorting; 22 dived		Weapons control: STN Atlas Elektronik ISUS 83-13; 2 Kollmorgen Mod 76 periscopes.		Operational: Endurance, 60 days. Sea trials began on 10 November 2005	
Range, n miles: 11,000 at 8 kt surfaced; 400 at 4 kt dived		Radars: Navigation Terma Scantier; I-band.			
Complement: 41 (8 officers)		Sonars: Atlas Elektronik CSU-83/1; hull-mounted; passive/active search and attack; medium frequency. STN Atlas Elektronik FAS-3 flank array.			
Torpedoes: 8–21 in (533 mm) bow tubes. Marconi Mk 24 Tigerfish Mod 1 or 2; wire-guided; active homing to 13 km (7 n miles) at 35 kt, passive homing to 29 km (15.7 n miles) at 24 kt; warhead 134 kg. IPQM designed		Programmes: Planned intermediate stage between Tupi class and the first SSN. Designed by the Naval Engineering			



TIKUNA

10/2006, Brazilian Navy / 1170053



TIKUNA

5/2006, Brazilian Navy / 1170032

4 TUPI (TYPE 209/1400) CLASS (SSK)

Name	No	Builders	Laid down	Launched	Commissioned
TUPI	S 30	Howaldtswerke-Deutsche Werft, Kiel	8 Mar 1985	28 Apr 1987	6 May 1989
TAMOKO	S 31	Arsenal de Marinha, Rio de Janeiro	15 July 1986	18 Nov 1993	17 July 1995
TIMBIRA	S 32	Arsenal de Marinha, Rio de Janeiro	15 Sep 1987	5 Jan 1996	16 Dec 1996
TAPAJÓ	S 33	Arsenal de Marinha, Rio de Janeiro	6 Aug 1992	5 June 1998	21 Dec 1999

Displacement, tons: 1,453 surfaced; 1,590 dived
Dimensions, feet (metres): 200.8 × 20.3 × 18
 (61.2 × 6.2 × 5.5)

Main machinery: Diesel-electric; 4 MTU 12V 493 AZ80 GA31L diesels; 2,400 hp(m) (1.76 MW); 4 Siemens alternators; 1.7 MW; 1 Siemens motor; 4,600 hp(m) (3.36 MW) sustained; 1 shaft

Speed, knots: 11 surfaced/snorting; 21.5 dived
Range, n miles: 8,200 at 8 kt surfaced, 400 at 4 kt dived
Complement: 36 (7 officers)

Torpedoes: 8–21 in (533 mm) bow tubes. 16 Marconi Mk 24 Tigerfish Mod 1 or 2; wire-guided; active homing to 13 km (7 n miles) at 35 kt; passive homing to 29 km (15.7 n miles) at 24 kt; warhead 134 kg. IPQM anti-submarine torpedoes may also be carried; range 18 km (9.7 n miles) at 45 kt. Swim-out discharge.

Countermeasures: ESM: IPQM/Elebra Defensor ET/SLR-1X; radar intercept.

Weapons control: Ferranti KAFS-A10 action data automation (to be replaced by UDS SUBTICS)

Radars: Navigation: Terma Scantec; I-band.

Sonars: Atlas Elektronik CSU-83/1; hull-mounted; passive/active search and attack; medium frequency. STN Atlas Elektronik FAS-3 flank array.

Programmes: Contract signed with Howaldtswerke in February 1984. Financial negotiations were completed with the West German Government in October 1984. Original plans included building four in Brazil followed by two improved Tupis for a total of six. In the end only three were constructed in Brazil

Modernisation. A programme (Mod Sub) to upgrade auxiliary machinery, sonars, weapon control, countermeasures

and navigation systems was announced in 2003. Refit work on S 31 was completed in June 2005 while work on S 32 was completed in January 2007. The programme is to be completed in 2008. Tigerfish torpedoes are to be replaced by Mk 48 Mod 6 and a Lockheed Martin integrated combat system AN/BYG-501 Mod 1D is to be installed. The upgrade is also likely to include a new flank array. Work on all four boats is to be completed by 2011

Structure: Hull constructed of HY 80 steel. Single hull. Diving depth, 250 m (820 ft). Equipped with Sperry Mk 29 Mod 3 SINS and two Kollmorgen Mod 76 periscopes.

Operational: Based at Niterói, Rio de Janeiro.



TAPAJÓ

10/2005, Mario R V Carneiro / 1153025



TAMOKO

2/2006, Marco Ghiglino / 1167123

AIRCRAFT CARRIERS

1 CLEMENCEAU CLASS (CVM)

Name	No	Builders	Laid down	Launched	Commissioned
SÃO PAULO (ex-Foch)	A 12 (ex-R 99)	Chantiers de l'Atlantique, St. Nazaire	15 Feb 1957	23 July 1960	15 July 1963

Displacement, tons: 27,307 standard; 33,673 full load
Dimensions, feet (metres): 869.4 oa; 780.8 pp x 104.1 hull (168 oa) x 28.2 (265, 238 x 31.7; 51.2 x 8.6)
Flight deck, feet (metres): 850 x 154 (259 x 47)
Main machinery: 5 Le Valley boilers; 640 psi (45 kg/cm²); 840°F (450°C); 2 GEC Alsthom turbines; 126,000 hp (93 MW); 2 shafts
Speed, knots: 30
Range, n miles: 7,000 at 18 kt; 4,800 at 24 kt; 3,500 at full power
Complement: 1,220 (80 officers); 358 (80 officers) aircrew

Missiles: SAM: 3 Matra Sadral; Mistral missiles; IR homing to 4 km (2.2 n miles) at 2.5 Mach; warhead 3 kg
Guns: 5-12.7 mm MGs.
Countermeasures: 2 CSEE AMBL 2A Sagai (10 barrelled trainable launchers), chaff and IR flares.
Combat data systems: IPqM/Elebra SICONTA Mk 4 tactical system, Links YB and 14, Inmarsat.
Weapons control: 2 Sagem DMa optical directors.
Radars: Air search: Thomson-CSF DRBV 23B ①, D-band. Air/surface search: Thomson-CSF DRBV 15 ②, E/F-band. Heightfinder: 2 DRBI 10 ③, E/F-band. Navigation: Racal Decca 1226; I-band. Fire control: 2 Thomson-CSF DRBC 32C. Tacan: NRBP-2B. Landing approach control: NRBA 51 ④, I-band.

Fixed-wing aircraft: 10-15 A-4 Skyhawks.
Helicopters: 4-6 Agusta SH-3A/D Sea Kings; 3 Aerospatiale UH-12/13; 2 UH-14 Cougar.

Programmes: Acquired from France on 15 November 2000 and following modifications in Brest, arrived in Brazil in February 2001.

Modernisation: A foldable mini ski-jump has been fitted to both catapults. The jet deflectors are enlarged (this implies reducing the area of the forward lift). Crotale and Sadral systems disembarked before transfer. Refit in 2003 included re-tubing of boilers and refurbishment of catapults. A further refit 2005-08 included a full machinery overhaul, flight deck renovations and the installation of three twin Matra SAM. The combat data system was upgraded to SICONTA Mk 4.

Structure: Flight deck, island superstructure and bridges, hull (over machinery spaces and magazines) are all armour plated. There are three bridges. Flag, Command and Aviation.

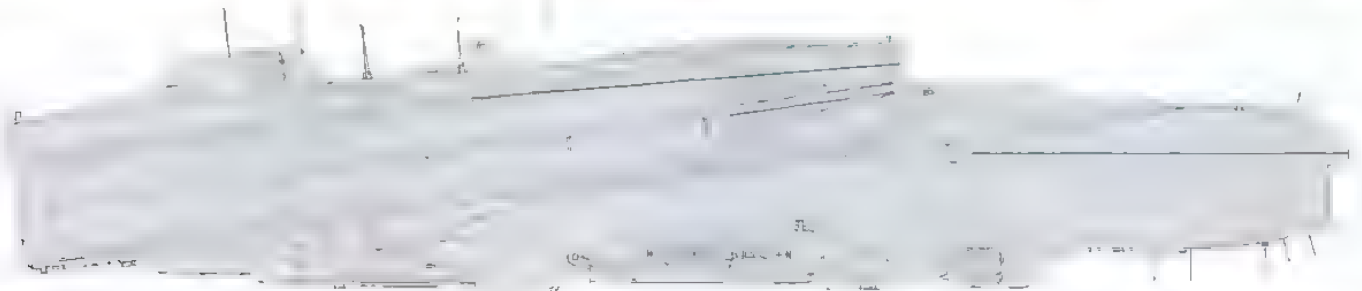
Two Mitchell-Brown steam catapults, Mk BS 5; able to launch 20 ton aircraft at 110 kt. The flight deck is angled at 8°. Two lifts 52.5 x 36 ft (16 x 10.97 m) one of which is on the starboard deck edge. Dimensions of the hangar are 590.6 x 78.7 x 23 ft (180 x 24 x 7 m).

Operational: Oil fuel capacity is 3,720 tons. Service life 2025.



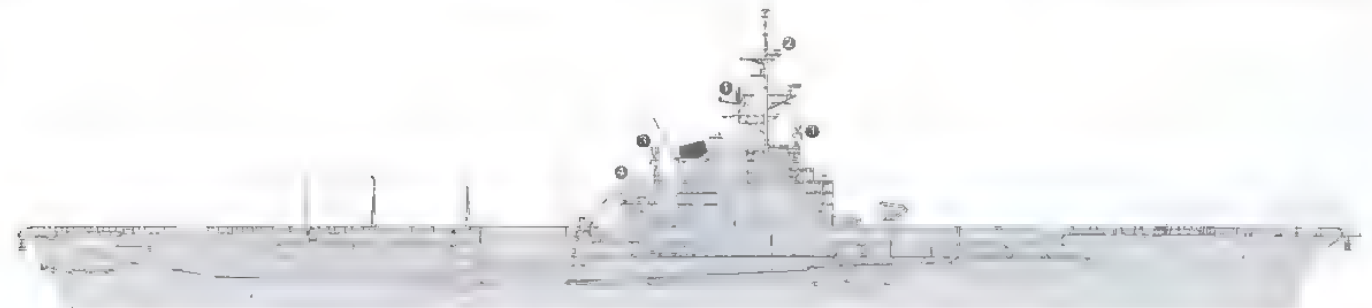
SÃO PAULO

9/2003, S C Neto/Mario R V Carneiro / 0569158



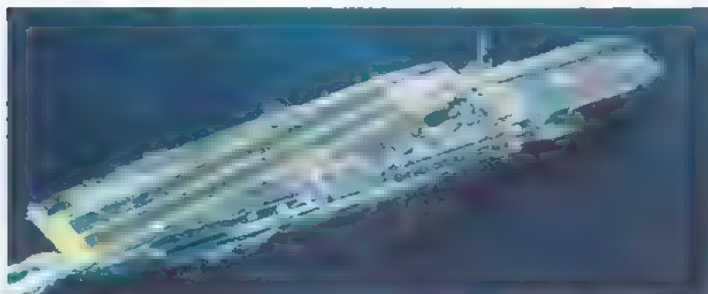
SÃO PAULO

(Scale 1 : 1,500), Ian Sturton / 0529159



SÃO PAULO

(Scale 1 : 1,500), Ian Sturton / 0130381



SÃO PAULO

2/2001, Mario R V Carneiro / 0059752



SÃO PAULO

9/2007, Mario R V Carneiro / 1335447



SÃO PAULO

9/2007, Mario R V Carneiro / 1336448

FRIGATES

Notes. Acquisition of up to six new frigates is reportedly under consideration. Following the Franco-Brazilian arms package of 12 February 2008, the French FREMM class is likely to be a strong contender.

3 BROADSWORD CLASS (TYPE 22) (FFGHM)

Name	No	Builders	Laid down	Launched	Commissioned	Recommissioned
GREENHALGH (ex-Broadsword)	F 48 (ex-F 88)	Yarrow Shipbuilders, Glasgow	7 Feb 1975	12 May 1976	3 May 1978	30 June 1995
BOSISIO (ex-Brazen)	F 48 (ex-F 91)	Yarrow Shipbuilders, Glasgow	18 Aug 1978	4 Mar 1980	2 July 1982	31 Aug 1996
RADEMAKER (ex-Battleaxe)	F 49 (ex-F 89)	Yarrow Shipbuilders, Glasgow	4 Feb 1976	18 May 1977	28 Mar 1980	30 Apr 1997

Displacement, tons: 3,500 standard; 4,731 full load
Dimensions, feet (metres): 430 oa, 410 wl x 48.5 x 19.9 (screws) (131.2; 125 x 14.8 x 6)

Main machinery: COGOG; 2 RR Olympus TM3B gas turbines, 50,000 hp (37.3 MW) sustained; 2 RR Tyne RM1C gas turbines, 9,900 hp (7.4 MW) sustained; 2 shafts; cp props

Speed, knots: 30; 18 on Tynes
Range, n miles: 4,500 at 18 kt on Tynes
Complement: 239 (17 officers)

Missiles, SSM: 4 Aerospatiale MM 38 Exocet ●; inertial cruise; active radar homing to 42 km (23 n miles) at 0.9 Mach; warhead 165 kg; sea-skimmer.

SAM: 2 British Aerospace 8-barrelled Seawolf GWS 25 Mod 4 ●; command line of sight (CLOS) TV/radar tracking to 5 km (2.7 n miles) at 2+ Mach; warhead 14 kg; 32 rounds.

Guns: 2 Bofors SAK 40 mm/L 70-350 A-3 ●; 300 rds/min to 12 km (6.5 n miles)
 2 Oerlikon BMARC 20 mm GAM BO1; 1,000 rds/min to 2 km.

Torpedoes: 6 324 mm Plessey STWS Mk 2 (2 triple) tubes ●
 Honeywell Mk 46 Mod 5; active/passive homing to 11 km (5.9 n miles) at 40 kt; warhead 44 kg.

Countermeasures: Decoys: 4 Loral Hycor SRBOC Mk 36, 6-barrelled fixed launchers ●; for chaff
 Graseby Type 182, towed torpedo decoy.

GREENHALGH

ESM MEL UAA-2; intercept.
Combat data systems: CAAIS; Link YB being fitted. Inmarsat

Weapons control: GWS 25 Mod 4 (for SAM), GWS 50 (Exocet).
Radars: Air/surface search: Marconi Type 967/968 ●, D/E-band.
 Navigation: Kelvin Hughes Type 1006; I-band
 Fire control: Two Marconi Type 910 ●; MKu-band (for Seawolf).

Sonars: Plessey Type 2050; hull-mounted; search and attack, medium frequency

Helicopters: 2 Westland Super Lynx AH-11A ●

Programmes: Contract signed on 18 November 1994 to transfer four Batch I Type 22 frigates from the UK, one



(Scale 1 : 1,200), Ian Sturton / 0017084

in 1995, two in 1996 and one in 1997. It is not planned to buy more Type 22s.

Modernisation: Plans to fit a single 57 mm gun on the bow were shelved in favour of a 40 mm gun on each beam. These guns are being taken from the Niteroi class. A modernisation programme is planned to start in mid-2009. Upgrades are likely to include replacement of Exocet MM 38 with MM 40 and modernisation of the Seawolf SAM system.

Structure: Accommodation modified in UK service to take 65 officers under training

Operational: Primary role is ASW. Form part of Second Escort Squadron at Niteroi, Rio de Janeiro. F 47 decommissioned in 2005



BOSISIO

10/2005, Mario R V Carneiro / 1153024



GREENHALGH

9/2007, Mario R V Carneiro / 1355449

6 NITERÓI CLASS (FFGHM)

Name	No	Builders	Laid down	Launched	Commissioned
NITERÓI	F 40	Vosper Thornycroft Ltd	8 June 1972	8 Feb 1974	20 Nov 1976
DEFENSORA	F 41	Vosper Thornycroft Ltd	14 Dec 1972	27 Mar 1975	5 Mar 1977
CONSTITUIÇÃO	F 42	Vosper Thornycroft Ltd	13 Mar 1974	15 Apr 1976	31 Mar 1978
LIBERAL	F 43	Vosper Thornycroft Ltd	2 May 1975	7 Feb 1977	18 Nov 1978
INDEPENDÊNCIA	F 44	Arsenal de Marinha, Rio de Janeiro	11 June 1972	2 Sep 1974	3 Sep 1979
UNIÃO	F 45	Arsenal de Marinha, Rio de Janeiro	11 June 1972	14 Mar 1975	12 Sep 1980

Displacement, tons: 3,200 standard; 3,707 full load
Dimensions, feet (metres): 424 × 44.2 × 18.2 (sonar)
 (129.2 × 13.5 × 5.5)

Main machinery: CODOG; 2 RR Olympus TM3B gas turbines; 50,880 hp (37.9 MW) sustained; 4 MTU 16V 956 TB 91 diesels; 15,000 hp (m) (11.0 MW) sustained, 2 shafts; cp props

Speed, knots: 30 gas, 22 diesels

Range, n miles: 5,300 at 17 kt on 2 diesels; 4,200 at 19 kt on 4 diesels; 1,300 at 28 kt on gas

Complement: 209 (22 officers)

Missiles: SSM: 4 Aerospatiale MM 40 Exocet (2 twin) launchers; inertial cruise; active radar homing to 70 km (40 n miles) at 0.9 Mach; warhead 165 kg, sea-skimmer.

SAM: AESN Albatros (8 cell, 2 reloads); Aspide 2000, semi-active radar homing to 21 km (11 n miles) at 2.5 Mach.

Guns: 1 Vickers 4.5 in (115 mm)/55 Mk 8; 25 rds/min to 22 km (12 n miles) anti-surface; 8 km (3.2 n miles) anti-aircraft; weight of shell 21 kg.

2 Bofors SAK 40 mm/L 70-800 Mk 3 Sea Trinity; 330 rds/min to 4 km (2.2 n miles).

Torpedoes: 8-324 mm Mk 32 (2 triple) tubes; Honeywell Mk 46 Mod 5; anti-submarine; active/passive homing to 11 km (5.9 n miles) at 40 kt; warhead 44 kg.

A/S mortars: 1 Bofors 375 mm trainable rocket launcher (twin-tube); automatic loading; range 1,600 m.

Countermeasures: Decoys: 4 IPqM/Elebra MDLS 16-barrel chaff launchers

ESM. Rascal Cutlass B-1B; intercept.

LIBERAL

Combat data systems: IPqM/Elebra Siconta II Link Y8.

Weapons control: Saab/Combtech: EOS-400/10B optronic director, WSA 401 FCS

Radars: Air/surface search: AESN RAN 20 S (3L); D-band. Surface search: Terma Scantec 4100; I-band.

Fire control: 2 AESN RTN 30X; I/J-band.

Navigation: Furuno FR-1942 Mk 2; I-band.

Sonars: EDO 997F; hull-mounted, active search and attack; medium frequency. EDO 700E VDS (F 40, F 41); active search and attack.

Helicopters: 1 Westland Super Lynx AH-11A

Programmes: A contract announced on 29 September 1970 was signed between the Brazilian government and Vosper Thornycroft for the design and building of six Vosper Thornycroft Mark 10 frigates. Seventh ship with

differing armament was ordered from Navy Yard, Rio de Janeiro in June 1981 and is used as a training ship.

Modernisation: The modernisation plan (Mod Frag) first signed in March 1995 included replacing Seacat by Aspide, Plessey AWS 2 radar by Alenia RAN 20S, RTN 10X by RTN 30X, ZW06 radar by Terma Scantec, new 40 mm mountings, new EW equipment, combat data system and hull-mounted sonar. Ikara removed. Work was undertaken by Elebra. *Liberal* completed 2001. *Defensora* (2002), *Independência* (2004) and *Niterói* (2004). *Constituição* and *União* were completed in 2005.

Structure: Originally F 40, 41, 44 and 45 were of the A/S configuration. F 42 and 43 general purpose design. Fitted with retractable stabilisers.

Operational: Endurance, 45 days' stores, 60 days' provisions. The helicopter has Sea Skua ASM. All are based at Niterói and form the First Escort Squadron.



(Scale 1 : 1,200), Ian Sturton / 1170278



DEFENSORA

3/2008*, M Declerck / 1436338



INDEPENDÊNCIA

5/2006*, Guy Toremans / 1335339

CORVETTES

1 + (3) BARROSO CLASS (FSGH)

Name
BARROSO

No
V 34

Builders
Arsenal de Marinha, Rio de Janeiro

Laid down
21 Dec 1994

Launched
20 Dec 2002

Commissioned
19 Aug 2008

Displacement, tons: 1,785 standard; 2,350 full load
Dimensions, feet (metres): 339.3 × 37.4 × 13.0; 17.4 (sonar)
(103.4 × 11.4 × 3.95; 5.3)
Main machinery: CODOG; 1 GE LM 2500 gas turbine;
27,500 hp (20.52 MW) sustained; 2 MTU 20V 1163 TB83
diesels; 11,780 hp(m) (8.67 MW) sustained; 2 shafts,
Kamewa cp props
Speed, knots: 29
Range, n miles: 4,000 at 12 kt
Complement: 145 (15 officers)

Missiles: SSM 4 Aerospatiale MM 40 Exocet Block II ●;
inertial cruise; active radar homing to 70 km (40 n miles)
at 0.90 Mach; warhead 165 kg; sea-skimmer.
Guns: 1 Vickers 4.5 in (115 mm) Mk 8 ●; 55° elevation;
25 rds/min to 22 km (12 n miles); weight of shell 21 kg
1 Bofors SAK Sea Trinity CIWS 40 mm/70 Mk 3 ●;
330 rds/min to 4 km (2.2 n miles); anti-aircraft; 2.5 km
(1.4 n miles) anti-missile; weight of shell 0.96 kg; with
‘3P’ improved ammunition.
2—12.7 mm MGs.
Torpedoes: 6 ARES/DSAM SLT Mod 400 324 mm (2 triple)
tubes ●; Honeywell Mk 46 Mod 5; anti-submarine; active/
passive homing to 11 km (5.9 n miles) at 40 kt; warhead
44 kg.
Countermeasures: Decoys: 2 IPqM/Elebra MDLS 101
12-tubed decoy launchers ●.
ESM: IPqM/Elebra ET/SLR-1X ●; radar warning.
ECM: IPqM/Elebra ET/SLO-2 ●; jammer.
Combat data systems: IPqM/Esca Siconta Mk III with
Link YB
Weapons control: Saab/Combitech EOS-400 FCS with
optronic director ●; two OFDLSE optical directors ●
Radars: Surface search: AESN RAN-20S ●; F-band.
Navigation: Terna Scenter 4100, E/F/I-band
Fire control: AESN RTN 30-X ●; I/J-band (for Albatross
and guns).
Sonars: EDO 997(F), hull-mounted; active; medium
frequency.

Helicopters: 1 AH-11A West and Super Lynx ●.

Programmes: Ordered in 1994 as a follow-on to the
Inhauma programme. The building programme has



BARROSO

(Scale 1 : 900), Ian Sturton / 0506270



BARROSO

6/2008* / 133540

been beset by funding difficulties and although a
class of six vessels was once projected, it is unlikely
that more than a further three vessels will be
built.

Structure: The hull is some 4.2 m longer than the Inhauma
class to improve sea-keeping qualities and allow extra

space in the engine room. The design allows the use of
containerised equipment to aid modernisation. Efforts
have been made to incorporate stealth technology
Vosper stabilisers.

Operational: To become operational in March 2009

4 INHAUMA CLASS (FSGH)

Name
INHAUMA
JACEGUAÍ
JULIO DE NORONHA
FRONTIN

No
V 30
V 31
V 32
V 33

Builders
Arsenal de Marinha, Rio de Janeiro
Arsenal de Marinha, Rio de Janeiro
Verolme, Angra dos Reis
Verolme, Angra dos Reis

Laid down
23 Sep 1983
15 Oct 1984
8 Dec 1986
14 May 1987

Launched
13 Dec 1986
8 June 1987
15 Dec 1989
6 Feb 1992

Commissioned
12 Dec 1989
2 Apr 1991
27 Oct 1992
11 Mar 1994

Displacement, tons: 1,600 standard; 2,140 full load
Dimensions, feet (metres): 314.2 × 37.4 × 12.1; 17.4 (sonar)
(95.8 × 11.4 × 3.7; 5.3)
Main machinery: CODOG; 1 GE LM 2500 gas turbine,
27,500 hp (20.52 MW) sustained; 2 MTU 16V 395 TB 91
diesels; 7,500 hp(m) (5.5 MW) sustained; 2 shafts,
Kamewa cp props
Speed, knots: 27
Range, n miles: 4,000 at 15 kt
Complement: 145 (20 officers)

Missiles: SSM 4 Aerospatiale MM 40 Exocet Block II ●;
inertial cruise, active radar homing to 70 km (40 n miles)
at 0.9 Mach; warhead 165 kg; sea-skimmer.
Guns: 1 Vickers 4.5 in (115 mm) Mk 8 ●; 55° elevation;
25 rds/min to 22 km (12 n miles); weight of shell 21 kg.
2 Bofors 40 mm/70 ●; 300 rds/min to 12 km (6.5 n miles)
anti-surface; 4 km (2.2 n miles) anti-aircraft; weight of
shell 0.96 kg. 2—12.7 mm MGs
Torpedoes: 6—324 mm Mk 32 (2 triple) tubes ●. Honeywell
Mk 46 Mod 5; anti-submarine; active/passive homing to
11 km (5.9 n miles) at 40 kt; warhead 44 kg.
Countermeasures: Decoys: 2 Plessey Shield chaff launchers ●;
fires chaff and IR flares in distraction, decoy or centroid
patterns.
ESM: IPqM/Elebra Defensor ET/SLR-1X, radar intercept.
ECM: IPqM/Elebra ET SLO-1, jammer ●
Combat data systems: Ferranti CAAIS 450/WSA 421, Link YB
Weapons control: Saab EOS-400 FCS with optronic director ●
and two OFDLSE optical ● directors.
Radars: Surface search: Plessey AWS 4 ●; E/F-band.
Navigation: Kelvin Hughes Type 1007, I/J band
Fire control: Selenia Orion RTN 10X ●; I/J-band.
Sonars: Atlas Elektronik DSQS-21C; hull-mounted, active;
medium frequency.

Helicopters: 1 Westland Super Lynx ● or UH-12/13
Ecuarel

Programmes: Designed by Brazilian Naval Design
Office with advice from West German private Marine
Technik design company. Signature of final contract on
1 October 1981. First pair ordered on 15 February 1982 and
second pair 9 January 1986. In mid-1986 the government
approved, in principle, construction of a total of 16 ships
but this was reduced to four.

Modernisation: A modernisation programme began in late
2008.

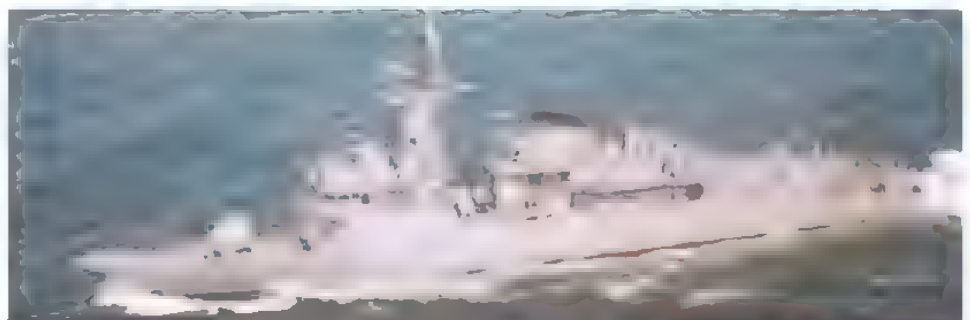
Operational: Form part of First Frigate Squadron based at
Niterói, Rio de Janeiro

JULIO DE NORONHA
10/2005, Mario R V Carneiro
115,801B



INHAUMA

(Scale 1 : 900), Ian Sturton 0311751 /



INHAUMA

9/2007, Mario R V Carneiro / 1335446



SHIPBORNE AIRCRAFT (FRONT LINE)

Notes: It is planned to acquire up to three AEW aircraft by 2022

Numbers/Type: 15/3 McDonnell Douglas AF-1/AF-1A Skyhawk.
Operational speed: 560 kt (1,040 km/h).
Service ceiling: 45,000 ft (13,780 m).
Range: 1,060 n miles (1,965 km).

Role/Weapon systems: Acquired from Kuwait Air Force in September 1998 to restore carrier fixed wing flying. A further five aircraft are kept as spares. An upgrade programme is under consideration. A Letter of Intent is expected in 2009. Sensors: APQ 145B radar; ESM/ECM. Weapons: AAM; 4 AIM 9H, 2 Colt 20 mm cannon; ASVW; bombs and rocket pods.



AF-1 10/2001, S C Neto/Mario R V Carneiro / 0569157

Numbers/Type: 4/1 Sikorsky SH-3A/SH-3B.
Operational speed: 125 kt (230 km/h).
Service ceiling: 12,200 ft (3,720 m).
Range: 400 n miles (740 km).

Role/Weapon systems: ASW helicopter, carrierborne and shore-based for medium-range ASW, ASVW and SAR. Sixteen delivered between 1970 and 1997. Three have been lost. Sensors: SMA APS-705(V)II or Northrop Grumman LN-66 HP search radar; Bendix AQS 13B or AQS 18(V) dipping sonar. Weapons: ASW; up to 2 x Mk 46 torpedoes, or 4 Mk II depth bombs. ASVW; 2 x AM 39 Exocet missiles.

Numbers/Type: 2/5 Aerospatiale UH-14 (AS 332F1 Super Puma)/UH-14 (AS 532 SC Cougar)

Operational speed: 120 kt (222 km/h).
Service ceiling: 12,000 ft (3,657 m).
Range: 445 n miles (825 km).

Role/Weapon systems: SAR, troop transport and ASVW. Sensors: Bendix RDR 1400C search radar. Weapons: None.



UH-14 6/2003, S C Neto/Mario R V Carneiro / 0569155

Numbers/Type: 4 Sikorsky S-70B Seahawk.
Operational speed: 135 kt (250 km/h).
Service ceiling: 10,000 ft (3,050 m).
Range: 600 n miles (1,110 km).

Role/Weapon systems: Four ex-US Navy aircraft ordered, under FMS funding arrangements, in June 2008. The aircraft are to have an ASW/ASUW role. Sensors: APS-124 search radar; Helras dipping sonar. Weapons: ASW: 2 Mk 46 torpedoes; Penguin ASM.



SEAHAWK S-70B (Turkish colours) 6/2002, Selçuk Emre / 0533251

Numbers/Type: 12 AH-IIA Westland Super Lynx.
Operational speed: 125 kt (232 km/h).
Service ceiling: 12,000 ft (3,650 m).
Range: 130 n miles (240 km).

Role/Weapon systems: ASW/ASV roles. First batch upgraded in 1994-97 to Super Lynx standard with Mk 3 radar and Racal Kestrel EW suite. Sensors: Sea Spray Mk 1/Mk 3 radar; Racal MIR 2 ESM; Sea Star III FLIR. Weapons: ASW; 2 x Mk 46 torpedoes, or Mk II depth bombs. ASV; 4 x BAe/Ferranti Sea Skua missiles.



AH-IIA 5/2006, Guy Toremans / 1335337

Numbers/Type: 18 Aerospatiale UH-12 Esquilo (AS-350BA Ecureuil).
Operational speed: 147 kt (272 km/h).
Service ceiling: 10,000 ft (3,050 m).
Range: 240 n miles (445 km).

Role/Weapon systems: Support helicopters for Fleet liaison and Marine Corps transportation. Sensors: None. Weapons: 2 x axial 7.62 mm MGs or 1 x lateral MG or 1 x rocket pod.



UH-12 12/2002, Mario R V Carneiro / 0569156

Numbers/Type: 7 Aerospatiale UH-13 Esquilo (AS 355F2 Ecureuil 2).
Operational speed: 121 kt (224 km/h).
Service ceiling: 11,150 ft (3,400 m).
Range: 240 n miles (445 km).

Role/Weapon systems: SAR, liaison and utility in support of Marine Corps. One transferred to Uruguay in 2006. Sensors: Search radar. Weapons: 2 x axial 7.62 mm MGs or 1 x lateral MG or 1 x rocket pod.



UH-13 3/2008, M Declerck / 1335336

Numbers/Type: 16 IH-6B (Bell JetRanger III).
Operational speed: 115 kt (213 km/h).
Service ceiling: 20,000 ft (6,100 m).
Range: 368 n miles (682 km).

Role/Weapon systems: Utility and training helicopters. One lost in June 2005. Sensors: None. Weapons: 2 x 7.62 mm MGs or 1 lateral 12.7 mm MG or 2 x rocket pods.

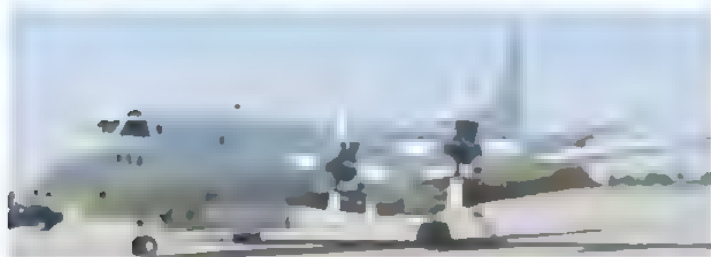


IH-6B 12/2002, Mario R V Carneiro / 0569154

LAND-BASED MARITIME AIRCRAFT (FRONT LINE)

Numbers/Type: 8 Lockheed P-3BR Orion.
Operational speed: 411 kt (761 km/h).
Service ceiling: 26,300 ft (8,025 m).
Range: 4,000 m (7,410 km).

Role/Weapon systems: Twelve P-3 A/B acquired by the Air Force from the US Navy in 2002. Eight being upgraded to P-3BR standard by EADS/CASA. Contract awarded in April 2005 and aircraft to be delivered 2008–10. The remaining four aircraft are to be used for spare parts. Sensors: Raytheon AN/APS-137B(V)5 radar, ASQ-81 MAD, EADS/CASA FITS, AAR-47 warning receiver, AN/ALR 86(V)3 ESM, AN/ALQ-78A countermeasures suite. Weapons: ASW; eight Mk 46 torpedoes, eight Mk 14 depth charges. ASuW: 4 Aerospaziale AM-39 Exocet.



P-3BR 2002, Brazilian Navy / 0538045

Numbers/Type: 10/9 Bandeirante P-95A/P-95B (EMB-111(B))
Operational speed: 194 kt (360 km/h).
Service ceiling: 25,500 ft (7,770 m).
Range: 1,590 n miles (2,945 km).

Role/Weapon systems: Air Force operated for coastal surveillance role by four squadrons. Sensors: MEL Super Searcher (P-95B) or Eaton/AIL APS-28 Sea Searcher (P-95A) search radar, searchlight pod on starboard wing, EFIS-74 (electronic flight instrumentat on) and Collins APS-65 (autopilot); ESM Thomson-CSF DR2000A/Dalia 1000A Mk II, GPS (Trimble). Weapons: 4 or 6 x 127 mm rockets, or up to 28 x 70 mm rockets.



EMB-111 6/1995 / 0503479

Numbers/Type: 53 A-1 (Embraer/Alenia/Aermacchi) AMX
Operational speed: 493 kt (914 km/h).
Service ceiling: 42,650 ft (13,000 m).
Range: 1,800 n miles (3,336 km).

Role/Weapon systems: Air Force operated for strike, reconnaissance and anti-shipping attack; shore-based for fleet air defence and ASW primary roles; operated by 3rd/10th Group at Santa Maria Air Base (KS) and Santa Cruz Air Base. Sensors: Tecnasa/SMA SCP-01 Scipio radar. ECM suite/ESM flares and chaffs; GPS and IFF. Weapons: Strike; up to 3,800 kg of 'IRON' bombs, Self-defence; AAM; 2 x MAA-1 Piranha or 2 x AIM 9 Sidewinder missiles; 2 DEFA 30 mm cannon.



AMX 6/1998 / 0013614

PATROL FORCES

Notes: (1) There are plans to acquire five offshore patrol ships of approximately 1,800 tons. Construction is expected to start in 2010.
 (2) There are 114 LAEP series Instruction and Support craft. 24 LAEP-10 are 10 m long and 90 LAEP-7 are 7 m long.
 (3) There are 174 LPN series Rivar patrol craft of 3 to 15 m length.
 (4) Fifteen 8 m aluminium hulled LAR (fast insertion craft) have entered service with the Brazilian Marines. Further orders are expected. There are two other variants of the class: LIN are operated by port authorities and LAM are ambulance craft.
 (5) Four Tracker II (LPAN-21) 21 m patrol craft are employed as police patrol craft.
 (6) There are plans to acquire two 200-ton river patrol ships.

1 + 5 (4) MARLIM (MEATINI) CLASS (PB)

MARLIM LP 01

Displacement, tons: 40 full load
Dimensions, feet (metres): 74.8 x 17.1 x 3.3 (22.8 x 5.2 x 1)
Main machinery: 2 CRM 18D/52 diesels, 2,500 hp(m) (1.84 MW); 2 shafts
Speed, knots: 34
Range, n miles: 560 at 20 kt
Complement: 11 (1 officer)
Guns: 1 – 12.7 mm MG
Radars: Surface search: 1 GEM 1210, I-band

Comment: The first of a new class of patrol craft that entered service in 2005. Slightly longer version of Italian Meatini class design in service with Guardia di Finanza. Built by Inace Shipyard, Brazil. Aluminium hull. Five further craft are to be delivered in 2009 and a class of 10 is expected. Details are for those in service in Italy and may be different.



MARLIM 6/2007, L. Frangetto / 11/0089

12 GRAJAU CLASS (LARGE PATROL CRAFT) (PBO)

Name	No	Builders	Launched	Commissioned
GRAJAU	P 40	Arsenal de Marinha	21 May 1993	1 Dec 1993
GUAIBA	P 41	Arsenal de Marinha	10 Dec 1993	12 Sep 1994
GRAUNA	P 42	Estaleiro Mauá, Niteroi	10 Nov 1993	15 Aug 1994
GOIANA	P 43	Estaleiro Mauá, Niteroi	26 Jan 1994	26 Feb 1997
GUAJARÁ	P 44	Peenewerft, Germany	24 Oct 1994	28 Apr 1995
GUAPORÉ	P 45	Peenewerft, Germany	23 Jan 1995	29 Aug 1995
GURUPÁ	P 46	Peenewerft, Germany	11 May 1995	8 Dec 1995
GURUPI	P 47	Peenewerft, Germany	6 Sep 1995	23 Apr 1996
GUANABARA	P 48	Inace, Fortaleza	5 Nov 1997	9 July 1999
GUARUJÁ	P 49	Inace, Fortaleza	24 Apr 1998	25 Nov 1999
GUARATUBA	P 50	Peenewerft, Germany	16 June 1999	1 Dec 1999
GRAVATAI	P 51	Peenewerft, Germany	26 Aug 1999	17 Feb 2000

Displacement, tons: 19/ standard; 217 full load
Dimensions, feet (metres): 152.6 x 24.6 x 7.5 (46.5 x 7.5 x 2.3)
Main machinery: 2 MTU 16V 396 TB94 diesels; 5,800 hp(m) (4.26 MW) sustained; 2 shafts
Speed, knots: 26
Range, n miles: 2,200 at 12 kt
Complement: 29 (4 officers)
Guns: 1 Bofors 40 mm/70. 2 Oerlikon 20 mm (P 40-44). 2 Oerlikon BMARC 20 mm GAM-801 (P 45-51)
Weapons control: ARES/DSAM AO optronic director may be fitted in due course
Radars: Surface search: Racal Decca 1290A, I-band.

Comment: Two ordered in late 1987 to a Vosper QAF design similar to Bangladesh Meghna class. Technology transfer in February 1988 and construction started in July 1988 for the first pair; second pair started construction in September 1990. Class name changed in 1993 when the first four were renumbered to reflect revised delivery dates. Building problems are also reflected in the replacing of the order for the third pair with Peenewerft in November 1993 and the fourth pair in August 1994. Two more ordered from Inace in September 1996 and from Peenewerft in 1998. Used for EEZ patrol duties and diver support. Carry one RIB and telescopic launching crane. A similar vessel has been built for Namibia.



GUAPORÉ 4/2006, A E Galarce / 1040/73



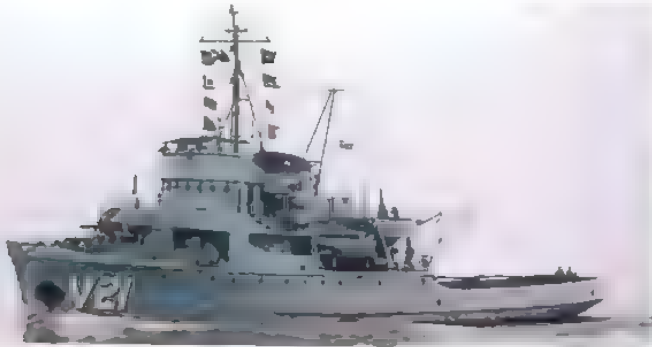
GUAJARÁ 2/2006, Marco Ghigliano / 1167/21

2 IMPERIAL MARINHEIRO CLASS (COASTAL PATROL SHIPS) (PG/ATR)

Name	No	Builders	Commissioned
IMPERIAL MARINHEIRO	V 15	Smit, Kinderdijk, Netherlands	8 June 1955
CABOCLO	V 19	Smit, Kinderdijk, Netherlands	5 Apr 1955

Displacement, tons: 911 standard; 1,025 full load
Dimensions, feet (metres): 184 x 30.5 x 11.7 (56 x 9.3 x 3.6)
Main machinery: 2 Sulzer 6TD36 diesels; 2,160 hp(m) (1.59 MW); 2 shafts
Speed, knots: 16
Complement: 64 (6 officers)
Guns: 1--3 in (76 mm)/50 Mk 33; 60 rds/min to 12.8 km (6.9 n miles); weight of shell 6 kg, 2 or 4 Oerlikon 20 mm.
Radars: Surface search: Rocal Decca; I-band

Comment: Fleet tugs classed as corvettes. Equipped for firefighting. *Imperial Marinheiro* has acted as a submarine support ship but gave up the role in 1990. V 21 and V 23 withdrawn from service in 2002, V 24 in 2003 and V 20 in 2004. V 19 has been re-engined and returned to service.



IMPERIAL MARINHEIRO CLASS 2/2000, van Ginderen Collection / 0104279

2 PEDRO TEIXEIRA CLASS (RIVER PATROL SHIPS) (PBR)

Name	No	Builders	Launched	Commissioned
PEDRO TEIXEIRA	P 20	Arsenal de Marinha	14 Oct 1970	17 Dec 1973
RAPOSO TAVARES	P 21	Arsenal de Marinha	11 June 1972	17 Dec 1973

Displacement, tons: 690 standard; 900 full load
Dimensions, feet (metres): 208.7 x 31.8 x 5.6 (63.6 x 9.7 x 1.7)
Main machinery: 4 MAN V6 V16/18 TL diesels, 3,840 hp(m) (2.82 MW); 2 shafts
Speed, knots: 16
Range, n miles: 5,000 at 13 kt
Complement: 58 (6 officers)
Guns: 1 Bofors 40 mm/60; 120 rds/min to 12 km (6.5 n miles). 6--12.7 mm MGs. 2--81 mm Mk 2 mortars.
Radars: Surface search: 2 Rocal Decca; I-band.
Helicopters: 1 Bell JetRanger or UH-12 Esquilo

Comment: Built in Rio de Janeiro. Belong to Amazon Flotilla. Can carry two armed LCVPs and 85 marines in deck accommodation. Both ships to be re-engined.



PEDRO TEIXEIRA 6/1997, Brazilian Navy / 0012091

3 RORAIMA CLASS (RIVER PATROL SHIPS) (PBR)

Name	No	Builders	Launched	Commissioned
RORAIMA	P 30	Maclaren, Niteroi	2 Nov 1972	21 Feb 1975
RONDÔNIA	P 31	Maclaren, Niteroi	10 Jan 1973	3 Dec 1975
AMAPÁ	P 32	Maclaren, Niteroi	9 Mar 1973	12 Jan 1976

Displacement, tons: 340 standard, 365 full load
Dimensions, feet (metres): 151.9 x 27.9 x 4.6 (46.3 x 8.5 x 1.4)
Main machinery: 2 Volvo-Penta D49A-MS diesels; 1,825 hp(m) (1.36 MW); 2 shafts
Speed, knots: 17
Range, n miles: 6,000 at 15 kt
Complement: 48 (5 officers)
Guns: 1 Bofors 40 mm/60; 120 rds/min to 12 km (6.5 n miles). 2 Oerlikon 20 mm. 2--81 mm mortars. 6--12.7 mm MGs.
Radars: Surface search: 2 Rocal Decca; I-band.

Comment: Carry two armed LCVPs. Belong to Amazon Flotilla. All re-engined with Volvo engines.



RORAIMA 6/1998, Brazilian Navy / 0017523

0 + 6 VIGILANTE (NAPA 500) CLASS (PBO)

Name	Builders	Laid down	Launched	Commissioned
—	INACE, Fortaleza	26 Nov 2006	2008	Oct 2009
—	INACE, Fortaleza	17 July 2007	2008	Mar 2010

Displacement, tons: 406 standard; 477 full load
Dimensions, feet (metres): 177.8 x 26.2 x 8.9 (54.2 x 8.0 x 2.7)
Main machinery: 2 MTU 16V 538TB93 diesels; 8,000 hp(m) (5.9 MW); 2 shafts
Speed, knots: 24
Range, n miles: 2,400 at 15 kt
Complement: 43 (8 officers)
Guns: 1 Bofors SAK-40 mm/L70 Mk 3 Sea Trinity; 330 rds/min to 4 km (2.2 n miles); weight of shell 0.96 kg
 2 Oerlikon/Royal Ordnance 20 mm GAM-801; 1,000 rds/min to 2 km.
Countermeasures: Decoys: 2 IPQM/Elebra MDLS 101 (12-tubed) launchers.
 ESM. To be announced.
Weapons control: ARES/DSAM AO optical sight
Radars: Surface search: To be announced
 Navigation: To be announced

Comment: Following an invitation to tender in June 2006, contract awarded on 28 September 2006 to Indústria Naval do Ceará (INACE), Fortaleza, for the construction of two patrol ships in partnership with the French company CMN. The ships, designated NAPA 500, are to CMN's 54 m Vigilante 400CL 54 design and are to be similar in configuration to the three Al Bushra class in service in the Royal Navy of Oman. CMN is to provide technical assistance and integrated logistic support. Steel was first cut on 1 November 2006. The ships are to be employed on EEZ patrol duties. The contract for a further four vessels was let in October 2008 and a class of 12 is projected by 2016.



VIGILANTE 400 6/2006, R Scott/NAVYPIX / 1162769

1 PARNAIBA CLASS (RIVER MONITOR) (PGRH)

Name	No	Builders	Commissioned
PARNAIBA	U 17 (ex-P 2)	Arsenal de Marinha, Rio de Janeiro	6 Nov 1938

Displacement, tons: 620 standard; 720 full load
Dimensions, feet (metres): 180.5 x 33.3 x 5.1 (55 x 10.1 x 1.6)
Main machinery: 2 diesels; 2 shafts
Speed, knots: 12
Range, n miles: 1,350 at 10 kt
Complement: 74 (6 officers)
Guns: 1 US 76 mm. 2 Bofors 40 mm/70. 6 Oerlikon 20 mm.
Radars: Surface search: Rocal Decca; I-band.
Navigation: Furuno 3600; I-band.
Helicopters: Platform for one IH-6B Jet Ranger.

Comment: Laid down 11 June 1936. Launched 2 September 1937 in Mato Grosso Flotilla. Re-armed with new guns in 1960. 3 in (76 mm) side armour and partial deck protection. Refitted in 1995/96 with improved armament, and with diesel engines replacing the steam reciprocating propulsion plant. Converted again in 1998 with Bofors 40 mm/70 guns taken from Niteroi-class frigates and a helo deck at the stern. Facilities to refuel and re-arm a UH-12 helicopter. Re-commissioned 6 May 1999.



PARNAIBA 5/2000, Hartmut Ehlers / 0087659

80 Brazil/Patrol forces – Amphibious forces

4 BRACUI (RIVER) CLASS (COASTAL PATROL CRAFT) (PBO)

Name	No	Builders	Commissioned
BRACUI (ex-Itchen)	P 60 (ex-M 2009)	Richards, Lowestoft	12 Oct 1985
BENEVENTE (ex-Blackwater)	P 61 (ex-M 2008)	Richards, Great Yarmouth	5 July 1985
BOCAINA (ex-Spey)	P 62 (ex-M 2013)	Richards, Lowestoft	4 Apr 1986
BABITONGA (ex-Arun)	P 63 (ex-M 2014)	Richards, Lowestoft	29 Aug 1986

Displacement, tons: 770 standard; 890 full load
Dimensions, feet (metres): 156 × 34.5 × 9.5 (475 × 10.5 × 2.9)
Main machinery: 2 Ruston 6 RKC diesels; 3,100 hp(m) (2.3 MW) sustained; 2 shafts
Speed, knots: 14
Range, n miles: 4,500 at 10 kt
Complement: 32 (4 officers)
Guns: 1 Bofors 40 mm/60
 2 – 7.62 mm MGs.
Mines: Rails for up to 20.
Radars: Surface search: 2 Racal Decca TM 1226C; I-band.

Comment: Second batch of ex-UK River class minesweepers transferred in 1988. These four were converted as patrol craft in UK service. Re-commissioned 6 April, 10 July, 10 July and 9 September respectively. Three others transferred in 1995 are listed as Survey Ships.



BOCAINA

7/1998, Maritime Photographic / 0056608

6 PIRATINI CLASS (COASTAL PATROL CRAFT) (PB)

Name	No	Builders	Commissioned
PIRATINI (ex-PGM 109)	P 10	Arsenal de Marinha, Rio de Janeiro	30 Nov 1970
PIRAJA (ex-PGM 110)	P 11	Arsenal de Marinha, Rio de Janeiro	8 Mar 1971
PAMPEIRO (ex-PGM 118)	P 12	Arsenal de Marinha, Rio de Janeiro	16 June 1971
PARATI (ex-PGM 119)	P 13	Arsenal de Marinha, Rio de Janeiro	29 July 1971
PENEDO (ex-PGM 120)	P 14	Arsenal de Marinha, Rio de Janeiro	30 Sep 1971
POTI (ex-PGM 121)	P 15	Arsenal de Marinha, Rio de Janeiro	29 Oct 1971

Displacement, tons: 105 standard; 146 full load
Dimensions, feet (metres): 95 × 19 × 6.5 (29 × 5.8 × 2)
Main machinery: 4 Cummins VT-12M diesels; 1,100 hp (820 kW); 2 shafts
Speed, knots: 17
Range, n miles: 1,700 at 12 kt
Complement: 16 (2 officers)
Guns: 1 Oerlikon 20 mm, 2 – 12.7 mm MGs.
Radars: Surface search, Racal Decca 1070; I-band
Navigation: Furuno 3600; I-band.

Comment: Built under offshore agreement with the USA and similar to the US Cape class. 81 mm mortar removed in 1988. Carries an inflatable launch. P 10, P 11, P 14 and P 15 are based at Ladário Fluvial Base, Mato Grosso, the other two at Amazonas.



POTI

6/1988, Brazilian Navy / 0017674

AMPHIBIOUS FORCES

- Notes:** (1) Replacement of the two Ceará-class LSDs is under consideration. Options include ex-US Navy Austin class.
 (2) Construction of three EDCG 41 LCU began at AMRJ in 2008.
 (3) There are six EDVP II class landing craft of 13 tons built by BFL, Ladário and capable of carrying 3.7 tons or 37 troops at 9 kt. These are based at Ladário.
 (4) There are 32 RIBs for special operations.

1 NEWPORT CLASS (LSTH)

Name	No	Builders	Laid down	Launched	Commissioned	Re-commissioned
MATTOSO MAIA (ex-Cayuga)	G 28 (ex-LST 1186)	National Steel & Shipbuilding Co	28 Sep 1968	12 July 1969	8 Aug 1970	30 Aug 1994

Displacement, tons: 5,159 standard; 8,757 full load
Dimensions, feet (metres): 522.3 (hull) × 69.5 × 17.5 (aft)
 (159.2 × 21.2 × 5.3)
Main machinery: 6 ALCO 16-251 diesels; 16,500 hp (12.3 MW) sustained; 2 shafts; cp props; bow thruster; 800 hp (596 kW)
Speed, knots: 20
Range, n miles: 14,250 at 14 kt
Complement: 267 (17 officers)

Military lift: 351 (33 officers); 500 tons vehicles; 3 LCVPs and 1 LCPL on davits

Guns: 1 General Electric/General Dynamics 20 mm Vulcan Phalanx Mk 15. 8 – 12.7 mm MGs
Radars: Surface search: Raytheon SPS-10F; G-band.
Navigation: Raytheon SPS-64(V)6 and Furuno FR 2120; I-band.

Helicopters: Platform only.

Programmes: Transferred from the USN by lease 26 August 1994, arriving in Brazil in late October. Purchased outright on 19 September 2000.

Structure: The ramp is supported by twin derrick arms. A stern gate to the tank deck permits unloading of amphibious tractors into the water, or unloading of other vehicles into an LCU or onto a pier. Vehicle stowage covers 19,000 sq ft. Length over derrick arms is 562 ft (171.3 m); full load draught is 11.5 ft forward and 17.5 ft aft.



MATTOSO MAIA

6/2003, S C Neto/Mario R V Carneiro / 0569153

2 CEARÁ (THOMASTON) CLASS (LSDH)

Name	No	Builders	Laid down	Launched	Commissioned	Recommissioned
CEARÁ (ex-Hermitage)	G 30 (ex-LSD 34)	Ingalls, Pascagoula	11 Apr 1955	12 June 1956	14 Dec 1956	28 Nov 1989
RIO DE JANEIRO (ex-Altamo)	G 31 (ex-LSD 33)	Ingalls, Pascagoula	11 Oct 1954	20 Jan 1956	24 Aug 1956	21 Nov 1990

Displacement, tons: 6,880 standard; 12,150 full load
Dimensions, feet (metres): 510 × 84 × 19
 (155.5 × 25.6 × 5.8)
Main machinery: 2 Babcock & Wilcox boilers; 580 psi
 (40.8 kg/cm²); 2 GE turbines; 24,000 hp (17.9 MW); 2 shafts
Speed, knots: 22.5. **Range, n miles:** 14,800 at 12 kt
Complement: 223 (21 officers)
Military lift: 340 troops; 3 EDCG-41 (LCU) or 6 EDVM 25
 (LCM 8) or 50 amphibious tractors in tank-deck and
 30 amphibious tractors on upper deck

Guns: 6 USN 3 in (76 mm)/50 (3 twin) Mk 33; 50 rds/min to
 12.8 km (7 n miles); weight of shell 6 kg.
 4–12 7 mm MGs.
Raders: Surface search: Raytheon SPS-10F; G-band.
 Air/surface search: Plessey AWS-2 (G 30); AWS-4 (G 31);
 E/F-band.
Navigation: Raytheon CRP 3100 (G 30); I-band. Furuno
 ARPA M-1942, E/F/I-band

Programmes: The original plan to build a 4,500 ton LST
 was overtaken by the acquisition of these two LSDs from
 the US initially on a lease and finally by purchase on
 24 January 2001.
Structure: Has two 50 ton capacity cranes and a docking
 well of 391 × 48 ft (119.2 × 14.6 m). Two LCVPs and two
 LCP(L)s on davits. Ice-strengthened bow. SATCOM fitted
 Phalanx guns and SRBOC chaff launchers removed
 before transfer. Air search radars removed.

Helicopters: Platform for Super Puma.



CEARÁ

9/2007, Mario R V Carneiro / 1335451

1 SIR GALAHAD CLASS (LSL)

Name	No	Builders	Laid down	Launched	Commissioned
GARCIA D'ÁVILA (ex-Sir Galahad)	G 29 (ex-L 3005)	Swan Hunter, Wallsend-on-Tyne	12 May 1985	13 Dec 1986	25 Nov 1987

Displacement, tons: 8,585 full load
Dimensions, feet (metres): 461.0 × 64.0 × 14.1
 (140.5 × 19.5 × 4.3)
Main machinery: 2 Mirlees-Blackstone diesels; 13,320 hp
 (9.94 MW); 2 shafts; cp props; 1 bow thruster; 400 hp (298 kW)
Speed, knots: 18. **Range, n miles:** 13,000 at 15 kt
Complement: 49 (15 officers)
Military lift: 343 troops (537 overload); 16 MBT, 34 mixed
 vehicles

Guns: 2 Oerlikon/Royal Ordnance 20 mm GAM-BO3 (twin);
 650 rds/min to 10 km (6.4 n miles); weight of shell
 0.36 kg. 2–7.62 mm MGs.
Countermeasures: Decoys: 2 Plessey Shield 200 (6-tubed
 launchers)
Combat data systems: Racal CANE data automation.
Raders: Navigation: Kolvin-Hughes Type 1007; I-band.
Helicopters: Platform for 1 medium.

Comment: Former UK Royal Fleet Auxiliary decommissioned
 in July 2006 and recommissioned into the Brazilian Navy
 on 4 December 2007 following a refit at Portsmouth. The
 work included overhaul of the engines and controllable-
 pitch propellers and upgrade of communications
 equipment. The ship is equipped with bow and stern
 ramps, a 25-tonne crane and three 8-tonne cranes.
 Up to four mexeflote pontoons can be attached to
 the hull.



GARCIA D'ÁVILA

2/2008*, Maritime Photographic / 1335335

3 LCU 1610 CLASS (EDCG/LCU)

Name	No	Builders	Commissioned
GUARAPARI	L 10 (ex-GED 10)	Arsenal de Marinha, Rio de Janeiro	27 Mar 1978
TAMBAÚ	L 11 (ex-GED 11)	Arsenal de Marinha, Rio de Janeiro	27 Mar 1978
CAMBORIÚ	L 12 (ex-GED 12)	Arsenal de Marinha, Rio de Janeiro	8 Jan 1981

Displacement, tons: 390 full load
Dimensions, feet (metres): 134.5 × 27.6 × 6.6 (41 × 8.4 × 2.0)
Main machinery: 2 GM 12V-71 diesels; 874 hp (650 kW) sustained; 2 shafts; cp props
Speed, knots: 11
Range, n miles: 1,200 at 8 kt
Complement: 14 (2 officers)
Military lift: 172 tons
Guns: 3–12.7 mm MGs.
Raders: Navigation: Furuno 3600; I-band.

Comment: Original pennant numbers restored in 2004. Based at Niterói.



CAMBORIÚ

6/2001, Brazilian Navy / 0130473

5 + 5 EDVM 25 CLASS (LCM)

801–805

Displacement, tons: 61 standard; 130 full load
Dimensions, feet (metres): 71 × 21 × 4.8 (21.7 × 6.4 × 1.5)
Main machinery: 2 Detroit diesels; 400 hp (294 kW) sustained; 2 shafts
Speed, knots: 9
Range, n miles: 95 at 9 kt
Complement: 5
Military lift: 150 troops plus 72 tons equipment

Comment: Five vessels constructed by Inace and delivered 1993–94. Construction of a
 further five craft started at AMRJ in 2008. LCM 8 type. Based at Niterói.



801

6/2001, Brazilian Navy / 0130472

1 SIR BEDIVERE CLASS (LANDING SHIP LOGISTIC) (LSLH)

Name	No	Builders	Laid down	Launched	Commissioned
ALMIRANTE SABOIA (ex-Sir Bedivere)	G 25 (ex L 3004)	Hawthorn Leslie, Hebburn-on-Tyne	Oct 1955	20 July 1966	18 May 1967

Displacement, tons: 3,270 light; 6,700 full load
Dimensions, feet (metres): 441.1 × 59.8 × 13 (134.4 × 18.2 × 4)
Main machinery: 2 Mirreless 10-ALSSDM diesels; 9,400 hp (7.01 MW) or 2 Wärtsilä 280 V12 diesels; 9,928 hp(m) (7.3 MW) sustained (SLEP); 2 shafts; bow thruster; 980 hp(m) (720 kW) (SLEP)
Speed, knots: 17
Range, n miles: 8,000 at 15 kt
Complement: 51 (18 officers); 49 (15 officers) (SLEP)
Military lift: 340 troops (534 hard lying); 18 MBTs; 34 mixed vehicles; 120 tons POL; 30 tons ammunition; 1–25 ton crane; 2 4.5 ton cranes. Capacity for 20 helicopters (11 tank deck and 9 vehicle deck)
Guns: 2 or 4 Oerlikon 20 mm. 4–762 mm MGs. 2 Mk 44 7.62 mm Miniguns.
Countermeasures: Decoys: 2 Plessey Shield chaff launchers.
Radars: Navigation: Kelvin Hughes Type 1006 or Racal Decca 2690, I-band. Aircraft control: Kelvin Hughes Type 1007, I-band (SLEP).
Helicopters: Platform to operate Lynx, Chinook or Sea King.

Comment: Former UK Royal Fleet Auxiliary decommissioned on 18 February 2008 and to be recommissioned into the Brazilian Navy in May 2009. Fitted for bow and stern loading with drive-through facilities and deck-to-deck ramps. Facilities provided for onboard maintenance of vehicles and for laying out pontoon equipment. Mexeflote self-propelled floating platforms can be strapped one on each side. SLEP in Rosyth from December 1994 to January 1998 included lengthening by 29 ft an enlarged flight deck, new main engines and a new bridge. The helicopter platform was lowered by one deck, which has reduced the size of the stern ramp.



ALMIRANTE SABOIA (UK colours)

4/2007, Shaun Jones / 11/0756

MINE WARFARE FORCES

6 ARATU (SCHÜTZE) CLASS (MINESWEEPERS—COASTAL) (MSC)

Name	No	Builders	Commissioned
ARATU	M 15	Abeking & Rasmussen, Lemwerder	5 May 1971
ANHATOMIRIM	M 16	Abeking & Rasmussen, Lemwerder	30 Nov 1971
ATALAIA	M 17	Abeking & Rasmussen, Lemwerder	13 Dec 1972
ARAÇATUBA	M 18	Abeking & Rasmussen, Lemwerder	13 Dec 1972
ABROLHOS	M 19	Abeking & Rasmussen, Lemwerder	25 Feb 1976
ALBARDÃO	M 20	Abeking & Rasmussen, Lemwerder	25 Feb 1976

Displacement, tons: 241 standard; 280 full load
Dimensions, feet (metres): 154.9 × 23.6 × 6.9 (47.2 × 7.2 × 2.1)
Main machinery: 2 MTU Maybach diesels; 4,500 hp(m) (3.3 MW); 2 shafts; 2 Escher-Weiss cp props
Speed, knots: 24
Range, n miles: 710 at 20 kt
Complement: 32 (4 officers)
Guns: 1 Bofors SAK 40 mm/70; 300 rds/min to 12 km (6.5 n miles); weight of shell 0.96 kg.
Radars: Surface search: Furuno M-1831, I-band
Navigation: Furuno FR 1831; I-band.

Comment: Wooden hulled. First four ordered in April 1969 and last pair in November 1973. Same design as the now deleted German Schütze class. Can carry out wire, magnetic and acoustic sweeping. A life-extension refit programme started in 2001. M 15 completed in 2002 and M17, 18 and 19 by 2005. M16 completed in 2006 and M 20 completed in 2007. Modifications include replacement of the surface search radar, communications upgrade and hull preservation measures. Based at Aratu, Bahia.



ABROLHOS

3/1998, Brazilian Navy / 0017625

1 POLAR RESEARCH SHIP (AGOBH)

Name	No	Builders	Commissioned
ARY RONGEL (ex-Polar Queen)	H 44	Eides, Norway	22 Jan 1961

Displacement, tons: 1,928 standard; 3,628 full load
Dimensions, feet (metres): 247 × 42.7 × 17.4 (75.3 × 13 × 5.3)
Main machinery: 2 MAK 6M-453 diesels; 4,500 hp(m) (3.3 MW); 1 shaft; cp prop; 2 bow thrusters; 1 stern thruster
Speed, knots: 14.5
Range, n miles: 17,000 at 12 kt
Complement: 70 (19 officers) + 22 scientists
Radars: Navigation: Sperry; I-band; Racal-Decca; I/J-band.
Cargo capacity: 2,400 m³
Helicopters: Platform for UH-13 Esquilo.

Comment: Acquired by sale 19 April 1994. Ice-strengthened hull fitted with Simrad Albatross dynamic positioning system



ARY RONGEL

6/2002, Carlos Veras, Brazilian Navy / 0572424

0 + 1 POLAR RESEARCH SHIP (AGOBH)

Name	No	Commissioned
ALMIRANTE MAXIMIANO (ex-Ocean Express)	H 45	1974

Displacement, tons: 5,450 full load
Dimensions, feet (metres): 306.4 × 43.9 × 7 (93.4 × 13.4 × 7)
Main machinery: to be announced
Speed, knots: to be announced
Complement: to be announced
Radars: Surface search: to be announced.
Navigation: to be announced.
Helicopters: 2 medium

Comment: Reportedly acquired in 2008 and undergoing conversion to an Antarctic support ship role in Germany. The refit includes provision of a hangar and flight deck to operate two helicopters.

SURVEY AND RESEARCH SHIPS

Notes: (1) Survey ships are painted white except for those operating in the Antarctic which have red hulls
(2) There are also 24 buoy tenders of between 15 and 26 m: seven LB 15, two LB 17 (Lufada and Piracema), one LB 19, 10 LB 20 (Achernar, Aldobaran, Betelgeuse, Capella, Denébola, Formalhaut, Regulus, Rigel, Vega and Pollux), two LB 23 (Suboficial Oliveira and Marco Zero) and two LB 26 (Tubarão and Boio).
(3) There is one inshore survey craft, Camocim, based at Niterói.

1 RESEARCH SHIP (AGS)

Name	No	Builders	Commissioned
ANTARES (ex-M/V Lady Harrison)	H 40	Mjøllem and Karlsen A/S, Bergen	Aug 1984

Displacement, tons: 855 standard; 1,248 full load
Dimensions, feet (metres): 180.3 × 33.8 × 14.1 (55 × 10.3 × 4.3)
Main machinery: 1 Burmeister & Wain Alpha diesel; 1,960 hp(m) (1.37 MW); 1 shaft; cp prop; bow thruster
Speed, knots: 13.5 **Range, n miles:** 10,000 at 12 kt
Complement: 58 (12 officers) + 12
Radars: Surface search: Racal Decca RMS 1230C; E/F-band
Navigation: Racal Decca RM 914C; I-band.

Comment: Research vessel acquired from Racal Energy Resources. Equipped with side scan sonar for route survey, Atlas Krupp deep echo sounder and Kongsberg/Simrad EA-500 deep echo sounder. Used for seismographic survey. Recommissioned 6 June 1988.



ANTARES 4/2000, Hartmut Ehlers / 0104233

3 AMORIM DO VALLE (RIVER) CLASS (SURVEY SHIPS) (AGS)

Name	No	Builders	Commissioned
AMORIM DO VALLE (ex-Humber)	H 35 (ex-M 2007)	Richards Ltd, Lowestoft	7 June 1985
TAURUS (ex-Helmsdale/Jorge Leite)	H 36 (ex-M 2010)	Richards Ltd, Lowestoft	1 Mar 1986
GARNIER SAMPAIO (ex-Ribble)	H 37 (ex-M-2012)	Richards, Great Yarmouth	19 Feb 1986

Displacement, tons: 770 standard; 890 full load
Dimensions, feet (metres): 156 × 34.5 × 9.5 (47.5 × 10.5 × 2.9)
Main machinery: 2 Ruston BRKC diesels; 3,100 hp (2.3 MW) sustained; 2 shafts; cp props
Speed, knots: 14
Range, n miles: 4,500 at 10 kt
Complement: 36 (4 officers)
Radars: Navigation: 2 Racal Decca TM 1226C; I-band.

Comment: Three ships transferred from the UK on 31 January 1995. The contract was signed on 18 November 1994. Steel hulled. All minesweeping gear and the 40 mm gun removed on transfer. Used as hydrographic ships. H 35 and H 36 fitted with a stern gantry and second crane amidships for oceanographic research. Equipment includes multibeam echo-sounders. Four others of the class transferred in 1998 are listed under Patrol Forces. The class is also in service with the Bangladesh Navy.



AMORIM DO VALLE 6/1995, David Cullen / 1153035



GARNIER SAMPAIO 6/2002, Brazilian Navy / 0579149

1 SIRIUS CLASS (SURVEY SHIP) (AGSH)

Name	No	Builders	Launched	Commissioned
SIRIUS	H 21	Ishikawajima Co Ltd, Tokyo	30 July 1957	17 Jan 1958

Displacement, tons: 1,448 standard; 1,885 full load
Dimensions, feet (metres): 255.7 × 39.3 × 12.2 (78 × 12.1 × 3.7)
Main machinery: 2 Vilares-Burmeister & Wain diesels; 1,550 hp (1.15 MW); 2 shafts, cp props
Speed, knots: 14. **Range, n miles:** 12,000 at 11 kt
Complement: 129 (16 officers) plus 14 scientists
Radars: Surface search: Racal Decca RMS 1230C; E/F-band.
Navigation: Furuno M 1942; E/F/I-band.
 Furuno, I-band
Helicopters: 1 Bell JetRanger or UH-12.

Comment: Laid down 1955-56. Special surveying apparatus, echo-sounders, Raydist equipment, sounding machines installed, and landing craft (LCVP), jeep, and survey launches carried. All living and working spaces are air conditioned.



SIRIUS 9/2007, Mario R V Carneiro / 1335445

1 LIGHTHOUSE TENDER (ABUH)

Name	No	Builders	Launched	Commissioned
ALMIRANTE GRAÇA ARANHA	H 34	Ebin, Niteroi	23 May 1974	9 Sep 1976

Displacement, tons: 1,070 standard; 2,440 full load
Dimensions, feet (metres): 245.3 × 42.6 × 13.8 (74.8 × 13 × 4.2)
Main machinery: 1 diesel; 2,440 hp(m) (1.8 MW); 1 shaft; bow thruster
Speed, knots: 14
Complement: 81 (13 officers)
Radars: Navigation: 2 Racal Decca; I-band
Helicopters: 1 Bell JetRanger

Comment: Laid down in 1971. Fitted with telescopic hangar, 10 ton crane, two landing craft, GP launch and two Land Rovers. Omega navigation system.



ALMIRANTE GRAÇA ARANHA 4/2000, Hartmut Ehlers / 0104234

4 BUOYTENDERS (ABU)

Name	No	Builders	Commissioned
COMANDANTE VARELLA	H 18	Arsenal de Marinha, Rio de Janeiro	20 May 1982
TENENTE CASTELO	H 19	Estanava, Manaus	15 Aug 1984
COMANDANTE MANHÃES	H 20	Estanava, Manaus	15 Dec 1983
TENENTE BOANERGES	H 25	Estanava, Manaus	29 Mar 1985

Displacement, tons: 300 standard; 420 full load
Dimensions, feet (metres): 123 × 28.2 × 8.5 (37.5 × 8.6 × 2.6)
Main machinery: 2 MAN R8V16-18TL B cylinder diesels; 1,300 hp(m) (955 kW); 2 shafts
Speed, knots: 12. **Range, n miles:** 2,880 at 9 kt
Complement: 22 (2 officers)
Radars: Navigation: Racal Decca TM 1226C; I-band.
 Furuno; I band

Comment: Dual-purpose minilayers. *Comandante Varellia* is based at Rio Grande, *Tenente Castelo* at São Luis, *Comandante Manhães* at Natal and *Tenente Boanerges* at Salvador.



COMANDANTE VARELLA 1/2000, van Ginderen Collection / 0104235

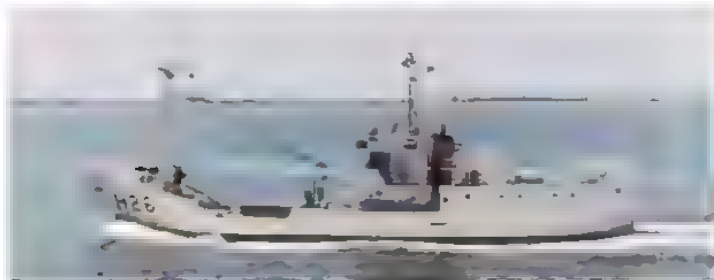
For details of the latest updates to *Jane's Fighting Ships* online and to discover the additional information available exclusively to online subscribers please visit
jfs.janes.com

1 BUOYTENDER (ABU)

FAROLEIRO MÁRIO SEIXAS (ex-Mestre Jerônimo) H 26

Displacement, tons: 234 standard; 294 full load
 Dimensions, feet (metres): 116.4 × 21.8 × 11.8 (35.5 × 6.6 × 3.6)
 Main machinery: 2 Scania DSI 14 M03 diesels, 900 hp (671 kW); 2 shafts
 Speed, knots: 10
 Complement: 19 (2 officers)
 Radars: Navigation: Racal Decca RD 150; I-band.

Comment: Former fishing vessel built in Vigo, Spain. Acquired by Brazilian Navy in 1979 and rebuilt as a buoy tender. Commissioned 31 January 1984.



FAROLEIRO MÁRIO SEIXAS 6/2002, Brazilian Navy / 0529148

1 RESEARCH SUPPORT VESSEL (AGS)

Name	No	Builders	Laid down	Launched	Commissioned
CRUZEIRO DO SUL (ex-DSND Surveyor)	H 38	Løngva Mek, Verksted	1 Mar 1986	1 July 1986	31 July 1986

Measurement, tons: 1,716 grt
 Dimensions, feet (metres): 180.3 × 33.8 × 14.1 (65.7 × 11.0 × 4.5)
 Main machinery: 1 Borgen KRMB-9 diesel, 1 shaft; Ulstein cp prop; 1 Ulstein forward thruster (368 kW); 1 Brunvoll forward thruster (600 kW); 1 Ulstein retractable azimuth thruster (880 kW); 2 Ulstein bow thrusters (552 kW and 368 kW)
 Speed, knots: 13.5
 Range, n miles: 10,000 at 12 kt
 Complement: 53 (11 officers)
 Radars: Surface search: Raytheon R 84, I-band.
 Navigation: Raytheon R 81; I-band.

Comment: Originally built as a multrole inspection/survey vessel and converted in 1991 into a ROV support vessel. Acquired by the Brazilian Navy and commissioned on 28 February 2008. The ship is capable of performing a range of tasks including pipeline inspection, structural inspection, geophysical and geotechnical operations and other support services. The principal features of the ship include a 6-ton Hydralift crane, large survey/inspection and data processing offices, a wet and dry lab space and a photo lab. The ship has high station-keeping performance. There is a large work-deck area and a moontube for deploying survey transducers.

TRAINING SHIPS

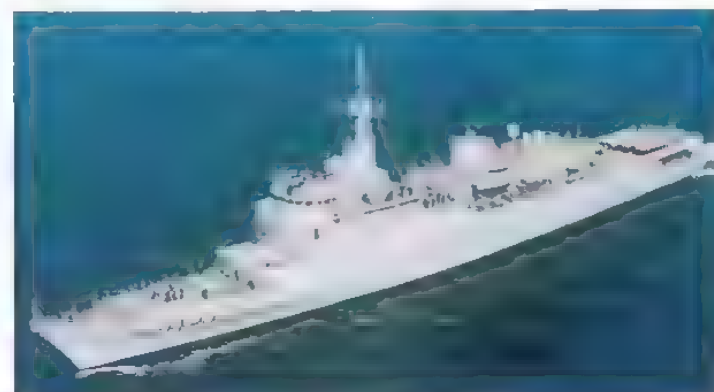
Notes: (1) There are 10 small sail training ships.
 (2) One training vessel *Braz de Aguiar* (ex-*Calha Norte*) is attached to the Naval Academy for merchant officers (CIABA) at Belém.
 (3) There are three small training craft (*Rosca Fina*, *Voga Picada*, *Lava Arriba*).

1 MODIFIED NITERÓI CLASS (AXH)

Name	No	Builders	Commissioned
BRASIL	U 27	Arsenal de Manhã, Rio de Janeiro	21 Aug 1986

Displacement, tons: 2,548 light; 3,729 full load
 Dimensions, feet (metres): 430.7 × 44.3 × 13.8 (131.3 × 13.5 × 4.2)
 Main machinery: 2 Pielstick/Isikawajima (Brazil) 6 PC2.5 L 400 diesels; 7,020 hp(m) (5.17 MW) sustained; 2 shafts
 Speed, knots: 18
 Range, n miles: 7,000 at 15 kt
 Complement: 218 (27 officers) plus 201 midshipmen
 Guns: 2 Bofors 40 mm/70, 4 saluting guns.
 Countermeasures: Decoys: 2 CBV 50.8 mm flare launchers.
 ESM: Racal RDL-2 ABC; radar intercept
 Weapons control: Saab Scania TVT 300 optronic director
 Radars: Surface search: Racal Decca RMS 1230C; E/F-band
 Navigation: Racal Decca TM 1226C and TMS 1230; I-band.
 Helicopters: Platform for 1 Sea King

Comment: A modification of the Vosper Thornycroft Mk 10 Frigate design ordered in June 1981. Laid down 18 September 1981, launched 23 September 1983. Designed to carry midshipmen and other trainees from the Naval and Merchant Marine Academies. Minimum electronics as required for training. There are two 51 mm launchers for flares and other illuminants.



BRASIL 10/2008, Kazumasa Watanabe / 1335452

3 NASCIMENTO CLASS (AXL)

Name	No	Builders	Commissioned
ASPIRANTE NASCIMENTO	U 10	Ebrasa, Santa Catarina	13 Dec 1980
GUARDA MARINHA JANSEN	U 11	Ebrasa, Santa Catarina	22 July 1981
GUARDA MARINHA BRITO	U 12	Ebrasa, Santa Catarina	22 July 1981

Displacement, tons: 108.5 standard; 136 full load
 Dimensions, feet (metres): 91.8 × 21.3 × 5.9 (28 × 6.5 × 1.8)
 Main machinery: 2 Mercedes Benz OM-352A diesels; 650 hp(m) (484 kW); 2 shafts
 Speed, knots: 10
 Range, n miles: 700 at 10 kt
 Complement: 6 (2 officers) + 10 midshipmen
 Guns: 2 – 12.7 mm MGs.
 Radars: Navigation: Racal Decca; I-band

Comment: Can carry 10 trainees overnight. All of the class are attached to the Naval Academy at Rio de Janeiro.



GUARDA MARINHA JANSEN 5/2003, A E Galarce / 0572425

1 SAIL TRAINING SHIP (AXS)

Name	No	Builders	Launched	Commissioned
CISNE BRANCO	U 20	Damen Shipyards, Gorinchem	4 Aug 1999	28 Feb 2000

Displacement, tons: 1,038 full load
 Dimensions, feet (metres): 249.3 × 34.4 × 15.7 (76 × 10.5 × 4.8)
 Main machinery: 1 Caterpillar 3508B DI-TA diesel; 1,015 hp(m) (746 kW) sustained; 1 shaft; Berg cp prop; bow thruster; 408 hp(m) (300 kW)
 Speed, knots: 17 (sail), 11 (diesel)
 Complement: 50 (10 officers) + 31 midshipmen
 Radars: Navigation: Furuno FR 1510 Mk 3; I-band.

Comment: Ordered in 1998. Maximum sail area 2,195 m².



CISNE BRANCO 7/2008, Maritime Photographic / 1335334

AUXILIARIES

Notes: (1) There are four Rio Pardo class transport vessels (*Rio Pardo*, *Rio Negro*, *Rio Chui* and *Rio Cisapoque*). Capable of carrying 600 passengers, they are all based at Rio de Janeiro.
 (2) One Torpedo Recovery Craft, *Almirante Hess*, is based at Niterói.
 (3) Acquisition of a replenishment tanker, to replace *Marajo*, is under consideration. Options include an ex-US Navy Cimarron-class oiler.
 (4) A new hospital ship, U 28, to be based at Ladário on the Paraguay River, is to enter service in 2009.

1 PARÁ CLASS (RIVER TRANSPORT SHIP) (YFB)

Name	No	Builders	Commissioned
PARÁ	U 15	Inconavi/MacLaren, Niterói	19 Jan 2005

Displacement, tons: 1,064 standard; 1,327 full load
 Dimensions, feet (metres): 184.1 × 70.2 × 13.0 (56.1 × 21.4 × 3.97)
 Main machinery: 2 Ishibras-Daihatsu diesels; 2 shafts
 Speed, knots: 10
 Range, n miles: 2,380 at 10 kt
 Complement: 66 (7 officers)
 Guns: 4 Oerlikon 20 mm.
 Radars: Navigation: Furuno 1830 and 1942; I-band.

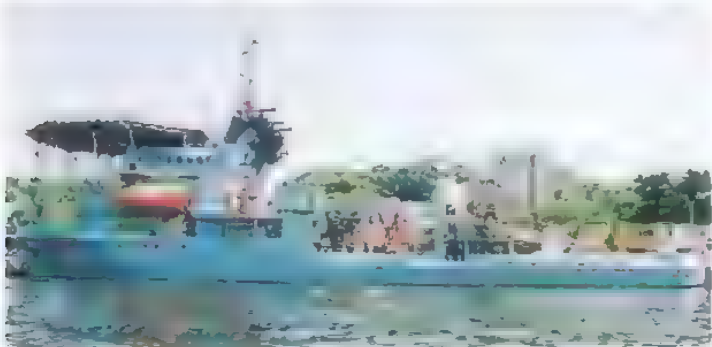
Comment: Ex-civilian catamaran hull vessel capable of carrying 175 marines and 350 tons cargo.

1 SUBMARINE RESCUE SHIP (ASRH)

Name	No	Builders	Commissioned
FELINTO PERRY <i>(ex-Holger Dane, ex-Wildrake)</i>	K 11	Stord Verft, Norway	Dec 1979

Displacement, tons: 2,840 standard; 4,107 full load
Dimensions, feet (metres): 256.6 x 57.4 x 15.1 (78.2 x 17.5 x 4.6)
Main machinery: Diesel-electric; 2 BMK KVG B12 and 2 KVG B16 diesels; 11,400 hp(m) (8.4 MW); 2 Daumler-Benz motors; 7,000 hp(m) (5.15 MW); 2 shafts; cp props; 2 bow thrusters; 2 stern thrusters
Speed, knots: 14.5
Complement: 65 (9 officers)
Radars: Navigation: 2 Raytheon; I-band.
Helicopters: Platform only

Comment: Former oilfield support ship acquired 28 December 1988. Has an octagonal heliport (62.5 ft diameter) above the bridge. Equipped with a moonpool for saturation diving, and rescue and recompression chambers as the submarine rescue ship A DeepOcean Phantom DS4 ROV, capable of operating to 610 m, is also carried. Dynamic positioning system. Based at Niteroi, Rio de Janeiro.



FELINTO PERRY 2/2003, Mario R V Carneiro / 0569157

1 BARROSO PEREIRA CLASS (TRANSPORT) (AKSH)

Name	No	Builders	Commissioned
ARY PARREIRAS	G 21	Ishikawajima, Tokyo	6 Mar 1957

Displacement, tons: 5,820 standard, 9,464 full load
Measurement, tons: 4,200 dwt, 4,879 gross (Panama)
Dimensions, feet (metres): 362 pp; 391.8 oa x 52.5 x 20.5 (110.4; 119.5 x 16 x 6.3)
Main machinery: 2 Ishikawajima boilers and turbines; 4,800 hp(m) (3.53 MW); 2 shafts
Speed, knots: 15
Complement: 127 (15 officers)
Military lift: 1,972 troops (overload); 497 troops (normal)
Cargo capacity: 425 m³ refrigerated cargo space, 4,000 tons
Guns: 2-3 in (76 mm) Mk 33; 50 rds/min to 12.8 km (6.9 n miles) anti-aircraft; weight of shell 6 kg; 2 or 4 Oerlikon 20 mm.
Radars: Navigation: 2 Racal Decca; I-band.
Helicopters: Platform for one medium

Comment: Transport and cargo vessel. Helicopter landing platform aft. Medical, hospital and dental facilities. Working and living quarters are mechanically ventilated with partial air conditioning. Refrigerated cargo space 15,500 cu ft. Operates commercially from time to time. Likely to be decommissioned in 2009, having been replaced in the transport role by Garcia d'Avila.



ARY PARREIRAS 2/2006, Marco Ghigliano / 1167120

1 RIVER TRANSPORT SHIP (AP)

Name	No	Builders	Commissioned
PARAGUASSÚ (ex-Garapuaa)	G 15	Amsterdam Drydock	1951

Displacement, tons: 200 standard, 285 full load
Dimensions, feet (metres): 131.2 x 23 x 4.9 (40 x 7 x 1.5)
Main machinery: 3 diesels; 2,505 hp(m) (1.84 MW); 1 shaft
Speed, knots: 13
Range, n miles: 2,600 at 10 kt
Complement: 35 (4 officers)
Military lift: 178 troops
Guns: 6 - 7.62 mm MGs.
Radars: Furuno 3600, I-band.

Comment: Passenger ship converted into a troop carrier in 1957 and acquired on 20 June 1972



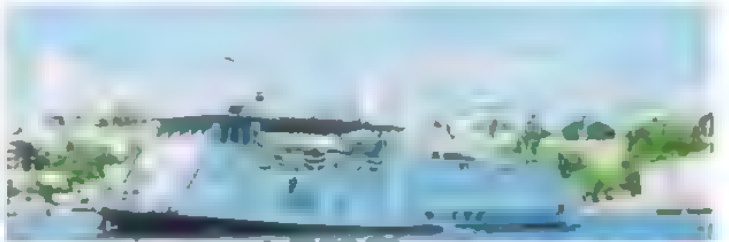
PARAGUASSU 5/2000, Hartmut Ehlers / 0104240

1 RIVER TRANSPORT (YFBH)

Name	No	Builders	Commissioned
PIRAIM (ex-Guacuru)	U 29	Estaleiro SNBP, Mato Grosso	10 Mar 1982

Displacement, tons: 73.3 standard; 91.5 full load
Dimensions, feet (metres): 82.0 x 18.0 x 3.2 (25.0 x 5.5 x 0.97)
Main machinery: 2 MWM diesels; 400 hp(m) (294 kW); 2 shafts
Speed, knots: 7. Range, n miles: 700 at 7 kt
Complement: 17 (2 officers)
Guns: 4 - 7.62 mm MG
Radars: Navigation: Furuno 3600; I-band.
Helicopters: Platform for UH-12.

Comment: Used as a logistics support ship for the Mato Grosso Flotilla. Can carry two platoons of marines and two rigid inflatable boats.



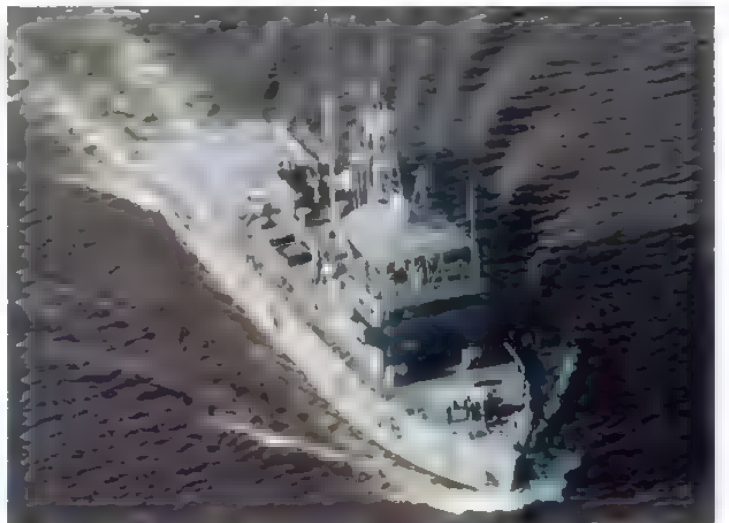
PIRAIM 6/1998, Brazilian Navy / 0017835

2 HOSPITAL SHIPS (AHH)

Name	No	Builders	Commissioned
OSWALDO CRUZ	U 18	Arsenal de Marinha, Rio de Janeiro	29 May 1984
CARLOS CHAGAS	U 19	Arsenal de Marinha, Rio de Janeiro	7 Dec 1984

Displacement, tons: 360 standard, 490 full load
Dimensions, feet (metres): 154.2 x 26.9 x 5.9 (47.2 x 8.5 x 1.8)
Main machinery: 2 Volvo diesels; 714 hp(m) (525 kW); 2 shafts
Speed, knots: 17. Range, n miles: 4,000 at 12 kt
Complement: 25 (4 officers) plus 21 medical (6 doctors/dentists)
Radars: Navigation: Racal Decca; I-band.
Helicopters: Platform for 1 UH-12/13 Esquilo.

Comment: Oswaldo Cruz launched 11 July 1983, and Carlos Chagas 16 April 1984. Has two sick bays, dental surgery, a laboratory, two clinics and X-ray centre. The design is a development of the Roraima class with which they operate in the Amazon Flotilla. Since 1992 both ships painted grey with dark green crosses on the hull.



OSWALDO CRUZ 6/2004, Brazilian Navy / 1044086

1 HOSPITAL SHIP (AH)

Name	No	Builders	Commissioned
DOUTOR MONTENEGRO	U 16	CONAVE Shipyard, Manaus	17 May 2000

Displacement, tons: 300 standard; 347 full load
Dimensions, feet (metres): 134.5 x 36 x 7.9 (41.0 x 11 x 2.4)
Main machinery: 2 Cummins NT 855M diesels; 720 hp (537 kW); 2 shafts
Speed, knots: 5
Complement: 50 (8 officers) plus 11 (8 doctors/dentists)
Radars: Navigation, Furuno 1942 Mk 2.

Comment: U 16 was built in January 1997 and belonged to the government of the Acre state before transfer to the Brazilian Navy. The ship has two wards, a paediatric ICU, an operating theatre, an X-ray room, a dentist office, a lab for clinical analysis, a trauma room and a pharmacy.



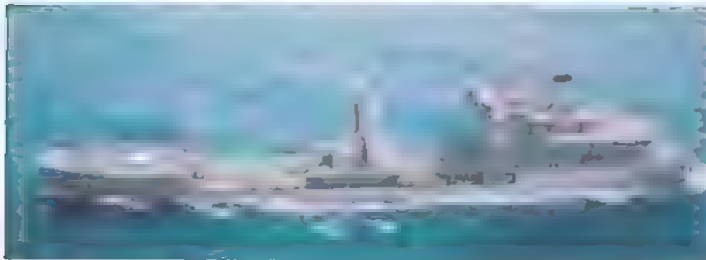
DOUTOR MONTENEGRO 6/2007, Brazilian Navy / 1170088

1 REPLENISHMENT TANKER (AOR)

Name	No	Builders	Commissioned
ALMIRANTE GASTÃO MOTTA	G 23	Ishibras, Rio de Janeiro	26 Nov 1991

Displacement, tons: 4,471 standard; 10,320 full load
Dimensions, feet (metres): 442.9 × 62.3 × 24.6 (135 × 19 × 7.5)
Main machinery: Diesel-electric; 2 Wärtsilä 12V32 diesel generators; 11,700 hp(m) (8.57 MW) sustained; 1 motor; 1 shaft; Kamewa cp prop
Speed, knots: 20
Range, n miles: 9,000 at 15 kt
Complement: 121 (13 officers) + 12 spare
Cargo capacity: 5,920 tons diesel, 950 tons JP-5; 200 tons dry
Guns: 2—12.7 mm MGs.
Radars: 2 unknown; I-band.

Comment: Ordered March 1987. Laid down 11 December 1989 and launched 1 June 1990. Fitted for abeam and stern refuelling.



ALMIRANTE GASTÃO MOTTA 9/2007, Mario R V Carneiro / 1335450

1 REPLENISHMENT TANKER (AOR)

Name	No	Builders	Launched	Commissioned
MARAJÓ	G 27	Ishikawajima do Brasil	31 Jan 1968	8 Jan 1969

Displacement, tons: 7,500 standard; 15,110 full load
Dimensions, feet (metres): 440.7 × 63.3 × 24 (134.4 × 19.3 × 7.3)
Main machinery: 1 Sulzer GRD 68 diesel; 8,000 hp(m) (5.88 MW); 1 shaft
Speed, knots: 13
Range, n miles: 9,200 at 13 kt
Complement: 80 (13 officers)
Cargo capacity: 7,470 tons fuel
Radars: Surface search: Racal Decca TM 1226C, I-band. Navigation: Racal Decca BT 503; I-band.

Comment: Fitted for abeam replenishment with two stations on each side. Was to have been replaced by *Gastao Motta* but is to be retained in service until 2009.



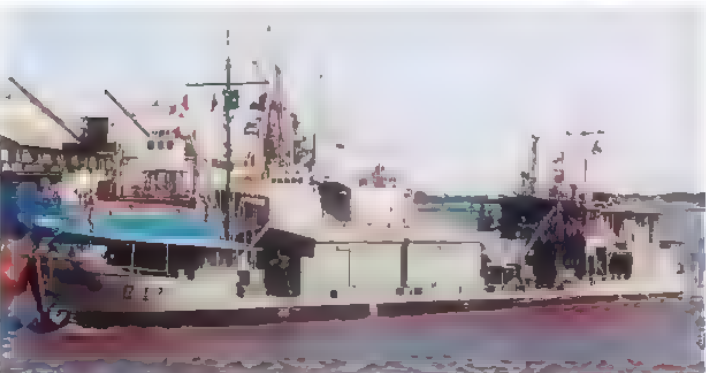
MARAJÓ 1/1999 / 0058623

1 RIVER TENDER (AG)

Name	No	Builders	Commissioned
POTENGI	G 17	Papendrecht, Netherlands	28 June 1938

Displacement, tons: 150 standard; 594 full load
Dimensions, feet (metres): 178.8 × 24.5 × 8 (54.5 × 7.5 × 1.8)
Main machinery: 2 Krohout diesels, 550 hp(m) (404 kW); 2 shafts
Speed, knots: 10
Range, n miles: 600 at 8 kt
Complement: 19 (2 officers)
Cargo capacity: 480 tons of general cargo including fuel, frozen and dry stores
Guns: 4—762 mm MGs.
Radars: Furuno 3600, I-band

Comment: Launched 16 March 1938. Employed in the Mato Grosso Flotilla on river service. Converted to logistic support ship and recommissioned 6 May 1999.



POTENGI 6/2000, Hartmut Ehlers / 0104241

4 FLOATING DOCKS

Name	No	Builders	Commissioned
CIDADE DE NATAL (ex-G 27, ex-AFDL 39)			
ALMIRANTE SCHIECK			
ALFONSO PENA (ex-ARD 14)			
ALMIRANTE JERONIMO GONÇALVES			
(ex-G 26, ex-Golaz AFDL 4)			

Comment: The first two are floating docks loaned to Brazil by US Navy in the mid-1960s and purchased 11 February 1980. Ship lifts of 2,800 tons and 1,000 tons respectively. *Cidade de Natal* based at Natal and *Almirante Jeronimo Gonçalves* at Manaus. *Almirante Schieck* of 3,600 tons displacement was built by Arsenal de Marinha, Rio de Janeiro and commissioned 12 October 1989. *Alfonso Pena* acquired from US and based at Val-de-Caes (Para).

TUGS

Notes: (1) In addition to the vessels listed below there are eight harbour tugs: *Comandante Marroig* (BNRJ 03), *Comandante Didier* (BNRJ 04), *Tenente Magalhães* (BNA 08), *Cabo Schram* (BNVC 01), *Intrepido* (BNRJ 16), *Arrojado* (BNRJ 17), *Veloz* (BNRJ 18) and *Impávido* (BNRJ 19).
 (2) There are plans to procure six ocean tugs from 2009–22. These are also to serve as offshore patrol ships.

2 ALMIRANTE GUILHEM CLASS (FLEET OCEAN TUGS) (ATF)

Name	No	Builders	Commissioned
ALMIRANTE GUILHEM (ex-Superpassa 4)	R 24	Sumitomo, Uraga	1976
ALMIRANTE GUILLOBEL (ex-Superpassa 5)	R 25	Sumitomo, Uraga	1976

Displacement, tons: 2,393 standard; 2,735 full load
Dimensions, feet (metres): 207 × 44 × 14.8 (63.2 × 13.4 × 4.5)
Main machinery: 2 GM EMD 20 645F7B diesels; 7,120 hp (5.31 MW) sustained; 2 shafts, cp props, bow thruster
Speed, knots: 14
Range, n miles: 10,000 at 13 kt
Complement: 40 (4 officers)
Guns: 2 Oerlikon 20 mm (not always carried)
Radars: Racal Decca; I-band. Furuno; I-band.

Comment: Originally built as civilian tugs. Bollard pull, 84 tons. Commissioned into the Navy 22 January 1981.



ALMIRANTE GUILLOBEL 5/2003, A E Galarce / 0577476

3 TRITÃO CLASS (FLEET OCEAN TUGS) (ATA)

Name	No	Builders	Commissioned
TRITÃO (ex-Sarandí)	R 21	Estanave, Manaus	19 Feb 1987
TRIDENTE (ex-Sambaíba)	R 22	Estanave, Manaus	8 Oct 1987
TRIUNFO (ex-Sorocabá)	R 23	Estanave, Manaus	5 July 1986

Displacement, tons: 819 standard; 1,680 full load
Dimensions, feet (metres): 181.8 × 38.1 × 11.2 (55.4 × 11.6 × 3.4)
Main machinery: 2 Vilares-Burmoister and Wain Alpha diesels; 2,480 hp(m) (1.82 MW); 2 shafts, bow thruster
Speed, knots: 13
Complement: 44 (6 officers)
Guns: 2 Oerlikon 20 mm.
Radars: Navigation: 1 Racal Decca; I-band. 2 Furuno; I-band.

Comment: Offshore supply vessels acquired from National Oil Company of Brazil and converted for naval use. Assumed names of previous three ships of Sotoyomo class. Fitted to act both as tugs and patrol vessels. Bollard pull, 23.5 tons. Firefighting capability Endurance, 45 days.



TRIDENTE 10/2004, A E Galarce / 1153016

British Indian Ocean Territory



Country Overview

The British Indian Ocean Territory was established as a British dependency in 1965 and is administered by a Commissioner and Administrator who reside in the UK. Situated in the Indian Ocean, halfway between Africa and Indonesia, the territory comprises six atolls of the

Chagos Archipelago which consist of the order of 1,000 uninhabited islands. The largest island is Diego Garcia (17 square miles) which was leased to the United States in 1971 in order to build an air and naval base. Adjacent to the small military port, the lagoon provides a protected anchorage for US pre-positioned forces while the island is also home to a number of communications

and space-related facilities. Exclusively occupied by military (largely US) forces and contractors, the base includes a small British garrison, whose commanding officer represents the Commissioner. Territorial waters (12 n miles) are claimed as is a 200 n mile fishery zone.

PATROL FORCES

1 FISHERY PATROL SHIP (PSO)

PACIFIC MARLIN (ex-*Bigorange XI*)

Measurement, tons: 1,200 grt

Dimensions, feet (metres): 189.3 × 40.0 × 12.5 (577 × 12.2 × 3.8)

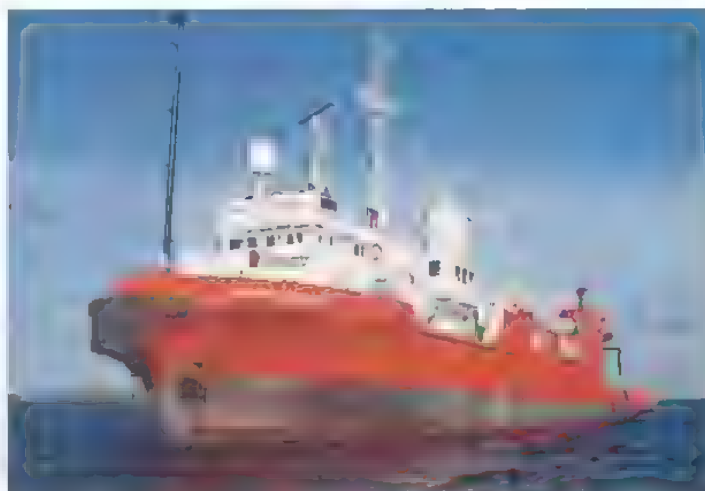
Main machinery: 2 Yanmar G250-E diesels; 2,600 hp (1.9 MW); 2 shafts; 1 Kamome TF30DLN bow thruster; 300 hp (225 kW)

Speed, knots: 12.5

Complement: 20 (accommodation for 33)

Radars: Surface search/navigation: JRC JMA-3210, I-band.

Comment: Former Production Testing Vessel built by Teraoka Zosen, Japan in 1978. Converted for fishery protection duties and chartered from Swire Pacific Offshore until December 2009. Equipped with 32 ton deck crane and two fast rescue craft. Steel construction.



PACIFIC MARLIN
6/2008, Swire Pacific Offshore
1336058

Brunei

ANGKATAN TENTERA LAUT DIRAJA BRUNEI



Country Overview

Formerly a British dependency, the Nation of Brunei is a sultanate that gained full independence in 1984. Situated on the northern coast of the island of Borneo, the country has a total area of 2,226 square miles and is bordered and divided into two halves by the Malaysian state of Sarawak. It has an 87 n mile coastline with the South China Sea. The capital and largest town is Bandar Seri Begawan which also has port facilities. There are further ports at Kuala Belait and Muara. Territorial seas (3 n miles) and an EEZ (200 n mile) are claimed.

Headquarters Appointments

Commander of the Navy:
Colonel Abd Halim bin Haji Mohd Hanifah
Fleet Commander:
Lieutenant Haji Aznan bin Haji Julahi

Personnel

(a) 2009: 747 (58 officers)
(b) Voluntary service

Bases

Muara

Prefix to Ships' Names

KDB (Kapal Diraja Brunei)

CORVETTES



NAKHODA RAGAM (on trials)

6/2002, H M Steele / 0533278

3 BRUNEI CLASS (FSGH)

Name	No	Builders	Laid down	Launched
NAKHODA RAGAM	28	BAE System Marine (Scotstoun)	16 Mar 1999	13 Jan 2001
BENDAHARA SAKAM	29	BAE System Marine (Scotstoun)	15 Nov 1999	23 June 2001
JERAMBAK	30	BAE System Marine (Scotstoun)	5 Apr 2000	22 June 2002

Displacement, tons: 1,940 full load
Dimensions, feet (metres): 311.7 oa; 294.9 wl x 42 x 11.8 (95.89 x 12.8 x 3.6)
Main machinery: CODAD; 4 MAN 20 RK270 diesels; 2 shafts; cp props
Speed, knots: 30. **Range, n miles:** 5,000 at 12 kt
Complement: 79 plus 24 spare

Missiles: SSM: 8 MBDA Exocet MM 40 Block II (1), active radar homing to 70 km (40 n miles) at 0.9 Mach.
SAM: BAe 16 cell VLS (2), BAe Sea Wolf; Command Line Of Sight (CLOS) radar/TV tracking to 6 km (3.3 n miles) at 2.5 Mach; warhead 14 kg; 16 missiles.
Guns: Otobreda 76 mm Super Rapid (2), 120 rds/min to 16 km (8.7 n miles); weight of shell 6 kg.
 2 MSI 30 mm/75, 650 rds/min to 10 km (5.4 n miles) (2).
Torpedoes: 6 Marconi 324 mm (2 triple) tubes (2)
Countermeasures: Decoys: 2 Super Barricade chaff launchers (2)
 ECM: Thales Scorpion, jammer.
 ESM: Thales Cutlass 242; intercept.
 CISM: Falcon DS 300; intercept.
Combat data systems: Nautis Mk 2 with Link Y.
Weapons control: Radamec 2500 optronic director (2).
Radars: Air/surface search Plessey AWS 9 (2); E/F-band.
 Surface search: Kelvin Hughes 1007 (2); I-band.
 Fire control: 2 Marconi 1802 (2); I/J-band.



NAKHODA RAGAM

(Scale 1 : 900), Ian Sturton / 0526842

Sonars: Thomson Marconi 4130C1; hull mounted.

Helicopters. Platform for 1 medium.

Programmes: Tenders requested on 28 April 1995. Yarrow Shipbuilders selected in August 1995. Detailed design done in 1996 with final contract signed 14 January 1998. Long-term support contract signed with BAE Systems in May 2002.

Structure: Scaled down version of Malaysian Lekiu class. Facilities to land and refuel S-70A and Bell 212 helicopters.

Operational: Sea trials of first of class began in January 2002. Training for all three crews provided by Flagship Training. *Jerambak* conducted acceptance trials in late 2004. Following settlement of a contractual dispute between the Brunei Procurement Agency and BAE Systems in early 2007, the Brunei government took formal possession of the vessels. Plans to commission the ships into naval service have been cancelled and it is planned to sell them to another navy. Meanwhile the ships remain under care and maintenance at Barrow.



BENDAHARA SAKAM

4/2004, John Brodie / 1044352

PATROL FORCES

Notes: (1) There are also up to 15 Rigid Raider assault boats operated by the River Division for infantry battalions. These boats are armed with 1–7.62 mm MG.
 (2) Plans to acquire new patrol craft have been reported.

3 WASPADA CLASS (FAST ATTACK CRAFT—MISSILE) (PTG)

Name	No	Builders	Launched	Commissioned
WASPADA	P 02	Vosper (Singapore)	3 Aug 1977	2 Aug 1978
PEJUANG	P 03	Vosper (Singapore)	15 Mar 1978	25 Mar 1979
SETERIA	P 04	Vosper (Singapore)	22 June 1978	22 June 1979

Displacement, tons: 206 full load
Dimensions, feet (metres): 121 x 23.5 x 6 (36.9 x 7.2 x 1.8)
Main machinery: 2 MTU 20V 538 TB91 diesels; 7,680 hp(m) (5.63 MW) sustained; 2 shafts
Speed, knots: 32
Range, n miles: 1,200 at 14 kt
Complement: 24 (4 officers)

Missiles: SSM: 2 Aerospatiale MM 38 Exocet; inertial cruise; active radar homing to 42 km (23 n miles) at 0.9 Mach; warhead 165 kg.
Guns: 2 Oerlikon 30 mm GCM-B01 (twin); 650 rds/min to 10 km (5.5 n miles); weight of shell 1 kg.
 2–7.62 mm MGs, 2 MOD(N) 2 in launchers for illuminants.
Countermeasures: ESM: Decca RDL; radar warning.
Weapons control: Sea Archer system with Sperry Co-ordinate Calculator and 1412A digital computer, Radamec 2500 optronic director.
Radars: Surface search: Kelvin Hughes Type 1007; I-band.

Modernisation: Started in 1988 and included improved gun fire control and ESM equipment. Further improvements in 1998–2000 included Type 1007 radar and a Radamec 2500 optronic director.

Structure: Welded steel hull with aluminium alloy superstructure. *Waspada* has an enclosed upper bridge for training purposes.

Operational: Reported active. All three vessels took part in Exercise Rajawali in September 2006, during which MM 38 Exocet were fired.



SETERIA

6/2005 / 1162116



PEJUANG

7/2000 / 0104244

3 PERWIRA CLASS (COASTAL PATROL CRAFT) (PB)

Name	No	Builders	Launched	Commissioned
PERWIRA	P 14	Vosper (Singapore)	5 May 1974	9 Sep 1974
PEMBURU	P 15	Vosper (Singapore)	30 Jan 1975	17 June 1975
PENYERANG	P 16	Vosper (Singapore)	20 Mar 1975	24 June 1975

Displacement, tons: 38 full load
Dimensions, feet (metres): 71 × 20 × 5 (21.7 × 6.1 × 1.2)
Main machinery: 2 MTU MB 12V 331 TC81 diesels; 2,450 hp(m) (1.8 MW) sustained, 2 shafts
Speed, knots: 32. **Range, n miles:** 600 at 22 kt; 1,000 at 16 kt
Complement: 14 (2 officers)
Guns: 2 Oerlikon/BMARC 20 mm GAM-BO1; 800 rds/min to 2 km; weight of shell 0.24 kg, 2–7.62 mm MGs
Radars: Surface search: Racal Decca RM 1290; I-band.

Comment: Of all-wooden construction on laminated frames. Fitted with enclosed bridge-modified July 1976. A high speed RIB is launched from a stern ramp. New guns fitted in mid-1980s. All three ships operational



PEMBURU 6/2005 / 1167117

LAND-BASED MARITIME AIRCRAFT

Notes: (1) There are also six BO-105, four S-70A and ten Bell 212 utility helicopters.
 (2) The requirement for maritime patrol aircraft was to have been met by three CN-235 MPA but these were not acquired. A decision on the way-ahead is awaited

AUXILIARIES**2 TERABAN CLASS (LCU)**

Name	No	Builders	Commissioned
TERABAN	33	Transfield, Perth	8 Nov 1996
SERASA	34	Transfield, Perth	8 Nov 1996

Displacement, tons: 220 full load
Dimensions, feet (metres): 119.8 × 26.2 × 4.9 (36.5 × 8 × 1.5)
Main machinery: 2 diesels; 2 shafts
Speed, knots: 12
Complement: 12
Military lift: 100 tons
Radars: Navigation: Racal, I-band.

Comment: Ordered in November 1995 and delivered in December 1996. Used as utility transports. Bow and side ramps are fitted. Reported active.



SERASA 6/2005 / 1167116

2 CHEVERTON LOADMASTERS (YFU)

Name	No	Builders	Commissioned
DAMUAN	L 31	Cheverton Ltd, Isle of Wight	May 1976
PUNI	L 32	Cheverton Ltd, Isle of Wight	Feb 1977

Displacement, tons: 60; 64 (Puni) standard
Dimensions, feet (metres): 65 × 20 × 3.6 (19.8 × 6.1 × 1.1) (length 74.8 (22.8) Puni)
Main machinery: 2 Detroit 6-71 diesels; 442 hp (305 kW) sustained; 2 shafts
Speed, knots: 9. **Range, n miles:** 1,000 at 9 kt
Complement: 8
Military lift: 32 tons
Radars: Navigation: Racal Decca RM 1216; I-band



DAMUAN 6/2005 / 1167115

POLICE

Notes: In addition to the vessels listed below there are two 12 m Rotork type *Behagia* 07 and *Selamat* 10 and four River Patrol Craft *Aman* 01, *Damai* 02, *Sentosa* 04 and *Sejahtera* 06

7 INSHORE PATROL CRAFT

PDB 11-15	PDB 63	PDB 68
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Displacement, tons: 20 full load
Dimensions, feet (metres): 47.7 × 13.9 × 3.9 (14.5 × 4.2 × 1.2)
Main machinery: 2 MAN D 2840 LE diesels; 1,040 hp(m) (764 kW) sustained; 2 shafts
Speed, knots: 30. **Range, n miles:** 310 at 22 kt
Complement: 7
Guns: 1–7.62 mm MG.
Radars: Surface search: Furuno; I-band.

Comment: Built by Singapore SBEC. First three handed over in October 1987, second pair in 1988, last two in 1996. Aluminum hulls



PDB 15 3/1999, John Webber / 0056631

3 BENDEHARU CLASS (PB)

BENDEHARU P 21	MAHARAJALELA P 22	KEMAINDERA P 23
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Displacement, tons: 68 full load
Dimensions, feet (metres): 93.5 × 17.8 × 5.6 (28.5 × 5.4 × 1.7)
Main machinery: 2 MTU diesels; 2,260 hp (1.7 MW); 2 shafts
Speed, knots: 29
Guns: 1–12.7 mm MG.
Radars: Navigation: I-band.

Comment: Constructed by PT Pal, Surabaya, and entered service in 1991

Bulgaria**VOENNOMORSKI SILI****Country Overview**

Situated in the Balkan Peninsula, the Republic of Bulgaria has an area of 42,823 square miles and is bordered to the north by Romania and to the south by Turkey and Greece. The River Danube forms much of the northern border. Bulgaria has a coastline of 191 n miles with the Black Sea on which Varna and Burgas are the principal ports. The capital is Sofia. Territorial waters (12 n miles) are claimed. An Exclusive Economic Zone (EEZ) was declared in 1987 but the precise limits have yet to be fully agreed and defined.

Headquarters Appointments

Commander of the Navy and Chief of Staff:
Rear Admiral Minko Slavov Kavalzhiev

Diplomatic Representation

Defence Attaché, London:
Rear Admiral P I Manushev

Organisation

Four squadrons: Submarine, Surface, MCMV and Auxiliary, with Headquarters at Varna and Burgas. There is also a Border Guard Unit.

Personnel

(a) 2009: 4,140 (695 officers)
 (b) Reserves 10,000

Bases

North Zone: HQ, Naval Base, Air Station and Higher Naval School (Nikola Yonkov Vaptsarov) at Varna.
 South Zone: Burgas (HQ) and Atiya (naval base).
 Danube: Vidin (naval base).

Coast Defence

One battalion with six truck-mounted SS-C-3 Styx twin launchers. Two Army regiments of coastal artillery with 100 mm and 130 mm guns. A coastal surveillance system, EKLAN, is planned to become operational in 2012.

DELETIONS**Submarines**

2007 *Slava*

Corvettes

2006 *Letyashti, Bdeltelni, Bezstrashni, Khrabri*

Amphibious Forces

2006 *Vydra 205*

SUBMARINES

Notes: Procurement of two second-hand submarines from a NATO country is reported to be under consideration

FRIGATES

1 KONI CLASS (PROJECT 1159) (FFLM)

SMELI (ex *Dolfin*) 11

Displacement, tons: 1,440 standard; 1,900 full load

Dimensions, feet (metres) 316.3 × 41.3 × 11.5
(96.4 × 12.6 × 3.5)

Main machinery: CODAG; 1 SGW, Nikolayev M88 gas turbine (centre shaft); 18,000 hp(m) (13.25 MW) sustained; 2 Russki B-68 diesels; 15,820 hp(m) (11.63 MW) sustained; 3 shafts

Speed, knots: 27 gas, 22 diesel

Range, n miles: 1,800 at 14 kt

Complement: 110

Missiles: SAM SA-N-4 Gecko twin launcher ●, semi-active radar homing to 15 km (8 n miles) at 2.5 Mach; warhead 60 kg; altitude 9.1-3,048 m (30-10,000 ft); 20 missiles

Guns: 4-3 in (76 mm)/59 AK 726 (2 twin) ●; 90 rds/min to 15 km (8 n miles); weight of shell 5.9 kg
4-30 mm/65 (2 twin) ●; 500 rds/min to 5 km (2.7 n miles); weight of shell 0.54 kg.

A/S mortars: 2 RBU 6000 12-tubed trainable ●; range 6,000 m; warhead 31 kg.

Depth charges: 2 racks

Mines: Capacity for 22.

SMELI

Countermeasures: Decoys. 2 PK 16 chaff launchers. ESM. 2 Watch Dog; radar warning.

Radars: Air search. Strut Curve ●; F-band; range 110 km (60 n miles) for 2 m² target.

Surface search: Don 2; I-band.

Fire control: Hawk Screech ●; I-band (for 76 mm). Drum Tilt ●; H/I-band (for 30 mm). Pop Group ●; F/H/I-band (for SA-N-4).

IFF: High Pole B.

Sonars: Hercules (MG 322); hull-mounted; active search and attack; medium frequency.

Programmes: First reported in the Black Sea in 1976. Type I retained by the USSR for training foreign crews but transferred in February 1990 when the Koni programme terminated. Others of the class acquired by the former East German Navy (now deleted), Serbia (deleted but for sale), Algeria, Cuba (deleted) and Libya.

Modernisation: Marisat fitted in 1995. Reported to be RAS capable. Communications upgrade planned to achieve NATO interoperability.

Operational: Based at Varna. Decommissioning was expected when *Drazki* entered service but remains operational



(Scale 1 : 900), Ian Sturton / 0114505



SMELI

6/2004, C D Yoyall / 058/093

3 WIELINGEN CLASS (TYPE E-71) (FFGM)

Name
DRAZKI (ex *Wandelaar*)
VERNI (ex *Wielingen*)
GORDI (ex *Westdiep*)

No
41 (ex-F 912)
42 (ex-F 910)
43 (ex-F 911)

Builders
Boelwert, Temse
Boelwert, Temse
Cockerill, Hoboken

Laid down
28 Mar 1975
5 Mar 1974
2 Sep 1974

Launched
21 June 1977
30 Mar 1976
8 Dec 1975

Commissioned
27 Oct 1978
20 Jan 1978
20 Jan 1978

Displacement, tons: 1,940 light; 2,430 full load

Dimensions, feet (metres): 349 × 40.3 × 18.4
(106.4 × 12.3 × 5.6)

Main machinery: CODAG; 1 RR Olympus TM38 gas-turbine, 25,440 hp (19 MW) sustained; 2 Cockerill 240 CO V 12 diesels; 6,000 hp(m) (4.4 MW); 2 shafts; LIPS cp props

Speed, knots: 26; 15 on 1 diesel; 20 on 2 diesels

Range, n miles: 4,500 at 18 kt; 6,000 at 15 kt

Complement: 159 (13 officers)

Missiles: SSM, 4 Aerospatiale MM 38 (2 twin) launchers ●; inertial cruise; active radar homing to 42 km (23 n miles) at 0.9 Mach; warhead 165 kg; sea-skimmer

SAM: Raytheon Sea Sparrow RIM-7P; Mk 29 octuple launcher ●; semi-active radar homing to 16 km (8.5 n miles) at 2.5 Mach; warhead 38 kg.

Guns: 1 Creusot-Loire 3.9 in (100 mm)/55 Mod 68 ●; 80 rds/min to 17 km (9 n miles) anti-surface, 8 km (4.4 n miles) anti-aircraft; weight of shell 13.5 kg.

Torpedoes: 2-21 in (533 mm) launchers, ECAN L5 Mod 4; anti-submarine; active/passive homing to 9.5 km (5 n miles) at 35 kt; warhead 150 kg; depth to 550 m (1,800 ft).

A/S mortars: 1 Creusot-Loire 375 mm 6-barrelled trainable launcher ●; Bofors rockets to 1,600 m; warhead 107 kg.

Countermeasures: Decoys: 2 Tracor MBA SRBOC 6-barrelled Mk 36 launchers; chaff (Mk 214 Seagnat) and IR flares to 4 km (2.2 n miles). Nixie SLQ-25; towed anti-torpedo decoy.

ESM: Argos AR 900; intercept.

Combat data systems: Signal SEWACO IV action data automation; Link 11. SATCOM



DRAZKI

(Scale 1 : 900), Ian Sturton / 1164332

Weapons control: Sagem Vigy 105 optronic director ●.

Radars: Air/surface search: Signaal DA05 ●, E/F band.

Surface search/fire control: Signaal WM25 ●, I/J-band

Navigation: Signaal Scout; I/J band

IFF: Mk XII.

Sonars: Computing Devices Canada SQS 510; hull-mounted; active search and attack; medium frequency.

Programmes: A compact, well-armed class of frigate originally designed by and for the Belgian Navy. Following the signature of a letter of intent on 4 December 2004, the Bulgarian government gave final approval on 17 March 2005 for transfer of ex-*Wandelaar* to Bulgarian service in October 2005. The procurement of ex-*Westdiep* and ex-*Wielingen* was confirmed on 7 December 2007. Ex-*Westdiep* transferred

on 22 August 2008 and ex-*Wielingen* in February 2009.

Modernisation: The ship completed a major upgrade programme before leaving Belgian service. This included update of Sea Sparrow to 7P; modification of WM25 radar to include improved ECCM and MTI capabilities and a new navigation radar and sonar. A new optronic director, IFF and communications facilities were also installed. Platform improvements included new diesel engines and alternators.

Structure: Fully air conditioned. Fin stabilisers fitted.

Operational: The ships are used for surveillance missions in the Black Sea, maritime interdiction and contributions to international peace-support operations, both under the NATO flag and as part of the Black Sea Naval Co-operation Task Group (BLACKSEAFOR).



GORDI

8/2008; Guy Toremans / 1335745

CORVETTES

1 TARANTUL II CLASS (PROJECT 1241.1M) (FSGM)

MULNAYA 43 (ex-101)

Displacement, tons: 385 standard; 455 full load
Dimensions, feet (metres): 184.1 x 37.7 x 8.2 (58.1 x 11.5 x 2.5)
Main machinery: COGAG; 2 Nikolayev Type DR 77 gas turbines; 16,016 hp(m) (11.77 MW) sustained; 2 Nikolayev Type DR 76 gas turbines with reversible gearboxes; 4,993 hp(m) (3.67 MW); sustained; 2 shafts
Speed, knots: 36 on 4 turbines
Range, n miles: 400 at 36 kt; 2,000 at 20 kt
Complement: 34 (5 officers)

Missiles: SSM: 4 Raduga SS-N-2C Styx (2 twin) launchers; active radar or IR homing to 83 km (45 n miles) at 0.9 Mach; warhead 513 kg; sea-skimmer.
SAM: SA-N-5 Grail quad launcher; manual aiming; IR homing to 6 km (3.2 n miles) at 1.5 Mach; altitude to 2,500 m (8,000 ft); warhead 1.5 kg.
Guns: 1–3 in (76 mm)/59 AK 176; 120 rds/min to 15 km (8.1 n miles); weight of shell 5.9 kg
 2–30 mm/65; 6 barrels per mounting; 3,000 rds/min to 2 km.
Countermeasures: Decoys: 2 PK 16 chaff launchers
ESM: 2 Half Hat, intercept.
Weapons control: Hood Wink optronic director. Band Stand datalink for SSM
Radars: Air/surface search: Plank Shave, E-band.
Navigation: Kivach, -band
Fire control: Bass Tilt; H/I-band.
 Band Stand (Mineral ME), D-band (for SSN 2C)
IFF: Square Head, High Pole.

Comment: Built at Volodarski, Rybinsk. Transferred from USSR in December 1989. Name means Thunderbolt. Based at Atiya.



MULNAYA (old number)

7/2000, van Ginderen Collection / 0104245

2 RESHITELNI (PAUK I) (PROJECT 1241P) CLASS (FSM)

RESHITELNI 13 BODRI 14

Displacement, tons: 440 full load
Dimensions, feet (metres): 195.2 x 33.5 x 10.8 (59.5 x 10.2 x 3.3)
Main machinery: 2 Type 521 diesels; 16,180 hp(m) (11.9 MW) sustained; 2 shafts
Speed, knots: 32
Range, n miles: 2,200 at 14 kt
Complement: 38

Missiles: SAM: SA-N-5 Grail quad launcher; manual aiming; IR homing to 6 km (3.2 n miles) at 1.5 Mach; altitude to 2,500 m (8,000 ft); warhead 1.5 kg; 8 missiles.
Guns: 1–3 in (76 mm)/59 AK 176; 120 rds/min to 15 km (8 n miles); weight of shell 5.9 kg.
 1–30 mm/65; 6 barrels, 3,000 rds/min combined to 2 km
Torpedoes: 4–16 in (406 mm) tubes. Type 40; anti-submarine; active/passive homing up to 15 km (8 n miles) at up to 40 kt; warhead 100–150 kg.
A/S mortars: 2 RBU 1200 6-tubed fixed; range 1,200 m; warhead 34 kg
Depth charges: 2 racks (12)
Countermeasures: Decoys: 2 PK 16 chaff launchers.
ESM: 3 Brick Plug; intercept.
Radars: Air/surface search: Peel Cone, E-band
Surface search: Spin Trough; I-band
Fire control: Bass Tilt; H/I-band.
Sonars: Foal Tail VDS (mounted on transom); active attack; high frequency

Comment: Reshitelni transferred from USSR in September 1989, Bodri in December 1990. Based at Varna.



BOORI

4/2007, C D Yaylali / 1335746

0 + (2) GOWIND 200 CLASS (CORVETTES) (FS)

Displacement, tons: 1,950 full load
Dimensions, feet (metres): 337.9 x 46.6 x ? (103.0 x 14.2 x ?)
Main machinery: CODAD, 2 waterjets
Speed, knots: 30
Range, n miles: 2,970 at 12 kt
Complement: 70

Missiles: SSM: To be announced.
SAM: To be announced.
Guns: To be announced.
Countermeasures: To be announced.
Combat data systems: DCNS Setis.
Electro-optic systems: To be announced.
Radars: Air/surface search. To be announced.
Surface search: To be announced
Fire control: To be announced.
Navigation: To be announced.

Comment: Following a meeting in October 2008 between French President Sarkozy and Bulgarian Prime Minister Stanishev, it was agreed in principle to proceed with negotiations to procure up to four corvettes. Although it had been hoped to finalise a contract by late 2007, progress was halted due to reported Bulgarian budgetary concerns until a further visit by President Sarkozy in 2008 appeared to revive the project. Negotiations continue. The design of the Gowind series of corvettes has drawn on experience gained in the FREMM frigate project. Design features include an integrated mast structure, a flight deck and hangar and space for a 16-cell VLS system, eight surface-to-surface missiles and a medium calibre gun. Particular attention has been paid to Stealth features. IR signature is reduced by channelling exhaust gases through waterjets rather than a funnel. Subject to contract, the first ship is likely to be built at Lorient and the second at Varna. There is likely to be an option for a further two ships.



GOWIND 200

10/2007, DCNS/Armaria / 1169319

LAND-BASED MARITIME AIRCRAFT (FRONT LINE)

Numbers/Type: 3 Mil Mi-14PL 'Haze A'
Operational speed: 120 kt (222 km/h).
Service ceiling: 15,000 ft (4,570 m).
Range: 240 n miles (445 km).

Role/Weapon systems: Primary role as inshore/coastal ASW and Fleet support helicopter; one converted as transport. Based at Asparukhovo airport. Sensors: Search radar, MAD, sonobuoys, dipping sonar. Weapons: ASW; up to 2 x torpedoes, or mines, or depth bombs.



HAZE 6/2006, Bulgarian Navy / 1164494

Numbers/Type: 6 Eurocopter AS 565MB Panther.
Operational speed: 150 kt (278 km/h).
Service ceiling: 15,420 ft (4,700 m).
Range: 464 n miles (859 km).

Role/Weapon systems: Six aircraft ordered on 28 January 2005. Delivery is to begin in 2010. The aircraft are to be shore-based and are to be used for maritime surveillance, ASW, anti-surface and SAR roles. Sensors and weapons to be announced.



AS 565 PANTHER (French colours) 1/2007, B Prézeln / 1305023

PATROL FORCES

Notes: Customs craft operate on the Danube. Vessels include three Boston Whalers donated by the US and RIBs given by the UK in 1992-93

9 ZHUK (PROJECT 1400M) CLASS (COASTAL PATROL CRAFT) (PB)

511-513 521-523 531-533

Displacement, tons: 39 full load
Dimensions, feet (metres): 78.7 x 16.4 x 3.9 (24 x 5 x 1.2)
Main machinery: 2 Type M 401B diesels; 2,200 hp(m) (1.6 MW) sustained; 2 shafts
Speed, knots: 30
Range, n miles: 1,100 at 15 kt
Complement: 11 (3 officers)
Guns: 4 USSR 14.5 mm (2 twin) MGs.
Radars: Surface search: Spin Trough; I-band.

Comment: Transferred from USSR 1980-81. Belong to the Border Police under the Minister of the Interior and have 'Border Guard' insignia on the ships side. Based at Atiya and at Varna.



ZHUK 512 (and others) 6/1996, Bulgarian Navy / 0506272

6 OSA (PROJECT 205) CLASS (FAST ATTACK CRAFT—MISSILE) (PTFG)

URAGON 102 - 105 (ex-111)
 BURYA 103 (Osa I) - 106 (ex-112) (Osa I)
 GRUM 104 SMERCH 107 (ex-113)

Displacement, tons: 245 full load; 210 (Osa I)
Dimensions, feet (metres): 126.6 x 24.9 x 8.8 (38.6 x 7.6 x 2.7)
Main machinery: 3 Type M 504 diesels; 10,800 hp(m) (7.94 MW) sustained; 3 shafts (Osa II)
 3 Type 503A diesels; 8,025 hp(m) (5.9 MW) sustained; 3 shafts (Osa I)
Speed, knots: 37 (Osa II); 35 (Osa I)
Range, n miles: 500 at 35 kt
Complement: 26 (3 officers)

Missiles: SSM: 4 SS-N-2A/B Styx; active radar/IR homing to 46 km (25 n miles) at 0.9 Mach; warhead 513 kg SS-N-2A in Osa I.
Guns: 4 USSR 30 mm/85 (2 twin); 500 rds/min to 5 km (2.7 n miles); weight of shell 0.54 kg.
Radars: Surface search/fire control: Square Tie; I-band.
Fire control: Drum Tilt; H/I-band.
IFF: High Pole. Square Head.

Comment: Four Osa Is built between 1965 and 1970, and transferred from USSR between 1977 and 1982. Two Osa Is transferred in 1972 and survived longer than expected. Names: 102 Hurricane, 103 Storm, 104 Thunder, and 107 Tornado. All based at Sozopol and seldom go to sea.



GRUM 6/2002, A Sheldon-Duplex / 0524968



BURYA 6/2002, A Sheldon-Duplex / 0524970

3 NEUSTADT CLASS (PB)

SOZOPOL (ex-Rosenheim) 525 (ex-BG 18) BALCHIK (ex-Duderstadt) 524 (ex-BG 14)
 NESEBAR (ex-Neustadt) 526 (ex-BG 11)

Displacement, tons: 218 full load
Dimensions, feet (metres): 127.1 x 23 x 5 (38.5 x 7 x 2.2)
Main machinery: 2 MTU MD diesels; 6,000 hp(m) (4.41 MW); 1 MWM diesel; 685 hp(m) (500 kW); 3 shafts
Speed, knots: 30
Range, n miles: 450 at 27 kt
Complement: 17
Guns: 2 - 762 mm MGs.
Radars: Surface search: Selenia ARP 1645, I-band
Navigation: Racal Decca Bndgemaster MA 180/4; I-band.

Comment: Built in 1970 by Lürssen, Vegesack. 525 transferred from German Border Guard in June 2002, 526 on 16 April 2004 and 524 in December 2004. Operated by the Border Police



NESEBAR 5/2004, Martin Mokrus / 0587697

3 COASTAL PATROL CRAFT (PB)

BURGAS 514 KAVARNA 531 VARNA 534

Displacement, tons: 50 standard
Dimensions, feet (metres): 68.9 × 19.0 × 4.6 (21.0 × 5.8 × 1.4)
Main machinery: 2 Deutz MWM TBD 616 diesels, 2,970 hp(m) (2.2 MW); 2 shafts
Speed, knots: 30

Comment: Contract awarded in November 2002 to Lürssen, Berne-Bardonfleth. Delivery of the first two craft made in 2003 and of the third in October 2005. Operated by Border Police



KAVARNA (in foreground)

9/2005, Michael Nitz / 1133236

AMPHIBIOUS FORCES

2 POLNOCHNY A (PROJECT 770) CLASS (LSM)

SIRIUS (ex-Ivan Zagubanski) 701 ANTARES 702

Displacement, tons: 750 standard; 800 full load
Dimensions, feet (metres): 239.5 × 27.9 × 5.8 (73 × 8.5 × 1.8)
Main machinery: 2 Kolomna Type 40-D diesels; 4,400 hp(m) (3.2 MW) sustained; 2 shafts
Speed, knots: 19
Range, n miles: 1,000 at 18 kt
Complement: 40
Military lift: 350 tons including 6 tanks; 180 troops
Guns: 2 USSR 30 mm (twin). 2 — 140 mm 18-barrelled rocket launchers.
Radars: Navigation. SpinTrough; I-band.

Comment: Built 1963 to 1968. Transferred from USSR 1986-87. Not fitted either with the SA-N-5 Grail SAM system or with Drum Tilt fire-control radars. Plans to convert them to minelayers have been shelved and both are now used as transports. Based at Atiya



ANTARES

6/2006, Bulgarian Navy / 1164493

6 VYDRA (PROJECT 106K) CLASS (LCU)

703-708

Displacement, tons: 425 standard, 550 full load
Dimensions, feet (metres): 178.7 × 25.3 × 6.6 (54.8 × 7.7 × 2)
Main machinery: 2 Type 3-D-12 diesels, 600 hp(m) (440 kW) sustained; 2 shafts
Speed, knots: 12
Range, n miles: 2,500 at 10 kt
Complement: 20
Military lift: 200 tons or 100 troops or 3 MBTs
Guns: 1 — 14.5 mm.
Radars: Navigation: Don 2; I-band
IFF: High Pole.

Comment: Built 1963 to 1969. Ten transferred from the USSR in 1970, the remainder built in Bulgaria between 1974 and 1978. In 1992-93 703-707 converted to be used as minelayers. Many deleted. All based at Atiya



VYDRA 705

6/2006, Bulgarian Navy / 1164492

MINE WARFARE FORCES

Notes: (1) Six Vydra class (see Amphibious Forces) converted to minelayers in 1992-93. Some are in reserve
 (2) MCM long-term projects include:
 acquisition of up to six second-hand MCM vessels
 establishment of a mine-warfare data centre
 the acquisition of route-survey and bottom surveillance systems
 procurement of a shallow-water MCM capability.

4 BRIZ (SONYA) (PROJECT 12650) CLASS (MINESWEEPERS—COASTAL) (MSC)

BRIZ 61 SHKVAL 62 PRIBOY 63 SHTORM 64

Displacement, tons: 450 full load
Dimensions, feet (metres): 157.4 × 28.9 × 6.6 (48 × 8.8 × 2)
Main machinery: 2 Kolomna Type 9-D-8 diesels; 2,000 hp(m) (1.47 MW) sustained, 2 shafts
Speed, knots: 15
Range, n miles: 1,500 at 14 kt
Complement: 43 (5 officers)
Guns: 2 USSR 30 mm/65 (twin); 500 rds/min to 5 km (2.7 n miles), weight of shell 0.54 kg.
 2 USSR 25 mm/80 (twin); 270 rds/min to 3 km (1.6 n miles), weight of shell 0.34 kg.
Mines: 5
Radars: Surface search/navigation: Kivach, I-band.
IFF: Two Square Head, High Pole B.
Sonars: MG 69/79; hull-mounted, active minehunting; high frequency.

Comment: Wooden hulled ships transferred from USSR in 1981-84. Based at Atiya



SHKVAL

6/2006, Bulgarian Navy / 1164491

1 FLOWER (TRIPARTITE) CLASS (MINEHUNTER) (MHC)

Name	No	Builders	Laid down	Launched	Commissioned
TSIBAR	32 (ex-M 922)	Beliard, Ostend	6 July 1987	4 Aug 1988	14 Dec 1989

(ex-Myosotis)

Displacement, tons: 562 standard; 595 full load
Dimensions, feet (metres): 168.9 × 29.2 × 8.5 (51.5 × 8.9 × 2.6)
Main machinery: 1 Stork Wärtsila A-RUB 215X-12 diesel; 1,860 hp(m) (1.35 MW) sustained; 1 shaft; LIPS cp prop; 2 active rudders; 2 motors; 240 hp(m) (179 kW); 2 bow thrusters
Speed, knots: 15 diesel; 7 electric
Range, n miles: 3,000 at 12 kt
Complement: 46
Guns: 1 DCN 20 mm/20, 720 rds/min to 10 km. 2 — 12.7 mm MGs.
Countermeasures: MCM: 2 PAP 104 remote-controlled mine locators; 39 charges. Mechanical minesweeping gear
Radars: Navigation: Racal Decca TM 1229C, I-band.
Sonars: Thomson Sintra DUBM 21A, hull-mounted; minehunting, 100 kHz (±10 kHz).

Programmes: Originally procured for the Belgian Navy in co-operation with France and the Netherlands. The hull was built at Ostend and the ship was fitted out at Rupelmonde. It was subsequently modified to act as an ammunition transport. The ship was decommissioned from Belgian service in 2004 and, following an announcement on 7 December 2007 is to be re-activated and transferred to Bulgaria in early 2009. Details are based on the ships in Belgian service before modernisation.

Modernisation: The ship is to be overhauled before entering Bulgarian service.
Structure: GRP hull fitted with active tank stabilisation, full NBC protection and air conditioning. Has automatic pilot and buoy tracking. A 6-ton container can be carried for varying tasks.



TSIBAR (Belgian colours)

6/2001, Findler & Winter / 0114697

94 Bulgaria/Mine warfare forces — Survey ships

4 ISCAR (VANYA) (PROJECT 257D) CLASS (MINESWEEPERS—COASTAL) (MSC)

ISKAR 31 ZIBAR 32 DOBROTICH 33 EVSTATI VINAROV 34

Displacement, tons: 245 full load
Dimensions, feet (metres): 131.2 × 23.9 × 5.9 (40 × 7.3 × 1.8)
Main machinery: 2 M 870 diesels; 2,502 hp(m) (1.84 MW); 2 shafts; cp props
Speed, knots: 16
Range, n miles: 2,400 at 10 kt
Complement: 36
Guns: 2 USSR 30 mm/65 (twin); 500 rds/min to 5 km (2.7 n miles); weight of shell 0.54 kg
Mines: Can carry 8
Radars: Surface search. Don 2 I-band
Sonars: MG 69/79; hull-mounted; active minehunting; high frequency

Comment: Built 1961 to 1973. Transferred from the USSR—two in 1970, two in 1971 and two in 1985. Can act as minehunters. Two paid off in 1992, but back in service in 1994 and then finally scrapped in 1995. Based at Varna.



ISKAR 6/2007, Maritime Photographic / 1166832

2 YEVGENYA (PROJECT 1258) CLASS (MINESWEEPERS—COASTAL) (MSC)

Displacement, tons: 77 standard; 90 full load
Dimensions, feet (metres): 80.4 × 18 × 4.6 (24.5 × 5.5 × 1.4)
Main machinery: 2 Type 3-D-12 diesels; 600 hp(m) (440 kW) sustained; 2 shafts
Speed, knots: 11
Range, n miles: 300 at 10 kt
Complement: 10 (1 officer)
Guns: 2—25 mm/80 (twin)
Mines: 8 racks
Radars: Surface search. Spin Trough; I-band.
IFF: High Pole
Sonars: MG-7 lifted over stern; active; high frequency.

Comment: GRP hulls built at Kolpino. Transferred from USSR 1977. Based at Varna.



YEVGENYA 66 6/2006, Bulgarian Navy / 1164490

2 PO 2 (PROJECT 501) CLASS (MINESWEEPERS—INSHORE) (MSB)

218–219

Displacement, tons: 56 full load
Dimensions, feet (metres): 70.5 × 11.5 × 3.3 (21.5 × 3.5 × 1)
Main machinery: 1 Type 3-D-12 diesel; 300 hp(m) (220 kW) sustained; 2 shafts
Speed, knots: 12
Complement: 8

Comment: Built in Bulgaria. First units completed in early 1950s and last in early 1960s. Originally a class of 24 and these are the last two to survive. Occasionally carries a 12.7 mm MG, when used for patrol duties. Both based at Varna.



PO 2 7/2000, van Ginderen Collection / 010425c

6 OLYA (PROJECT 1259) CLASS (MINESWEEPERS—INSHORE) (MSB)

51–56

Displacement, tons: 64 full load
Dimensions, feet (metres): 84.6 × 14.9 × 3.3 (25.8 × 4.5 × 1)
Main machinery: 2 Type 3D 6S11/235 diesels; 471 hp(m) (346 kW) sustained; 2 shafts
Speed, knots: 12. **Range (miles):** 300 at 10 kt
Complement: 15
Guns: 2—12.7 mm MGs (twin).
Radars: Navigation: Pachora; I-band.

Comment: First five built between 1988 and 1992 in Bulgaria to the Russian Olya design. 56 completed in 1996. Minesweeping equipment includes AT-6, SZMT-1 and 3 PKT-2 systems. 55 based at Varna, the remainder at Balchik.



OLYA 52 7/2000, van Ginderen Collection / 0104250

SURVEY SHIPS

1 MOMA (PROJECT 861) CLASS (AGS)

ADMIRAL BRANIMIR ORMANOV 401

Displacement, tons: 1,580 full load
Dimensions, feet (metres): 240.5 × 36.8 × 12.8 (73.3 × 11.2 × 3.9)
Main machinery: 2 Zgoda-Sulzer 6TD48 diesels; 3,300 hp(m) (2.43 MW) sustained; 2 shafts; cp props
Speed, knots: 17. **Range, n miles:** 9,000 at 12 kt
Complement: 37 (5 officers)
Radars: Navigation: 2 Don-2; I-band.

Comment: Built at Northern Shipyard, Gdansk, Poland in 1977. Based at Varna. Two others of the class belonging to Russia were refitted in Bulgaria in 1995–96.



ADMIRAL BRANIMIR ORMANOV 6/2007, Maritime Photographic / 1166833

2 COASTAL SURVEY VESSELS (PROJECT 612) (AGSC)

231 331

Displacement, tons: 114 full load
Dimensions, feet (metres): 87.6 × 19 × 4.9 (26.7 × 5.8 × 1.5)
Main machinery: 2 Type 3-D-12 diesels; 600 hp(m) (440 kW) sustained; 2 shafts
Speed, knots: 12. **Range, n miles:** 600 at 10 kt
Complement: 9 (2 officers)
Radars: Navigation. I-band

Comment: Built in Bulgaria in 1986 and 1988 respectively. Can carry 2 tons of equipment. 231 is based at Varna and 331 at Atiya.



AGSC 331 6/1996, Bulgarian Navy / 0506774

AUXILIARIES

1 SUPPORT TANKER (AOTL)

AKIN 303 (ex-203)

Displacement, tons: 1,250 full load
 Dimensions, feet (metres): 181.8 x 36.1 x 11.5 (55.4 x 11 x 3.5)
 Main machinery: 2 Sulzer 6AL-20-24 diesels; 1,500 hp(m) (1.1 MW); 2 shafts
 Speed, knots: 12. Range, n miles: 1,000 at 8 kt
 Complement: 23
 Cargo capacity: 650 tons fuel
 Guns: 2 ZU-23-2F Wrobo: 23 mm (twin)
 Radars: Navigation: I-band.

Comment: Laid down 1989, launched 1993 and completed in 1994 at Burgas Shipyards, Burgas. Based at Varna



AOT 303 6/2006, Bulgarian Navy / 1164488

1 MESAR CLASS (PROJECT 102) (SUPPORT TANKER) (AORL)

ATIYA 302

Displacement, tons: 3,240 full load
 Dimensions, feet (metres): 319.8 x 45.6 x 16.4 (97.5 x 13.9 x 5)
 Main machinery: 2 diesels; 12,000 hp(m) (8.82 MW); 2 shafts
 Speed, knots: 18. Range, n miles: 12,000 at 15 kt
 Complement: 32 (6 officers)
 Cargo capacity: 1,593 tons
 Guns: 4 USSR 30 mm/65 (2 twin)
 Radars: Navigation: 2 Don 2; I-band.

Comment: Built in Bulgaria in 1987. Abeam fuelling to port and astern fuelling. Mount 1.5 ton crane amidships. Also carries dry stores. Based at Atiya.



ATIYA 7/2002, S Broyer / 0568845

2 DIVING TENDERS (PROJECT 245) (YDT)

223 323

Displacement, tons: 112 full load
 Dimensions, feet (metres): 91.5 x 17.1 x 7.2 (27.9 x 5.2 x 2.2)
 Main machinery: Diesel-electric; 2 MCK 83-4 diesel generators; 1 motor; 300 hp(m) (220 kW); 1 shaft
 Speed, knots: 10. Range, n miles: 400 at 10 kt
 Complement: 6 + 7 divers
 Radars: Navigation: Don 2; I-band

Comment: Built in Bulgaria in mid-1980s. A twin 12.7 mm MG can be fitted. Capable of bell diving to 60 m. 223 based at Varna. 323 based at Atiya.



YDT 323 6/2006, Bulgarian Navy / 1164485

2 TYPE 215 (TORPEDO RECOVERY VESSELS) (ARS)

222 +1

Displacement, tons: 110 full load
 Dimensions, feet (metres): 87.3 x 19.0 x 4.9 (26.6 x 5.8 x 1.5)
 Main machinery: 1 diesel; 290 hp(m) (216 kW); 1 shaft
 Speed, knots: 12

Comment: Capable of carrying five torpedoes.



222 6/2007, Maritime Photographic / 11671907

1 BEREZA (PROJECT 130) CLASS (ADG/AX)

KAPITAN 1st RANK DIMITRI DOBREV 206

Displacement, tons: 2,051 full load
 Dimensions, feet (metres): 228 x 45.3 x 13.1 (69.5 x 13.8 x 4)
 Main machinery: 2 Zgoda-Sulzer 8 AL 25/30 diesels; 2,925 hp(m) (2.16 MW) sustained; 2 shafts; cp props
 Speed, knots: 13. Range, n miles: 1,000 at 13 kt
 Complement: 48
 Radars: Navigation: Kivach; I-band.

Comment: New construction built in Poland and transferred July 1988. Used as a degaussing ship. Fitted with an NBC citadel and upper deck wash-down system. The ship has three laboratories. Has also been used as a training ship. Based at Varna.



KAPITAN 1st RANK DIMITRI DOBREV 7/2007, Bob Fildes / 1166829

5 AUXILIARIES (ATS)

224 312 313 321 421

Comment: 421 is a survey vessel converted to a training ship. 224 and 321 are firefighting vessels. 312 and 313 are tugs.



421 6/2003, Schaeffer/Marsan / 0561677



224 6/2006, Bulgarian Navy / 1164483

1 SALVAGE SHIP (ARS)

Name	No	Builders	Commissioned
PROTEO	224 (ex-A 5310)	Cantieri Navali Riuniti, Ancona	24 Aug 1951
(ex-Protea, ex-Perseo)			

Displacement, tons: 1,865 standard; 2,147 full load
 Dimensions, feet (metres): 248 x 38 x 21 (75.6 x 11.6 x 6.4)
 Main machinery: 2 Fiat diesels; 4,800 hp(m) (3.53 MW); 1 shaft
 Speed, knots: 18. Range, n miles: 7,500 at 13 kt
 Complement: 122 (8 officers)
 Radars: Navigation: SMA-748; I-band.

Comment: Transferred to Bulgaria on 3 June 2004 having been decommissioned from the Italian Navy in 2002. Originally laid down in 1943, construction was suspended until restarted in 1949. Details are those of the ship when in Italian service



PROTEO 7/2007, Bob Fildes / 1166830



Canada

Country Overview

Canada is the world's second-largest country. The British monarch, represented by a governor-general, is head of state. With an area of 3,849,652 square miles, it occupies most of northern North America and is bordered to the south by the United States and to the west by the US state of Alaska. It has a coastline of 131,647 n miles with the Pacific, Arctic and Atlantic Oceans and with Baffin Bay and the Davis Strait. Numerous coastal islands include the Arctic Archipelago to the north, Newfoundland, Cape Breton, Prince Edward, and Anticosti to the east and Vancouver Island and the Queen Charlotte Islands to the west. Hudson Bay contains Southampton Island and many smaller islands. The 2,035 n mile St Lawrence-Great Lakes navigation system enables ocean-going vessels to sail between the Atlantic Ocean and the Great Lakes via the St Lawrence Seaway (opened 1959). Ottawa is the capital while Toronto is the largest city. Major ports include Vancouver, Montreal, Halifax, Sept-Îles, Port-Cartier, Quebec City, Saint John (New Brunswick), Thunder Bay, Prince Rupert, and Hamilton. Territorial seas (12 n miles) are claimed. A 200 n mile EEZ has been claimed but the limits have only been partly defined by boundary agreements.

Headquarters Appointments

Chief of Maritime Staff
Vice Admiral DW Robertson, CMM, MSM, CD
Assistant Chief of Maritime Staff
Commodore K E Williams, OMM, MSM, CD
Director General Maritime Personnel and Readiness
Commodore L M Hickey, OMM, CD
Director General Maritime Force Development
Captain J E T P Ellis, CD

Flag Officers

Commander, Maritime Forces, Atlantic:
Rear Admiral P A Maddison, OMM, MSM, CD
Commander, Maritime Forces, Pacific:
Rear Admiral T H W Pile, CMM, CD
Commander, Naval Reserves:
Commodore J J Bennett, OMM, CD

Diplomatic Representation

Defence Attaché, Washington:
Captain A L Garceau, CD
Naval Adviser, London
Captain N H Jolin, OMM, CD
Defence Attaché, Tokyo:
Captain J E H A Langlois, CD

Establishment

The Royal Canadian Navy (RCN) was officially established on 4 May 1910, when Royal Assent was given to the Naval Service Act. On 1 February 1968 the Canadian Forces Reorganisation Act unified the three branches of the Canadian Forces and the title 'Royal Canadian Navy' was dropped.

Personnel

2009: 8,553 (Regular), 3,850 (Reserves)

Prefix to Ships' Names

HMCS

Bases

Halifax and Esquimaux

Fleet Deployment

Atlantic
Canadian Fleet Atlantic (destroyer, frigates, ADR)
Maritime Operations Group Five (maritime warfare forces, submarines, training ships)

Pacific
Canadian Fleet Pacific (destroyer, frigates, ADR)
Maritime Operations Group Four (maritime warfare forces, submarines, training ships)

Maritime Air Components (MAC)

1 Canadian Air Division HQ Detachment Regional Air Control Element Atlantic (Halifax)
1 Canadian Air Division HQ Detachment Regional Air Control Element Pacific (Esquimaux)

Squadron/Unit	Base	Aircraft	Function
MP 404 (MP&T)	Greenwood, NS	Aurora/Arcturus	LRMP/Training
MP 405 (MP)	Greenwood, NS	Aurora	LRMP
HT 406 (M) OTS	Shearwater, NS	Sea King	Training
MP 407 (MP)	Comox, BC	Aurora	LRMP
MH 423 (MH)	Shearwater, NS	Sea King	General
MH 443 (MH)	Victoria, BC	Sea King	General
HOTEF	Shearwater, NS	Sea King	Test
MP & EU	Greenwood, NS	Aurora	Test

Notes

1. Detachments from 423 and 443 meet ships' requirements in Atlantic and Pacific Fleets respectively. Sea King helicopters are now classified as General Purpose vice the former ASW designation.
2. 413 Squadron based in Greenwood, NS, and 442 Squadron based in Comox, BC, are two maritime search and rescue squadrons under the command of 1 Canadian Air Division (CAD).
3. Combat training support provided by commercial contract from March 2002.

Strength of the Fleet

Type	Active	Building
Submarines	4	-
Destroyers	3	-
Frigates	12	-
Mine Warfare Forces	12	-
Survey Ships	1	-
Support Ships	2	(3)

PENNANT LIST

Submarines	Frigates	Mine Warfare Forces	Training Ships	S10	Preserver
876 <i>Victoria</i>	330 Halifax	700 Kingston	55 Orca	610	Sechelt
877 <i>Windsor</i>	331 Vancouver	701 Glace Bay	56 Raven	611	Sikanni
878 <i>Cornor Brook</i>	332 Ville de Québec	702 Nanaimo	57 Caribou	612	Sooke
879 <i>Chicoutimi</i>	333 Toronto	703 Edmonton	58 Renard	613	Stikine
	334 Regina	704 Shawinigan	59 Wolf		
	335 Calgary	705 Whitehorse	60 Grizzly		
Destroyers	336 Montreal	706 Yellowknife	61 Cougar		
280 <i>Iroquois</i>	337 Fredericton	707 Goose Bay	62 Moose		
282 <i>Athabaskan</i>	338 Winnipeg	708 Moncton	Auxiliaries		
283 <i>Algonquin</i>	339 Charlottetown	709 Saskatoon	172 Quest		
	340 St John's	710 Brandon	509 Protecteur		
	341 Ottawa	711 Summerside			

SUBMARINES

4 VICTORIA (UPHOLDER) CLASS (TYPE 2400) (SSK)

Name	No	Builders	Start date	Launched	Commissioned	Recommissioned
VICTORIA (ex- <i>Unseen</i>)	876 (ex-S 41)	Cammell Laird, Birkenhead	Jan 1986	14 Nov 1989	7 June 1991	2 Dec 2000
WINDSOR (ex- <i>Unicorn</i>)	877 (ex-S 43)	Cammell Laird, Birkenhead (VSEL)	Feb 1989	16 Apr 1992	25 June 1993	4 Oct 2003
CORNER BROOK (ex- <i>Ursula</i>)	878 (ex-S 42)	Cammell Laird, Birkenhead (VSEL)	Aug 1987	28 Feb 1991	8 May 1992	29 June 2003
CHICOUTIMI (ex- <i>Upholder</i>)	879 (ex-S 40)	Vickers Shipbuilding and Engineering, Barrow	Nov 1983	2 Dec 1986	8 June 1990	2 Oct 2004

Displacement, tons: 2,168 surfaced; 2,455 dived

Dimensions, feet (metres): 230.6 x 25 x 177
(70.3 x 7.6 x 5.5)

Main machinery: Diesel-electric; 2 Paxman Valenta 16SZ diesels; 3,620 hp (2.7 MW) sustained; 2 GEC alternators; 2.8 MW; 1 GEC motor; 5,400 hp (4 MW); 1 shaft

Speed, knots: 12 surfaced; 20 dived; 12 snorting

Range, n miles: 8,000 at 8 kt snorting

Complement: 48 (7 officers) plus 11 spare

Torpedoes: 6—21 in (533 mm) bow tubes, 18 Raytheon Mk 48 Mod 4M; dual purpose; active/passive homing to 50 km (27 n miles); 38 km (21 n miles) at 40/55 kt; warhead 267 kg. Air turbine pump discharge.

Countermeasures: Decoys; 2 SSE launchers.

ESM: Sea Search II; intercept

Weapons control: Lockheed Martin SFCS

Radars: Navigation: Kelvin Hughes Type 1007; I-band.

Furuno (portable); I-band.

Sonars: Thomson Sintra Type 2040; hull-mounted; passive search and intercept; medium frequency.

BAE Type 2007; flank array; passive; low frequency.

Thales Type 2046; towed array; passive very low frequency. Thales Type 2019; passive/active range and intercept (PARIS).

Programmes: First ordered 2 November 1983. Further three ordered on 2 January 1985. Laid up after post Cold War defence cuts in 1994 and acquired from the UK on 6 April 1998. Refitted at Vickers, Barrow, for delivery from June 2000.

Modernisation: A mid-life update is under consideration and there are plans to modernise the Mk 48 torpedo.



CORNER BROOK

6/2007, Blake Rodgers, RCN / 1186H.35

Structure: Single-skinned NQ1 high tensile steel hull, tear dropped shape 9:1 ratio, five man lock-out chamber in fin. Fitted with elastomeric acoustic tiles. Diving depth, greater than 200 m (650 ft). Fitted with Pilkington Optronics CK 35 search and CH 85 attack optronic periscopes.

Operational: *Victoria* is based in the Pacific Fleet at Esquimaux, BC and the remaining three submarines are based in the Atlantic Fleet at Halifax, NS. *Victoria* arrived in Canada in October 2000 and transferred to the Pacific Fleet in August

2003, following an extended work period. Currently in an Extended Docking Work Period (EDWP), *Victoria* will resume operations in mid-2010. *Windsor* was accepted in 2002, completed several patrols and is undergoing EDWP at Halifax 2007-10. *Cornor Brook* arrived in mid-2003 and is currently operational. While on passage to Canada in October 2004, *Chicoutimi* suffered a serious fire. Extensive repairs are required and will be carried out 2010-13 in conjunction with EDWP on the west coast.



WINDSOR

6/2006, Formation Imaging Services / 1335652



VICTORIA

10/2000, CDF / 0094514

FRIGATES

12 HALIFAX CLASS (FFGHM)

Name	No	Builders	Laid down	Launched	Commissioned
HALIFAX	330	Saint John SB Ltd, New Brunswick	19 Mar 1987	30 Apr 1988	29 June 1992
VANCOUVER	331	Saint John SB Ltd, New Brunswick	19 May 1988	8 July 1989	23 Aug 1993
VILLE DE QUEBEC	332	Marine Industries Ltd, Sorel	17 Jan 1989	16 May 1991	14 July 1994
TORONTO	333	Saint John SB Ltd, New Brunswick	24 Apr 1989	18 Dec 1990	29 July 1993
REGINA	334	Marine Industries Ltd, Sorel	6 Oct 1989	25 Oct 1991	30 Sep 1994
CALGARY	335	Marine Industries Ltd, Sorel	15 June 1991	28 Aug 1992	12 May 1995
MONTREAL	336	Saint John SB Ltd, New Brunswick	8 Feb 1991	28 Feb 1992	21 July 1994
FREDERICTON	337	Saint John SB Ltd, New Brunswick	25 Apr 1992	13 Mar 1993	10 Sep 1994
WINNIPEG	338	Saint John SB Ltd, New Brunswick	19 Mar 1993	5 Dec 1993	23 June 1995
CHARLOTTETOWN	339	Saint John SB Ltd, New Brunswick	5 Dec 1993	10 July 1994	9 Sep 1995
ST JOHN'S	340	Saint John SB Ltd, New Brunswick	24 Aug 1994	12 Feb 1995	26 June 1996
OTTAWA	341	Saint John SB Ltd, New Brunswick	29 Apr 1995	22 Nov 1995	28 Sep 1996

Displacement, tons: 4,770 full load
Dimensions, feet (metres): 441.9 oa; 408.5 pp x 53.8 x 16.4; 23.3 (screws) (134.7; 124.5 x 16.4 x 5; 71)
Main machinery: CODOG; 2 GE LM 2500 gas turbines; 47,494 hp (35.43 MW) sustained
 1 SEMT-Pielstick 20 PA6 V 280 diesel; 8,800 hp(m) (6.48 MW) sustained; 2 shafts; cp props
Speed, knots: 29
Range, n miles: 9,500 at 13 kt (diesel); 3,930 at 18 kt (gas)
Complement: 198 (17 officers) plus 17 (8 officers) aircrew

Missiles: SSM: 8 McDonnell Douglas Harpoon Block 1C (2 quad) launchers ●; active radar homing to 130 km (70 n miles) at 0.9 Mach; warhead 227 kg.

SAM: Raytheon Sea Sparrow RIM-7P; 2 Mk 48 octuple vertical launchers ●; semi-active radar homing to 16 km (8.5 n miles) at 2.5 Mach; warhead 38 kg; 18 missiles. Evolved Sea Sparrow RIM-162 (339, 340), semi-active homing to 18 km (9.7 n miles) at 3.6 Mach; warhead 38 kg.

Guns: 1 Bofors 57 mm/70 Mk 2 ●; 220 rds/min to 17 km (9 n miles); weight of shell 2.4 kg
 1 GE/GDC 20 mm Vulcan Phalanx Mk 15 Mod 1 ●; anti-missile; 3,000 rds/min (6 barrels combined) to 1.5 km, 6–12.7 mm MGs

Torpedoes: 4–324 mm Mk 32 Mod 9 (2 twin) tubes ●
 24 Honeywell Mk 46 Mod 5; anti-submarine; active/passive homing to 11 km (5.9 n miles) at 40 kt; warhead 44 kg.

Countermeasures: Decoys: 4 Plessey Shield Mk 2 decoy launchers ●; sextuple mountings; fires P8 chaff and P6 IR flares in distraction, decoy or centroid modes.
 Nixie SLQ-25; towed acoustic decoy

ESM: MEL/Lockheed Canews SLQ-501 ●; radar intercept; (1–18 GHz), SRD 502; intercept. Sea Search AN/UJR 501
ECM: MEL/Lockheed Ramzes SLQ-503 ●; jammer.

Combat data systems: UYC-501 SHINFADS action data automation with UYQ-504 and UYK-505 or 507 (336–341) processors. Links 11 and 14.

Weapons control: AHWCS for Harpoon. CDC UYS-503(V); sonobuoy processing system.

Radars: Air search: Raytheon SPS-49(V)5 ●; C-band.
 Air/surface search: Ericsson Sea Giraffe HC 150 ●; G/H-band

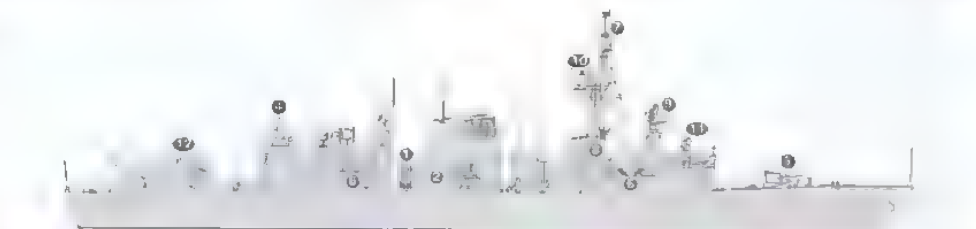
Fire control: Two Signal SPG-503 (STIR 1.8) ●; K/I-band.
 Navigation: Sperry Mk 340 being replaced by Kelvin Hughes 1007; I-band.

Tecan: URN 25. IFF Mk XII
Sonars: Westinghouse SQS-510; hull-mounted; active search and attack; medium frequency.
 General Dynamics SQR-501 CANTASS towed array (uses part of Martin Marietta SQR-19TACTASS).

Helicopters: 1 CH-124A ASW ●.

Programmes: On 29 June 1983 Saint John Shipbuilding Ltd won the competition for the first six of a new class of patrol frigates. Combat system design and integration was subcontracted to Loral Canada (formerly Paramax, a subsidiary of Unisys) Three ships were subcontracted to Marine Industries Ltd in Lauzon and Sorel. On 18 December 1987 six additional ships of the same design were ordered from Saint John SB Ltd.

Modernisation: The Halifax Class Modernisation (HCM)/Frigate Life Extension (FELEX) programme subsumes all maintenance, sustainment and stand-alone projects planned to ensure the continued operation of the class for the duration of its life. In general, combat system enhancements are to reflect increasing emphasis on littoral operations in a joint force and a coalition. Major equipment acquisitions through HCM/FELEX include a modernised command and control system, multi-LINK, IFF



HALIFAX

(Scale 1 : 1,200, Ian Sturton / 0528399)



VILLE DE QUEBEC

8/2008, RCN / 1135650

Mode S/S, upgrade or replacement of SPS-49, Sea Giraffe and SPG-503 radars, a new ESM system, upgrades to the internal communications system, Harpoon to Block II, Bofors 57 mm gun to Mk 3 standard and an improvement of the degaussing system. In addition, a CTG capability is to be added to four ships. Projects already underway include modifications to receive Evolved Sea Sparrow (ESSM) (to be completed by 2010), the upgrade of the Vulcan Phalanx to Block 1B and the fitting of SEQSS and SIRIUS Infra-Red Search and Track (IRST). ASW projects include improvement of torpedo defence. Integration of the Cyclone helicopter will also make a significant contribution to ASW improvements. The HCM/FELEX Project will also be responsible for platform changes arising from the planned modifications. These include upper deck and operations room reconfiguration, power

supplies, heating/ventilation/air-conditioning, chill water supplies, hull strength, and stability. All ships are being modified to achieve a common equipment and systems baseline before beginning the HCM/FELEX upgrade which is to begin with Halifax in 2010. Seven ships are to be refitted in Halifax Shipyard and five on the west coast at Victoria Shipyard.

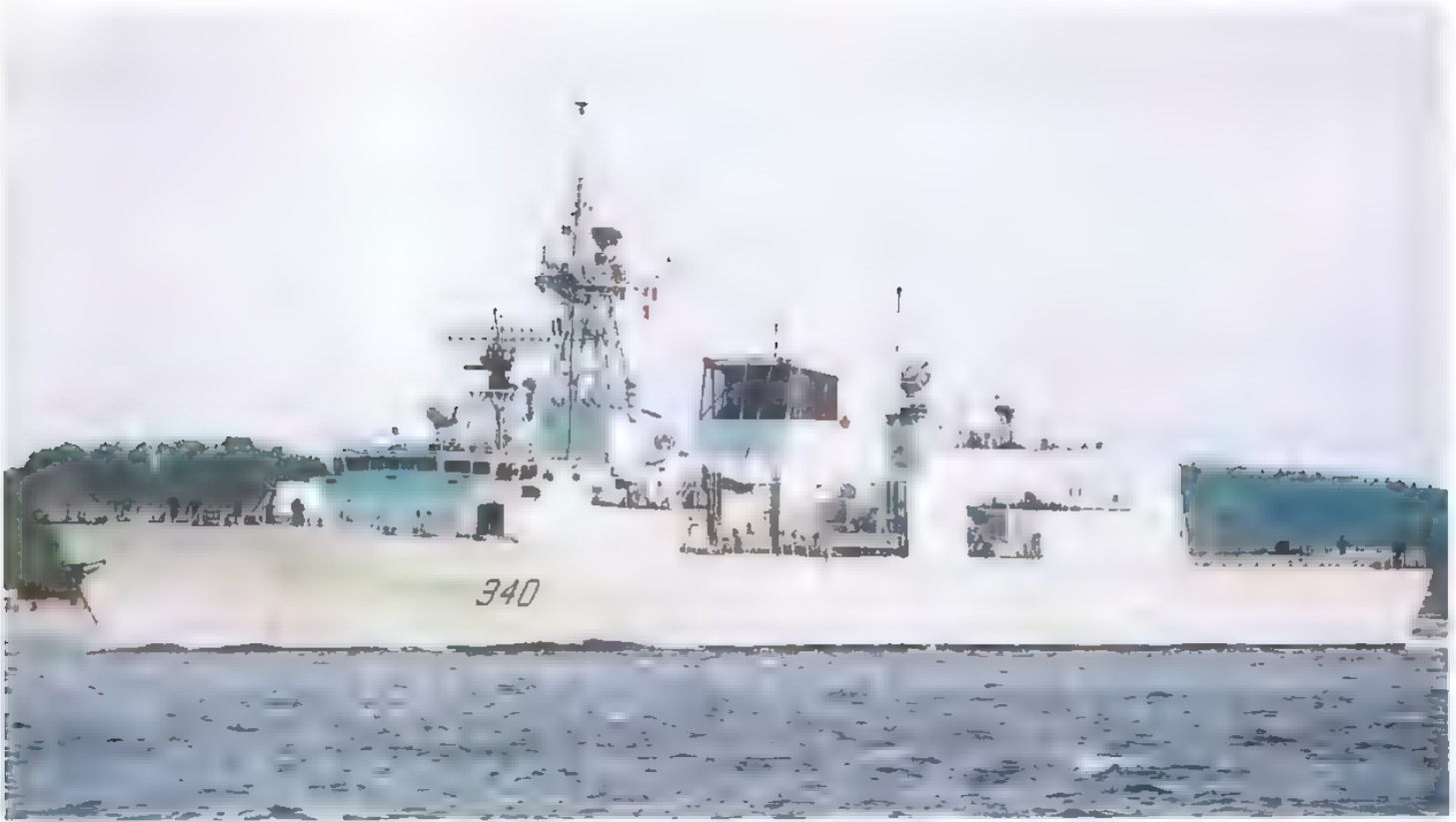
Structure: Much effort has gone into stealth technology. Gas turbine engines are raft mounted. Dresbach IR suppression is fitted. Indal RAST helicopter handling system.

Operational: Problems on first of class trials included higher than designed radiated noise levels which were reported as speed associated. These have been rectified and the ships are stable and quiet in all sea conditions. Vancouver, Regina, Calgary, Winnipeg and Ottawa are Pacific based



FREDERICTON

8/2007, Blake Rodgers, RCN / 1168334



ST JOHN'S

5/2007, Frank Findler / 1166765



CALGARY

8/2008, RCN / 1335648



TORONTO

6/2008, M Declerck / 1335849

DESTROYERS

Notes: The Canadian Surface Combatants (CSC) programme is for the construction of 15 ships to replace the current destroyer and frigate force. These vessels are to have a common hull and machinery, displace up to 7,500 tonnes, and are to employ modular concepts. The first batch of ships are to be optimised for air defence and command and control roles, as replacements for the Iroquois-class DDHGs, and later batches are to replace the Halifax-class frigates. It is planned that the first ships will become operational in the 2018–20 period.

3 IROQUOIS CLASS (DDGH)

Name	No	Builders	Laid down	Launched	Commissioned
IROQUOIS	280	Marine Industries Ltd, Sordal	15 Jan 1969	28 Nov 1970	29 July 1972
ATHABASKAN	282	Davie Shipbuilding, Lauzon	1 June 1969	27 Nov 1970	30 Sep 1972
ALGONQUIN	283	Davie Shipbuilding, Lauzon	1 Sep 1969	23 Apr 1971	3 Nov 1973

Displacement, tons: 5,300 full load
Dimensions, feet (metres): 398 wl; 426 oa x 50 x 15.5 keel/21.5 screws (121.4; 129.8 x 15.2 x 4.7/6.6)
Main machinery: COGOG; 2 Pratt & Whitney FT4A2 gas turbines; 50,000 hp (37 MW); 2 GM Allison 570-KF gas turbines; 12,700 hp (9.5 MW) sustained; 2 shafts; LIPS cp props
Speed, knots: 27
Range, n miles: 4,500 at 15 kt (cruise turbines)
Complement: 255 (23 officers) plus 30 (9 officers) aircrew

Missiles: SAM. 1 Martin Marietta Mk 41 VLS ● for 29 GDC Standard SM 2MR Block III/III-A; command/inertial guidance; semi-active radar homing to 167 km (90 n miles) at Mach 2.5.

Guns: 1 OTO Melara 3 in (76 mm)/62 Super Rapid ●; 120 rds/min to 16 km (8.7 n miles); weight of shell 6 kg. 6—12.7 mm MGs

1 GE/GDC 20 mm/76 6-barrelled Vulcan Phalanx Mk 15 ●; 3,000 rds/min combined to 1.5 km

Torpedoes: 6—324 mm Mk 32 (2 triple) tubes ●. Honeywell Mk 46 Mod 5, anti-submarine, active/passive homing to 11 km (5.9 n miles) at 40 kt; warhead 44 kg.

Countermeasures: Decoys: 4 Plessey Shield Mk 2 6-tubed fixed launchers ●. P 8 chaff or P 6 IR flares. BAe Nulka offboard decoys in quad pack launchers.

SLO-25 Nixie, torpedo decoy
 ESM MEL SLO-501 Canews ●; radar warning.
 ECM BAe Nulka

Combat data systems: SHINPADS, automated data handling with UYQ-504 and UYK 507 processors. Links 11, 14 and 15. JMCIS and Marconi Matra SHF SATCOM ●.

Weapons control: Signal LIROD 8 ● optronic director. UYS-503(V) sonobuoy processor.

Radars: Air search: Signal SPQ-502 (LW08) ●; D-band



IROQUOIS

(Scale 1 : 1,200, Ian Sturton / GU56677)

Surface search: Signal SPQ-501 (DA08) ●; E/F-band.
Fire control: 2 Signal SPG-501 (STIR 1.8) ●; I/J-band.
Navigation: 2 Raytheon Pathfinder, I-band.
Tacan: URN 26

Sonars: General Dynamics SQS-510; combined VDS and hull-mounted; active search and attack; medium frequency.

Helicopters: 2 CH-124A Sea King ASW ●.

Modernisation: A contract for the Tribal Class Update and Modernisation Project (TRUMP) was awarded to Litton Systems Canada Limited in June 1986. The equipment reflected the changing role of the ship and replaced systems that did not meet the air defence requirement. *Algonquin* completed modernisation in October 1991, followed by *Iroquois* in May 1992 and *Athabaskan* in

August 1994. Sonar upgraded from 1998. Nulka system replaced ULQ-6 in 1999. JMCIS has been fitted vice JOTS II, with SHF SATCOM in all three ships. Shipboard Electro-Optic Surveillance System (SEOSS) is being fitted in all ships. Vulcan Phalanx upgraded to Block 1B from 2003. A programme to upgrade/overhaul the SPQ-501, SPQ-502 and SPG-501 radars and the LIROD 8 optronic director began in 2008.

Structures: These ships are also fitted with a landing deck equipped with double hauldown and Beartrap, pre-wetting system to counter NBC conditions, enclosed citadel and bridge control of machinery. The flume type anti-roll tanks have been replaced during modernisation with a water displaced fuel system. Design weight limit has been reached

Operational: Helicopters can carry 12.7 mm MGs and ESM/FLIR instead of ASW gear. To remain in service until 2015.



IROQUOIS

10/2006, Charles Barber, RCN / 1166839



ALGONQUIN

10/2007, Michael Nitz / 1335651

SHIPBORNE AIRCRAFT

Notes: The five HELTAS Sea Kings have been converted to a battlefield/utility transport role. All acoustic systems have been removed.

Numbers/Type: 28 Sikorsky CH-148 Cyclone
Operational speed: 165 kt (305 km/h)
Service ceiling: 11,320 ft (3,450 m)
Range: 444 n miles (821 km)

Role/Weapon systems: Contract for the acquisition of 28 helicopters to replace the Sea King (by 2012) made on 23 November 2004. Delivery of the aircraft is to begin in late 2010. Multimission maritime helicopter for ASW and ASUW and secondary missions of SAR, special forces operations, and Medevac. Sensors: L3 HELRAS sonar, Telephonics APS 143B(V)3 ISAR radar, GDC acoustic signal processor, FLIR Systems Star Safire III electro-optics system, Rockwell-Collins ARC-210 communications suite, ATK Alliant AN/ARR-47 MAWS, Lockheed Martin AN/ALQ-210 ESM/radar warning, Lockheed Martin AN/ALR-47 laser warning, BAE AN/ALQ-144 IR jammer, BAE AN/ALE-47 countermeasures dispenser system; Links 11 and 22. Weapons: Two Mk 46 torpedoes and C6 7.62 mm MG.



CH-148 6/2005, Sikorsky / 1123062

Numbers/Type: 22/5 Sikorsky CH-124A ASW/CH-124B SCF Utility Sea King.
Operational speed: 110 kt (203 km/h)
Service ceiling: 10,000 ft (3,030 m)
Range: 380 n miles (705 km)

Role/Weapon systems: ASW, surface surveillance and support, convertible for carriage of six troops; deployed from shore or from three classes of ships (Halifax class FFG (1 aircraft), Iroquois class DDG (2 aircraft) and 'Protecteur' AOR (3 aircraft)); Sensors: CH-124A/B: APS-503 radar, ASN-123 mission computer, GPS, ARA-5 direction finder, APX-77A IFF, HF/VHF/UHF comms (with secure voice capability), ALQ-144 IR countermeasures (fitted for but not with). CH-124A: AQS-502 dipping sonar, ARR-52A sonar receiver and ARR-1047 OTPI. CH-124B: AN/ARC-210 communications, AN/ARR-47 MAWS, AN/ALQ-144 IR jammer and AN/ALE-47 CDS. Weapons: Two Mk 46 torpedoes and C6 7.62 mm MGs for both aircraft types.



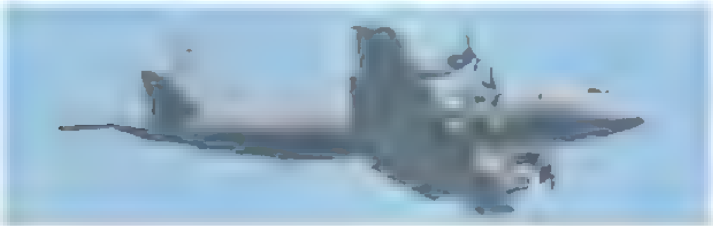
CH-124A 10/2005, M Decker / 1184751

LAND-BASED MARITIME AIRCRAFT (FRONT LINE)

Notes: Procurement of a new maritime patrol aircraft to replace the Aurora from about 2020 is under consideration.

Numbers/Type: 18 Lockheed CP-140 Aurora
Operational speed: 405 kt (750 km/h)
Service ceiling: 34,000 ft (9,930 m)
Range: 4,000 n miles (7,410 km)

Role/Weapon systems: Operated for long-range maritime surveillance over Atlantic, Pacific and Arctic Oceans; roles include ASW, ASV and SAR. Incremental modernisation (AIMP) programme to upgrade avionics and communications in up to 12 aircraft scheduled 2000-2013. Contract for update of navigation and flight instruments awarded to CMC Electronics in late 2000 and to MacDonald Dettwiler in January 2003 for replacement of AN/APS 508 radar by Telephonics AN/APS-143(V)3. In parallel, an ASLEP programme addresses airframe structural issues. Sensors: APS-506 radar, IFF, ALR-508 (to be replaced by AN/ALQ-217) ESM, ECM, FLIR OR 5008 (to be replaced by L3 Wescam MX-20), ASQ-502 MAD, OL 5004 acoustic processor. Weapons: 8 Mk 46 Mod 5 torpedoes.



AURORA 10/2007, Michael Nitz / 1335641

Numbers/Type: 2 Lockheed CP-140A Arcturus.
Operational speed: 405 kt (750 km/h)
Service ceiling: 34,000 ft (9,930 m)
Range: 4,000 n miles (7,410 km)

Role/Weapon systems: Arcturus operated for unarmed Arctic patrol, maritime surveillance, SAR and training. Fitted with same equipment as Aurora but without the ASW fit. To be withdrawn from service. Sensors: APS-507 radar, IFF

PATROL FORCES

Notes: It was announced on 9 July 2007 that up to eight Arctic/Offshore Patrol Ships (AOPS) are to be acquired. The ships are to be tasked with maritime security duties in Canada's Exclusive Economic Zone, including the full length of the Northwest Passage in Summer and approaches in Winter. The broad requirement is for a 100 m ship of about 6,000 tons with an ice-strengthened steel hull capable of operating at 3 kt in ice up to 1 m thick. With a maximum speed of about 20 kt, the ships are to be armed (possibly with a 40 mm gun) and to be helicopter capable. The first ship is to be delivered in 2013. Naval support facilities are also to be constructed at the existing deep-water port of Nanisivik on Strathcona Sound, Nunavut. These are to be completed in 2015.

AMPHIBIOUS FORCES

Notes: The Standing Contingency Force concept was evolved in response to the need for a sea-based expeditionary capability for operations in the world's littorals. As part of the process to determine the required capabilities, an Initial Integrated Tactical Effects (ITE) experiment was conducted in November 2006 using USS *Gunston Hall* as a trials platform. While development of a full SCF capability has since been placed in abeyance until at least 2011, conceptual development continues at the Maritime Warfare Centre.

MINE WARFARE FORCES

Notes: The Interim Remote Minehunting and Disposal System (IRMDS) is based on the Remote Minehunting System - Technology Demonstration (RMS-TD) system developed by Defence Research and Development Canada in conjunction with MDA Ltd of Richmond, BC, ISE Ltd of Port Moody, BC and DCNI of Paris, France. The production system is not expected to enter service until 2011 but, in the meantime, has been prepared for limited operation in an interim capacity. Initial Operating Capability was achieved on 1 April 2007. IRMDS, also known as Seakeeper, can be controlled from the Kingston class MCMVs and Sechelt class YDTs. French trials have been conducted from *Armanique* and *Taapa*. The system consists of an 8.3 m long semi-submersible drone powered by a 375 hp diesel engine and capable of up to 16 kt transit speed and 10 kt minehunting. The Aurora towfish can deploy to depths of 15-200 m and is a mount for the L3/Klein K5500 multibeam side scan sonar and Reson 8125 echo sounder. Sonar operations can be conducted in up to Sea State 5. Missions are controlled from a C2 container embarked in a host ship or installed ashore.

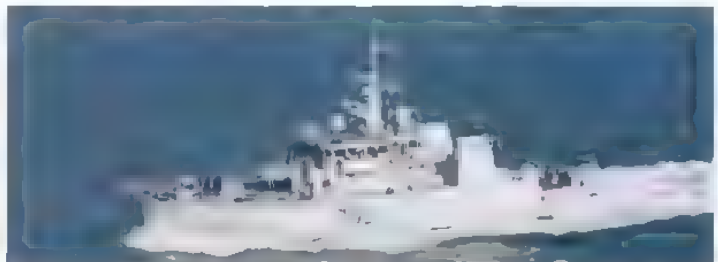
12 KINGSTON CLASS (MM)

Name	No	Builders	Laid down	Launched	Commissioned
KINGSTON	700	Halifax Shipyards	15 Dec 1994	12 Aug 1995	21 Sep 1996
GLACE BAY	701	Halifax Shipyards	28 Apr 1995	22 Jan 1996	26 Oct 1996
NANAIMO	702	Halifax Shipyards	11 Aug 1995	17 May 1996	10 May 1997
EDMONTON	703	Halifax Shipyards	8 Dec 1995	16 Aug 1996	21 June 1997
SHAWINIGAN	704	Halifax Shipyards	26 Apr 1996	15 Nov 1996	14 June 1997
WHITEHORSE	705	Halifax Shipyards	26 July 1996	24 Feb 1997	17 Apr 1998
YELLOWKNIFE	706	Halifax Shipyards	7 Nov 1996	5 June 1997	18 Apr 1998
GOOSE BAY	707	Halifax Shipyards	22 Feb 1997	4 Sep 1997	26 July 1998
MONCTON	708	Halifax Shipyards	31 May 1997	5 Dec 1997	12 July 1998
SASKATOON	709	Halifax Shipyards	5 Sep 1997	30 Mar 1998	21 Nov 1998
BRANDON	710	Halifax Shipyards	6 Dec 1997	3 Sep 1998	6 June 1999
SUMMERSIDE	711	Halifax Shipyards	28 Mar 1998	4 Oct 1998	18 July 1999

Displacement, tons: 962 full load
Dimensions, feet (metres): 181.4 x 37.1 x 11.2 (55.3 x 11.3 x 3.4)
Main machinery: Diesel-electric; 4 Wärtsilä UD 23V12 diesels; 4 Jeumont ANR-53-50 alternators; 72 MW; 2 Jeumont CI 560L motors; 3,000 hp(m) (2.2 MW); 2 LIPS Z drive azimuth thrusters
Speed, knots: 15; 10 sweeping
Range, n miles: 5,000 at 8 kt
Complement: 31 (Patrol); 37 (MCM)

Guns: 1 Bofors 40 mm/60 Mk 5C. 2—12.7 mm MGs.
Countermeasures: Three positions on the sweep deck can receive a variety of mission payloads on a 20 ft ISO footprint: (a) Indal Technologies AN/SLQ 38 deep mechanical minesweeping system (MMS) (2 systems); (b) MDA Ltd. AN/SQS 511 heavy-weight high-definition Route Survey System (RSS) (4 systems); (c) ISE Ltd. Trailblazer 25 bottom object inspection vehicle (BOIV) (1 system); (d) ISE Ltd. HYSUB 50 deep seabed intervention system (DSIS) (1 system); (e) Fullerton and Sherwood Ltd. 6-man, 2-compartment containerised diving system (CDS) (2 systems); (f) Naval engineered 6-person accommodation module (6 modules); and (g) MDA Ltd. Interim Remote Minehunting and Disposal System (IRMDS) control van (1 system). In addition, a number of light-weight systems, not normally fitted on 20 ft ISO bedplates or in containers, can be embarked: (a) L3/Klein K5500 high-definition side scan sonar (2 systems); (b) L3/Klein K 3000 dual frequency side scan sonar (4 systems); and (c) Deep Ocean Engineering Inc. Phantom 4 remotely operated vehicle (P4ROV) (2 systems)
Radars: Surface search, Kelvin Hughes 6000; E/F-band.
Navigat on: Kelvin Hughes, I-band.

Programmes: Contract awarded to Fenco MacLaren on 15 May 1992. Halifax Shipyards is owned by Saint John Shipbuilding. Known as Maritime Coastal Defence Vessels (MCDV) combining MCM with general patrol duties.
Modernisation: Radars are to be replaced 2009-10.
Operational: Predominantly manned by reservists. Six on each coast (700, 701, 704, 707, 708 and 711 Atlantic, remainder Pacific). One ship per coast is kept at extended readiness on a rotational basis.



SASKATOON 10/2006, Michael Nitz / 1166835

SURVEY AND RESEARCH SHIPS

1 RESEARCH SHIP (AGORH)

Name	No	Builders	Launched	Commissioned
QUEST	AGOR 172	Burrard, Vancouver	9 July 1969	21 Aug 1969

Displacement, tons: 2,130 full load
Dimensions, feet (metres), 252.0 x 42 x 18.4 (76.8 x 12.8 x 5.6)
Main machinery: Diesel-electric; 2 Fairbanks-Morse diesel generators; 2 GE motors; 2 shafts
Speed, knots: 14.5 **Range, n miles:** 10,000 at 12 kt
Complement: 24 plus 21 scientists

Comment: Used by Defence Research and Development Canada (DRDC) for acoustic, hydrographic and general oceanographic research activities. Designed with special acoustic quieting (anechoic tiles, rotating machinery on resilient mounts, propulsion and service diesels resiliently mounted and acoustically enclosed, various operational quiet states). Capable of operating in summer ice conditions (Ice Class I). Based in Halifax, NS, operates mainly in North and Mid Atlantic. Mid-life update in 1997-99 included new communications and navigation equipment, improved noise insulation, updated deck cranes and hardware, and modernised laboratories.



QUEST 6/2008, Don Glencross / 1335646



RENARD 5/2008, RCN / 1335645

1 SAIL TRAINING SHIP (AXS)

Name	No	Builders	Launched
ORIOLE	YAC 3	Owens	4 June 1921

Displacement, tons: 92 full load
Dimensions, feet (metres): 102 x 19 x 9 (31.1 x 5.8 x 2.7)
Main machinery: 1 Cummins diesel; 165 hp (123 kW); 1 shaft
Speed, knots: 8
Complement: 6 (1 officer) plus 18 trainees

Comment: Commissioned in the Navy in 1948 and based at Esquimalt. Sail area (with spinnaker) 11,000 sq ft. Height of mainmast 94 ft (28.7 m), mizzen 55.2 ft (16.8 m).



ORIOLE 6/2008, RCN / 1335644

TRAINING SHIPS

8 ORCA CLASS (TRAINING SHIPS) (AXL)

ORCA 65	CARIBOU 57	WOLF 59	COUGAR 61
RAVEN 56	RENARD 58	GRIZZLY 60	MOOSE 62

Displacement, tons: 210 full load
Dimensions, feet (metres): 108.3 x 27.6 x 8.2 (33.0 x 8.4 x 2.5)
Main machinery: 2 Caterpillar 3516 diesels; 5,000 hp (3.7 MW); 2 shafts
Speed, knots: 21
Range, n miles: 750 at 15 kt
Complement: 4 plus 16 trainees
Guns: 1—12.7 mm MG (fitted for).
Radars: 2 Raytheon NSC 1810; I-band.

Comment: Contract awarded to Victoria Shipyards, BC, on 8 November 2004 for the construction of six training vessels. The option to build a further two has been exercised. Based on the Australian *Seahorse Mercator* design. Construction of the first vessel began on 8 September 2005 with formal acceptance on 17 November 2006. The eighth and final vessel was delivered in late 2008. All vessels based at Esquimalt.

AUXILIARIES

Notes: Plans to procure three Joint Support Ships were cancelled on 22 August 2008 on cost grounds; it is reported that the Statement of Requirement could not be met with the funds allocated. While the requirement to replace the AORs remains a high priority, extension of the project definition stage is likely to result in a delay of at least two years and a contract is unlikely to be let until late 2010.

2 PROTECTEUR CLASS (AORH)

Name	No	Builders	Laid down	Launched	Commissioned
PROTECTEUR	AOR 509	St John Dry Dock Co, NB	17 Oct 1967	18 July 1968	30 Aug 1969
PRESERVER	AOR 510	St John Dry Dock Co, NB	17 Oct 1967	29 May 1968	30 July 1970

Displacement, tons: 9,259 light; 25,676 full load
Dimensions, feet (metres): 564 x 76 x 34.3
 (171.9 x 23.2 x 10.46)
Main machinery: 2 Babcock & Wilcox boilers; 1 GE Canada turbine; 21,000 hp (15.7 MW); 1 shaft; bow thruster
Speed, knots: 21
Range, n miles: 4,100 at 20 kt; 7,500 at 11.5 kt
Complement: 335 (38 officers) including 45 aircrew
Cargo capacity: 13,036 tons fuel; 506 tons aviation fuel; 362 tons dry cargo; 300 tons ammunition; 2 cranes (15 ton lift)

Guns: 2 GE/GDC 20 mm/76 6-barrelled Vulcan Phalanx Mk 15. 8—12.7 mm MGs.
Countermeasures: Decoys: 6 Loral Hyco SRBOC chaff launchers.
ESM: Racal Kestrel. SLQ-504; radar warning.
Combat data systems: EDO Link 11; SATCOM WSC-3(V).
Radars: Surface search: Norden SPS 502 with Mk XII IFF.
Navigation: Racal Decca 1630 and 1629; I-band.
Tacan: URN 20.

Helicopters: 3 CH-124A or CH-124B Sea King

Comment: Four replenishment positions. Both have been used as flagships and troop carriers. They can carry military vehicles and bulk equipment for sealift purposes, also two LCVPs. For the Gulf deployment in 1991, the 76 mm gun was remounted, two Vulcan Phalanx and two Bofors 40/60 guns were fitted, four Plessey Shield chaff launchers and ESM equipment were provided for *Protecteur*. Bofors and 76 mm guns are unlikely to be fitted again. *Protecteur* transferred to the Pacific Fleet November 1992.



PROTECTEUR 10/2008, Michael Nitz / 1335643

4 SECHELT CLASS (YT/YP/YPT/YDT)

Name	No	Builders	Commissioned
SECHELT	YDT 610	West Coast Manly	10 Nov 1990
SIKANNI	YPT 611	West Coast Manly	10 Nov 1990
SOOKE	YDT 612	West Coast Manly	10 Nov 1990
STIKINE	YPT 613	West Coast Manly	10 Nov 1990

Displacement, tons: 290 full load
 Dimensions, feet (metres): 108.5 x 27.8 x 7.8 (33.1 x 8.5 x 2.4)
 Main machinery: 2 Caterpillar 3412T diesels, 1,080 hp (806 kW) sustained; 2 shafts
 Speed, knots: 12.5
 Complement: 4 or 12 (610 and 612)
 Sonars: Fitted for (610 and 612) L3/Klein K 3000 or K 5500 side scan sonar.

Comment: *Sikanni* and *Stikine* based at the Nanoose Bay Maritime Experimental and Test Range. *Sechelt* and *Sooke* converted to diving tenders in 1997 with a 6 place recompression chamber embarked. Diving operations supported to 80 m. Both have been used as control platforms for IRMDS and are also fitted for the Phantom 4 ROV. *Sechelt* based at Halifax, Nova Scotia, *Sooke* at Esquimalt, British Columbia.



SOOKE (with containerised diving system) 6/2002, CDF / 0528415

2 GRANBY CLASS (GENERAL PURPOSE DIVING TENDERS) (YDT)

YDT 11 GRANBY YDT 12

Displacement, tons: 110
 Dimensions, feet (metres): 99 x 20 x 8.5 (27.3 x 6.2 x 2.6)
 Main machinery: Diesel; 228 hp (170 kW); 1 shaft
 Speed, knots: 11
 Complement: 13
 Radars: Navigation Facal Decca; I-band
 Sonars: Fitted for L3/Klein K 5500.

Comment: Built to provide platform for underwater engineering and 100 m surface supplied diving operations. Secondary role is support of MCM operations and maritime explosive ordnance disposal operations. The ships are equipped to deploy the Deep Ocean Engineering Phantom 4 ROV. Both ships are to be replaced by new construction ships in about 2010.



GRANBY 11/1995, CDF / 0056682

TUGS AND TENDERS

13 COASTAL TUGS (YT/TL/YTR/YTM)

GLENDYNE YTB 640	LAWRENCEVILLE YTL 590	FIREBIRD YTR 561
GLENDALE YTB 641	PARKSVILLE YTL 591	FIREBRAND YTR 562
GLENEVIS YTB 642	LISTERVILLE YTL 592	TILLICUM YTM 555
GLENBROOK YTB 643	MERRICKVILLE YTL 593	
GLENSIDE YTB 644	GRANVILLE (ex-Marysville) YTL 594	

Comment: Glen class are 265 ton tugs built in the mid-1970s. Ville class are 70 ton tugs built in mid-1970s. The two YTRs are firefighting craft of 130 tons. The YTM is a 160 ton tug.



GLENDYNE 11/2008, RCN / 1335641

6 DIVING SUPPORT CRAFT (YDT)

FORTUNE ABALONE	RESOLUTE DUNGENESS	TONNERRE SCULPIN
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Displacement, tons: 2.2 full load
 Dimensions, feet (metres): 39 x 12.5 x 2.3 (11.9 x 3.8 x 0.7)
 Main machinery: 2 Caterpillar 3126TA diesels; 740 hp(m) (548 kW); 2 WMC 357 waterjets
 Speed, knots: 36
 Range, n miles: 600 at 29 kt
 Complement: 3 plus 14 divers
 Sonars: Fitted for L3/Klein K 3000 and K 5500 side scan sonars.

Comment: Built by Celtic Shipyards and delivered in early 1997. Landing craft bows for launching unmanned submersibles (fitted for Phantom 4 ROV). Boliard pull 6,560 lb. 1,000 kg hydraulic crane. *Fortune*, *Resolute* and *Tonnerre* based at Halifax, Nova Scotia, and the remainder at Esquimalt, British Columbia



DIVING SUPPORT CRAFT 11/2008, RCN / 1335647

COAST GUARD

Administration

Commissioner Canadian Coast Guard:
 George De Pont
 Deputy Commissioner
 Charles Gaudin

Establishment

In January 1962, the ships owned and operated by the Department of Transport along with vessels operated by some other government agencies were amalgamated into a new organisation to be known as the Canadian Coast Guard. This reflected the increase in duties that had occurred since 1945, especially in the Arctic. Further expansion and diversification followed: notably of the dedicated search and rescue facilities, vessel traffic management and pollution prevention and response.

On 1 April 1995, the fleet of the Department of Fisheries and Oceans was merged with the Coast Guard under the direction of the Minister of Fisheries and Oceans. Its headquarters are in Ottawa while operations are administered from regional offices in Vancouver, British Columbia (Pacific Region); Sarnia, Ontario (Central and Arctic Region); Quebec, Quebec (Quebec Region); Dartmouth, Nova Scotia, (Maritimes Region) and St John's, Newfoundland (Newfoundland Region).

Missions

The Canadian Coast Guard carries out the following missions:

1. Provides services for the safe, economical and efficient movement of ships in Canadian waters through the provision of aids to navigation systems, marine communication and traffic management and channel maintenance.
2. Provides icebreaking services and vessel escort through ice in the Arctic and, in Winter, in the Gulf and River St Lawrence and the Great Lakes.
3. Contributes to the manne component of the Search and Rescue programme and participates with the Department of National Defence in Joint Rescue Coordination Centres in Victoria, British Columbia; Trenton, Ontario and Halifax, Nova Scotia. Sponsors a Coast Guard Auxiliary and promotes pleasure craft safety.
4. Participates (from April 2005) as a Special Operating Agency in joint patrols with the Royal Canadian Mounted Police to combat organised crime and terrorism.
5. Carries out fisheries patrols and enforcement of fishery regulations.
6. Provides and operates hydrographic survey, oceanographic and fisheries research vessels.
7. Supports other departments, boards and agencies of the government through the provision of ships, aircraft and other maritime services.

Shipborne Aircraft

A total of 22 helicopters can be operated from vessels equipped with flight decks. There are 15 MBB BO 105, four Bell 212 and three Bell 206L. One Sikorsky S 61N is based at Prince Rupert, BC, in the Pacific Region. This aircraft cannot operate from current vessels. Helicopters are painted in Canadian Coast Guard markings.

Small Craft

In addition to the ships listed there are numerous lifeboats, surfboats, self-propelled barges and other small craft which are carried on board the larger vessels. Also excluded are shore-based work boats, floating oil spill boats, oil slick-lickers or any of the small boats which are available for use at the various Canadian Coast Guard Bases and lighthouse stations.

DELETIONS

2006	J E Bernier
2007	Simcoe
2008	Ile des Barques

HEAVY ICEBREAKERS

Notes: The programme for a new heavy icebreaker, to replace *Louis St Laurent* was announced in February 2008. The new ship, to be named *John G Diefenbaker*, is to enter service in 2017

1 GULF CLASS (TYPE 1300)

Name	Builders	Launched	Commissioned
LOUIS S ST LAURENT	Canadian Vickers Ltd, Montreal	3 Dec 1966	Oct 1969

Displacement, tons: 14,500 full load
Measurement, tons: 11,441 grt; 5,370 net
Dimensions, feet (metres): 392.7 × 80.1 × 32.2 (119.7 × 24.4 × 9.8)
Main machinery: Diesel-electric; 5 Krupp MaK 16 M 453C diesels; 39,400 hp(m) (28.96 MW); 5 Siemens alternators; 3 GE motors; 27,000 hp(m) (19.85 MW); 3 shafts; bow thruster
Speed, knots: 20
Range, n miles: 23,000 at 16 kt
Complement: 46 (13 officers) plus 38 scientists
Radars: Navigation: 3 Kelvin Hughes; I-band.
Helicopters: 2 BO 105 CBS

Comment: Larger than any of the former Coast Guard icebreakers. Two 49.2 ft (15 m) landing craft embarked. Mid-life modernisation July 1988 to early 1993 included replacing main engines with a diesel-electric system, adding a more efficient *Henry Larsen* type icebreaking bow (adds 8 m to length) with an air bubbler system and improving helicopter facilities with a fixed hanger. In addition the complement was reduced. Based in the Maritimes Region at Dartmouth, NS but to re-deploy to the Newfoundland and Labrador region in 2009. On 22 August 1994 became the first Canadian ship to reach the North Pole, in company with USCG *Polar Sea*. To be decommissioned in 2017.



LOUIS S ST LAURENT

6/1998, Harald Carstens / 0017665



LOUIS S ST LAURENT

6/1998, Harald Carstens / 0056691

1 TERRY FOX CLASS (TYPE 1200)

Name	Builders	Launched	Commissioned
TERRY FOX	Burrard Yarrow, Vancouver	1982	1983

Displacement, tons: 7,100 full load
Measurement, tons: 4,233 gross; 1,955 net
Dimensions, feet (metres): 288.7 × 58.7 × 27.2 (88 × 17.9 × 8.3)
Main machinery: 4 Werkspoor 8-cyl 4SA diesels; 23,200 hp(m) (17 MW); 2 shafts; cp props, bow and stern thrusters
Speed, knots: 16. **Range, n miles:** 1,920 at 15 kt
Complement: 24 (10 officers)
Radars: Navigation: 2 Racal Decca ARPA, 1 Furuno 1411; E/F- and I-bands.

Comment: Initially leased for two years from Gulf Canada Resources during the completion of *Louis S St Laurent* conversion but has now been retained. Commissioned in Coast Guard colours 1 November 1991 and purchased 1 November 1993. Based in the Newfoundland and Labrador region.



TERRY FOX

7/1997, M B MacKay / 0012133

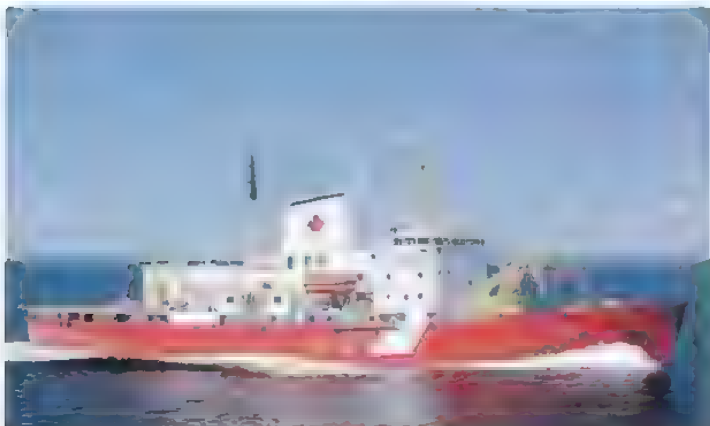
MEDIUM ICEBREAKERS

3 R CLASS (TYPE 1200)

Name	Builders	Launched	Commissioned
PIERRE RADISSON	Burrard, Vancouver	3 June 1977	June 1978
AMUNDSEN (ex-Sir John Franklin)	Burrard, Vancouver	10 Mar 1978	Mar 1979
DES GROSEILLIERS	Port Weller, Ontario	20 Feb 1982	Aug 1982

Displacement, tons: 6,400 standard; 8,180 (7,594, *Des Groseilliers*) full load
Measurement, tons: 5,910 gross; 1,678 net
Dimensions, feet (metres): 322 × 64 × 23.6 (98.1 × 19.5 × 7.2)
Main machinery: Diesel-electric; 6 Montreal Loco 251V-16F diesels; 17,580 hp (13.1 MW); 6 GEC generators; 11.1 MW sustained; 2 motors; 13,600 hp (10.14 MW); 2 shafts, bow thruster
Speed, knots: 16
Range, n miles: 15,000 at 13.5 kt
Complement: 38 (12 officers)
Radars: Navigation: Sperry; E/F- and I-band.
Helicopters: 1 Bell 212.

Comment: Based in the Quebec Region at Quebec. *Amundsen* underwent a major refit in 2003 to convert her to an Arctic research role



AMUNDSEN

6/2003, P Dionne / 0572428

1 MODIFIED R CLASS (TYPE 1200)

Name	Builders	Launched	Commissioned
HENRY LARSEN	Versatile Pacific SY, Vancouver, BC	3 Jan 1987	29 June 1988

Displacement, tons: 5,798 light; 8,290 full load
Measurement, tons: 6,172 gross; 1,756 net
Dimensions, feet (metres): 327.3 × 64.6 × 24 (99.8 × 19.7 × 7.3)
Main machinery: Diesel-electric; 3 Wärtsilä Vasa 16V32 diesel generators; 17.13 MW/60 Hz sustained; 3 motors; 16,320 hp(m) (12 MW); 3 shafts
Speed, knots: 16
Range, n miles: 15,000 at 13.5 kt
Complement: 31 (11 officers) plus 20 spare berths
Radars: Navigation: Racal Decca Bridgemaster; I-band.
Helicopters: 1 Bell 212.

Comment: Contract date 25 May 1984, laid down 23 August 1985. Although similar in many ways to the R class she has a different hull form particularly at the bow and a very different propulsion system. Fitted with Wärtsilä air bubbling system. Based at St John's in the Newfoundland and Labrador Region. Engine room fire in 1998 put her out of commission for some time.



HENRY LARSEN

3/1999, Canadian Coast Guard / 0056707

LIGHT ICEBREAKERS

6 MARTHA L BLACK CLASS (TYPE 1100)

Name	Builders	Commissioned
MARTHA L BLACK	Versatile Pacific, Vancouver, BC	30 Apr 1986
GEORGE R PEARKES	Versatile Pacific, Vancouver, BC	17 Apr 1986
EDWARD CORNWALLIS	Marine Industries Ltd, Tracy, Quebec	14 Aug 1986
SIR WILLIAM ALEXANDER	Marine Industries Ltd, Tracy, Quebec	13 Feb 1987
SIR WILFRID LAURIER	Canadian Shipbuilding Ltd, Ontario	15 Nov 1986
ANN HARVEY	Halifax Industries Ltd, Halifax, NS	29 June 1987

Displacement, tons: 4,662 full load
Measurement, tons: 3,818 (*Martha L Black*); 3,809 (*George R Pearkes*); 3,812 (*Sir Wilfrid Laurier*); 3,727 (*Edward Cornwallis* and *Sir William Alexander*); 3,823 (*Ann Harvey*) gross
Dimensions, feet (metres): 272.2 × 53.1 × 18.9 (83 × 16.2 × 5.8)
Main machinery: Diesel-electric; 3 Bombardier/Alco 12V-251 diesels; 8,019 hp (6 MW), sustained; 3 Canadian GE generators; 6 MW; 2 Canadian GE motors; 7,040 hp (5.25 MW), 2 shafts; bow thrusters
Speed, knots: 15.5
Range, n miles: 6,500 at 15 kt
Complement: 25 (10 officers)
Radars: Navigation: Racal Decca Bridgemaster; I-band.
Helicopters: 1 light type, such as Bell 206L.

Comment: *Black* based in the Quebec Region at Quebec, *Cornwallis* and *Alexander* in the Maritimes Region at Dartmouth, *Ann Harvey* and *Pearkes* in the Newfoundland and Labrador Region at St John's and *Laurier* in the Pacific Region at Victoria. The feasibility of converting *Cornwallis* to a survey ship was investigated but not taken forward.



GEORGE R PEARKES 4/1996, van Ginderen Collection / 0056692



SIR WILLIAM ALEXANDER 8/1998, M B MacKay / 0017668

1 GRIFFON CLASS (TYPE 1100)

Name	Builders	Commissioned
GRIFFON	Davie Shipbuilding, Lauzon	Dec 1970

Displacement, tons: 3,096 full load
Measurement, tons: 2,212 gross; 752 net
Dimensions, feet (metres): 233.9 × 49 × 15.5 (71.3 × 14.9 × 4.7)
Main machinery: Diesel-electric; 4 Fairbanks-Morse 38DB-1/8-12 diesel generators; 5.8 MW sustained; 2 motors; 3,982 hp(m) (2.97 MW); 2 shafts
Speed, knots: 14
Range, n miles: 5,600 at 10 kt
Complement: 25 (9 officers)
Radars: Navigation: 2 Kelvin Hughes, I-band.
Helicopters: Platform for 1 light type, such as Bell 206L.

Comment: Based in the Central and Arctic Region at Prescott, Ontario.



GRIFFON 7/1998, van Ginderen Collection / 0017669

MULTIROLE VESSELS

2 SAMUEL RISLEY CLASS (TYPE 1050)

Name	Builders	Commissioned
SAMUEL RISLEY	Vito Construction Ltd, Delta, BC	4 July 1985
EARL GREY	Pictou Shipyards Ltd, Pictou, NS	30 May 1986

Displacement, tons: 2,935 full load
Measurement, tons: 1,988 gross (*Grey*); 1,967 gross (*Risley*); 642 net (*Grey*); 649.5 net (*Risley*)
Dimensions, feet (metres): 228.7 × 44.9 × 19 (69.7 × 13.7 × 5.8)
Main machinery: Diesel-electric; 4 Wärtsilä 4SA 12-cyl diesels; 8,644 hp(m) (6.4 MW) (*Samuel Risley*); 4 Deutz 4SA 9-cyl diesels; 8,836 hp(m) (6.5 MW) (*Earl Grey*); 2 shafts, cp props
Speed, knots: 13. **Range, n miles:** 18,000 at 12 kt
Complement: 22 (9 officers)
Radars: Navigation: 2 Racal Decca, I-band

Comment: *Risley* based in the Central and Arctic Region at Pary Sound, Ontario, *Grey* in the Maritimes Region at Charlottetown, PEI.



SAMUEL RISLEY 4/1993, Canadian Coast Guard / 0056694

2 PROVO WALLIS CLASS (TYPE 1000)

Name	Builders	Commissioned
BARTLETT	Marine Industries, Sorel	Dec 1969
PROVO WALLIS	Marine Industries, Sorel	Oct 1969

Displacement, tons: 1,620 full load (*Bartlett*)
Measurement, tons: 1,317 gross; 491 net
Dimensions, feet (metres): 189.3; 209 (*Provo Wallis*) × 42.5 × 15.4 (57.7; 63.7 × 13 × 4.7)
Main machinery: 2 National Gas 6-cyl diesels; 2,100 hp (1.55 MW), 2 shafts, LIPS cp props
Speed, knots: 12.5. **Range, n miles:** 3,300 at 11 kt
Complement: 24 (9 officers)
Radars: Navigation: 2 Kelvin Hughes; I-band

Comment: Both ships based in Pacific Region at Victoria. *Bartlett* was modernised in 1988 and *Provo Wallis* completed one year modernisation at Marystown, Newfoundland at the end of 1990. Work included lengthening the hull by 6 m, installing new equipment and improving accommodation.



PROVO WALLIS 6/2008, M Mazumdar / 1335247

1 TRACY CLASS (TYPE 1000)

Name	Builders	Commissioned
TRACY	Port Weller Drydocks, Ontario	17 Apr 1968

Displacement, tons: 1,300 full load
Measurement, tons: 963 gross; 290 net
Dimensions, feet (metres): 181.1 × 38 × 12.1 (55.2 × 11.6 × 3.7)
Main machinery: Diesel-electric; 2 Fairbanks-Morse 38DB-1/8-8 diesel generators; 1.94 MW sustained; 2 motors; 2,000 hp (1.49 MW); 2 shafts
Speed, knots: 13. **Range, n miles:** 5,000 at 11 kt
Complement: 23 (8 officers)
Radars: Navigation: Kelvin Hughes, I-band.

Comment: Based in Quebec Region at Sorel



TRACY 4/1999, Canadian Coast Guard / 0056715

OFFSHORE PATROL VESSELS

1 SIR WILFRED GRENFELL (TYPE 600)

Name	Builders	Commissioned
SIR WILFRED GRENFELL	Marystown SY, Newfoundland	1987

Displacement, tons: 3,753 full load
Measurement, tons: 2,403 gross; 664.5 net
Dimensions, feet (metres): 224.7 × 49.2 × 16.4 (68.5 × 15 × 5)
Main machinery: 4 Deutz 4SA (2-16-cyl, 2-9-cyl) diesels; 12,862 hp(m) (9.46 MW); 2 shafts; cp props
Speed, knots: 16 **Range, n miles:** 11,000 at 14 kt
Complement: 20

Comment: Built on speculation in 1984–85. Modified to include an 85 tonnes towing winch and additional SAR accommodation and equipment. Ice strengthened hull. Based in the Newfoundland Region and Labrador at St John's.



SIR WILFRED GRENFELL 8/1997, M B MacKay / 0012137

1 LEONARD J COWLEY CLASS (TYPE 600)

Name	Builders	Commissioned
LEONARD J COWLEY	Manly Shipyard, RivTow Ind, Vancouver BC	June 1985

Displacement, tons: 2,080 full load
Measurement, tons: 2,244 grt; 655 net
Dimensions, feet (metres): 236.2 × 45.9 × 16.1 (72 × 14 × 4.9)
Main machinery: 2 Wärtsilä Nohab F 312A diesels; 2,325 hp(m) (1.71 MW); 1 shaft; bow thruster
Speed, knots: 12
Range, n miles: 12,000 at 12 kt
Complement: 19 (7 officers)
Guns: 2—12.7 mm MGs.
Radars: Surface search: Sperry 340; E/F-band.
Navigation: Sperry ARPA; I-band.
Helicopters: Capability for 1 light.

Comment: Based in Newfoundland and Labrador Region at St John's.



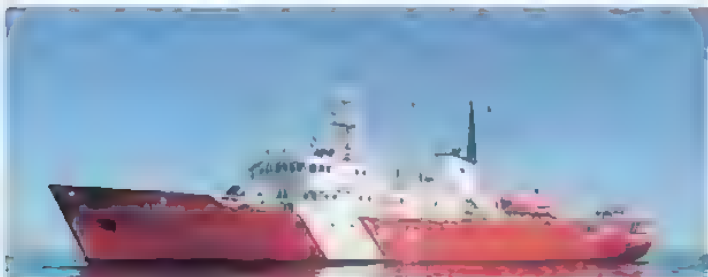
LEONARD J COWLEY 9/1996, D Maginley / 0058698

2 CAPE ROGER CLASS (TYPE 600)

Name	Builders	Commissioned
CYGNUS	Marystown SY, Newfoundland	May 1981
CAPE ROGER	Ferguson Industries, Pictou NS	Aug 1977

Displacement, tons: 1,465 full load
Measurement, tons: 1,255 grt; 357 net
Dimensions, feet (metres): 205 × 40 × 13 (62.5 × 12.2 × 4.1)
Main machinery: 2 Wärtsilä Nohab F 212V diesels, 4,461 hp(m) (3.28 MW); 1 shaft; bow thruster
Speed, knots: 13 **Range, n miles:** 10,000 at 12 kt
Complement: 19
Guns: 2—12.7 mm MGs.
Helicopters: Capability for 1 light.

Comment: Cygnus based in Maritimes Region at Dartmouth and Cape Roger in Newfoundland and Labrador Region at St John's. Half-life refits completed in 1995–97.



CYGNUS 9/1999, Canadian Coast Guard / 0056704

MIDSHORE PATROL VESSELS

Notes: The acquisition of 12 40 m mid-shore patrol vessels was approved in the 2007 budget. Eight of these vessels are to be used for conservation and protection duties in the Maritimes, Quebec and Pacific regions. The remaining four vessels are to be used for maritime security duties on the St Lawrence Seaway-Great Lakes system and are to be operated jointly by the Coast Guard and by the RCMP. Bids for the design were re-invited in September 2007 for submission by March 2008. A contract is expected in 2009.

1 TANU CLASS (TYPE 500)

Name	Builders	Commissioned
TANU	Yarows Ltd, Victoria BC	Sep 1968

Displacement, tons: 925 full load
Measurement, tons: 746 grt; 203 net
Dimensions, feet (metres): 164.3 × 3.2 × 15.1 (50.1 × 9.8 × 4.6)
Main machinery: 2 Fairbanks-Morse diesels; 2,824 hp (1.96 MW); 1 shaft
Speed, knots: 11 **Range, n miles:** 5,000 at 11 kt
Complement: 16 (6 officers)
Guns: 2—12.7 mm MGs

Comment: Based in Pacific Region at Patricia Bay



TANU 7/2004, M K Mitchell / 1042125

2 LOUISBOURG CLASS (TYPE 500)

Name	Builders	Commissioned
LOUISBOURG	Breton Industries, Port Hawkesbury, NS	1977
LOUIS M LAUZIER	Breton Industries, Port Hawkesbury, NS	1976

Displacement, tons: 460 full load
Measurement, tons: 295 grt; 65 net
Dimensions, feet (metres): 125 × 27.2 × 8.5 (38.1 × 8.3 × 2.6)
Main machinery: 2 MTU 12V 538TB91 diesels; 4,600 hp(m) (3.38 MW); 2 shafts
Speed, knots: 13.5 **Range, n miles:** 3,840 at 10 kt
Complement: 14
Guns: 2—12.7 mm MGs.

Comment: Both based in the Quebec Region. Louis M Lauzier returned to service from charter (to Memorial University) in 2005



LOUISBOURG 9/1999, Canadian Coast Guard / 0056708

1 ARROW POST CLASS

Name	Builders	Commissioned
ARROW POST	Hike Metal Products, Wheatley, Ontario	1991

Measurement, tons: 228 gross; 93.1 net
Dimensions, feet (metres): 94.8 × 28.9 × 7 (28.9 × 8.8 × 7)
Main machinery: 1 Caterpillar 3512 diesel; 711 hp (954 kW); 1 shaft
Speed, knots: 12 **Range, n miles:** 2,800 at 11 kt
Complement: 6 (3 officers)

Comment: Based in Pacific Region at Prince Rupert, British Columbia. To be replaced by new midshore patrol vessel



ARROW POST 6/2004, M K Mitchell / 1042124

1 CUTTER (TYPE 200)

Name	Builders	Commissioned
HARP	Georgetown SY, PEI	12 Dec 1986

Displacement, tons: 225 full load
 Measurement, tons: 179 gross, 69 net
 Dimensions, feet (metres): 76.1 x 24.9 x 8.2 (23.2 x 7.6 x 2.5)
 Main machinery: 2 Caterpillar 3408 diesels, 850 hp (634 kW); 2 Kort nozzle props
 Speed, knots: 10. Range, n miles: 500 at 10 kt
 Complement: 7 (3 officers)
 Radars: Navigation: Sperry Mk 1270; I-band.

Comment: Ordered 26 April 1985. Ice strengthened hull. Based in Newfoundland and Labrador Region at St Anthony.



TYPE 200 CUTTER 3/1999, Canadian Coast Guard / 0056706

1 GORDON REID CLASS (TYPE 500)

Name	Builders	Commissioned
GORDON REID	Versatile Pacific, Vancouver	Oct 1990

Measurement, tons: 836 gross, 247 net
 Dimensions, feet (metres): 163.9 x 36.1 x 13.1 (49.9 x 11 x 4)
 Main machinery: 4 Deutz SBV-6M-628 diesels; 2,475 hp(m) (1.82 MW) sustained, 2 shafts, bow thruster, 400 hp (294 kW)
 Speed, knots: 15. Range, n miles: 2,500 at 15 kt
 Complement: 14 (6 officers)

Comment: Designed for long-range patrols along the British Columbian coast out to 200 mile limit. Has a stern ramp for launching Zodiac Hurricane 733 rigid inflatables in up to Sea State 6. The Zodiac has a speed of 50 kt and is radar equipped. Based in the Pacific Region at Victoria.



GORDON REID 6/2004, M K Mitchell / 1042122

NAVAIDS VESSELS

1 NAHIDIK CLASS (TYPE 700)

Name	Builders	Commissioned
NAHIDIK	Allied Shipbuilders Ltd, N Vancouver	1974

Displacement, tons: 1,125 full load
 Measurement, tons: 856 gross, 392 net
 Dimensions, feet (metres): 175.2 x 49.9 x 6.6 (53.4 x 15.2 x 2)
 Main machinery: 2 Detroit diesels, 4,290 hp (3.2 MW); 2 shafts
 Speed, knots: 14. Range, n miles: 5,000 at 10 kt
 Complement: 12 (6 officers)

Comment: Based in Central and Arctic Region at Hay River, North West Territories



NAHIDIK 6/2004, Canadian Coast Guard / 1042126

1 DUMIT CLASS (TYPE 700)

Name	Builders	Commissioned
DUMIT	Allied Shipbuilders Ltd, N Vancouver	July 1979

Displacement, tons: 629 full load
 Measurement, tons: 569 gross; 176 net
 Dimensions, feet (metres): 160.1 x 40 x 5.2 (48.8 x 12.2 x 1.6)
 Main machinery: 2 Caterpillar 3512TA; 2,420 hp (1.8 MW) sustained; 2 shafts
 Speed, knots: 13.5
 Range, n miles: 7,700 at 11 kt
 Complement: 10

Comment: Similar to Eckaloo. Based in Central and Arctic Region at Hay River, North West Terr tones.



DUMIT 7/1996, Canadian Coast Guard / 0017671

1 TEMBAH CLASS (TYPE 700)

Name	Builders	Commissioned
TEMBIAH	Allied Shipbuilders Ltd, N Vancouver	Oct 1963

Measurement, tons: 189 gross; 58 net
 Dimensions, feet (metres): 123 x 25.9 x 3 (37.5 x 7.9 x 0.9)
 Main machinery: 2 Cummins diesels, 500 hp (373 kW); 2 shafts
 Speed, knots: 12
 Range, n miles: 1,300 at 10 kt
 Complement: 9

Comment: Based in Central and Arctic Region at Hay River, North West Territories.



TEMBIAH 4/1999, Canadian Coast Guard / 0056714

1 ECKALOO CLASS (TYPE 700)

Name	Builders	Commissioned
ECKALOO	Vancouver SY Ltd	31 Aug 1988

Displacement, tons: 534 full load
 Measurement, tons: 661 gross; 213 net
 Dimensions, feet (metres): 160.8 x 44 x 4 (49 x 13.4 x 1.2)
 Main machinery: 2 Caterpillar 3512TA, 2,420 hp (1.8 MW) sustained; 2 shafts
 Speed, knots: 13
 Range, n miles: 2,000 at 11 kt
 Complement: 10
 Helicopters: Platform for 1 Bell 206L/L-1.

Comment: Replaced vessel of the same name. Similar design to Dumit. Based in Central and Arctic Region at Hay River, North West Territories.



ECKALOO 9/1994, van Ginderen Collection / 0096697

SPECIAL ROLE VESSELS

1 VAKTA CLASS

Name	Builders	Commissioned
VAKTA	Hike Metal Products Ltd, Wheatley, Ontario	2004

Measurement, tons: 34 gross, 26 net
 Dimensions, feet (metres): 53.5 x 14.8 x 9.8 (16.3 x 4.5 x 3.0)
 Main machinery: 2 Caterpillar diesels; 980 hp (731 kW); 2 shafts
 Speed, knots: 21
 Complement: 3

Comment: Replaced *Nemao* in 2005. Provides navigational aids and SAR services on Lake Winnipeg. Based in the Central and Arctic Region at Gimli, Manitoba.



VAKTA 6/2005, Canadian Coast Guard / 1151242

5 COVE ISLAND CLASS (TYPE 800)

Name	Builders	Commissioned
COVE ISLE	Canadian D and D, Kingston, Ontario	1980
GULL ISLE	Canadian D and D, Kingston, Ontario	1980
TSEKOA II	Allied Shipbuilders, Vancouver	1984
ILE SAINT-OURS	Breton Industries, Port Hawkesbury, NS	15 May 1986
CARIBOU ISLE	Breton Industries, Port Hawkesbury, NS	16 June 1986

Displacement, tons: 138 full load
 Measurement, tons: 92 gross, 36 net
 Dimensions, feet (metres): 75.5 x 19.7 x 4.4 (23 x 6 x 1.4)
 Main machinery: 2 Detroit 8V-92 diesels; 475 hp (354 kW); 2 shafts
 Speed, knots: 11
 Range, n miles: 1,800 at 11 kt
 Complement: 5
 Radars: Navigation: Sperry 1270; I-band.

Comment: Details given are for the last two. *Cove Isle* and *Gull Isle* are 3 m shorter in length; *Tsekoa II* is 3.7 m longer. *Cove Isle*, *Gull Isle* and *Caribou Isle* are based in the Central and Arctic Region at Parry Sound, Amherstburg and Prescott respectively. *Tsekoa II* is based in the Pacific at Victoria. *Ile Saint-Ours* is based in the Quebec Region at Sorel. *Ile des Barques* was decommissioned in 2008.



ILE SAINT-OURS 9/1994, van Ginderen Collection / 0056696

4 CUTTERS (TYPE 400)

Name	Builders	Commissioned
POINT HENRY	Breton Industrial and Machinery, Pt Hawkesbury, NS	1980
ISLE ROUGE	Breton Industrial and Machinery, Pt Hawkesbury, NS	1980
POINT RACE	Breton Industrial and Machinery, Pt Hawkesbury, NS	1982
CAPE HURD	Breton Industrial and Machinery, Pt Hawkesbury, NS	1982

Displacement, tons: 97 full load
 Measurement, tons: 57 gross, 14 net
 Dimensions, feet (metres): 70.8 x 18 x 5.6 (21.6 x 5.5 x 1.7)
 Main machinery: 2 MTU 8V 396TC82 diesels; 1,740 hp(m) (1.28 MW) sustained; 2 shafts
 Speed, knots: 20
 Range, n miles: 950 at 12 kt
 Complement: 5

Comment: Aluminum alloy hulls. *Point Henry* and *Point Race* based in Pacific Region at Prince Rupert and Campbell River respectively; *Cape Hurd* and *Isle Rouge* in Central and Arctic Region at Amherstburg.



POINT RACE 6/2001, Canadian Coast Guard / 0176356

3 POST CLASS

Name	Builders	Commissioned
ATLIN POST	Philbrooks Shipyard Ltd, Sidney, BC	1975
KITMAT II	Philbrooks Shipyard Ltd, Sidney, BC	1974
SOOKE POST	Philbrooks Shipyard Ltd, Sidney, BC	1973

Measurement, tons: 57 gross; 15 net
 Dimensions, feet (metres): 65.0 x 17.1 x 7 (19.8 x 5.2 x 7)
 Main machinery: 2 General Motors V12-71 diesels; 800 hp (596 kW); 2 shafts
 Speed, knots: 15
 Range, n miles: 400 at 12 kt
 Complement: 4 (3 officers)

Comment: *Atlin Post* based at Patricia Bay, British Columbia, *Kitmat II* at Prince Rupert, British Columbia and *Sooke Post* at Port Hardy, BC. To be replaced by new midshore patrol vessels.



ATLIN POST 6/2001, Canadian Coast Guard / 0176355

1 CUMELLA CLASS

Name	Builders	Commissioned
CUMELLA	A F Theriault & Son, Meteghan, NS	1983

Measurement, tons: 80 gross; 19 net
 Dimensions, feet (metres): 76.1 x 15.7 x 7 (23.2 x 4.8 x 7)
 Main machinery: 2 General Motors V6-24L diesels; 1,680 hp (1.25 MW); 2 shafts
 Speed, knots: 15
 Range, n miles: 600 at 12 kt
 Complement: 4 (2 officers)

Comment: Based in Maritimes Region at Grand Menan, New Brunswick. To be replaced by new midshore patrol vessel.



CUMELLA 6/2001, Canadian Coast Guard / 0176354

1 QUÉBÉCOIS CLASS

Name *Builders* *Commissioned*
E P LE QUÉBÉCOIS Les Chantiers Maritimes, Paspébiac, Quebec 1968

Measurement, tons: 186 gross; 32 net
Dimensions, feet (metres): 78.1 x 23.3 x 7 (28.3 x 7.1 x 7)
Main machinery: 1 Caterpillar 3509 diesel; 509 hp (380 kW); 1 shaft
Speed, knots, 11 Range, n miles: 2,800 at 9 kt
Complement: 8 (4 officers)

Comment: Based at Sept Îles, Quebec. Refitted in 1994. To be replaced by new midshore patrol vessel.



E P LE QUÉBÉCOIS 6/2002, Canadian Coast Guard / 0578823

5 SAR CRAFT (TYPE 100)

Name *Builders* *Commissioned*
CG 119 Eastern Equipment, Montreal 1973
MALLARD Matsumoto Shipyard, Vancouver, BC Feb 1986
SKUA Matsumoto Shipyard, Vancouver, BC Mar 1986
OSPREY Matsumoto Shipyard, Vancouver, BC May 1986
STERNE Matsumoto Shipyard, Vancouver, BC Mar 1987

Measurement, tons: 15 gross
Dimensions, feet (metres): 40.8 x 13.2 x 4.2 (12.4 x 4.1 x 1.3)
Main machinery: 2 Mitsubishi diesels; 637 hp (475 kW); 2 shafts
Speed, knots: 26. Range, n miles: 300 at 18 kt
Complement: 6 (3 officers)

Comment: CG 119 (laid up) based in Central and Arctic Region at Prescott; *Sterne* (laid up) is based in Quebec Region at Quebec and *Mallard*, *Skua* (laid up) and *Osprey* in the Pacific Region at Powell River, Ganges and Kitsilano respectively. CG 119 is structurally different to and slower than the remainder



CG 119 1990, van Ginderen Collection / 0504968

SAR LIFEBOATS

Notes: There are also at least 15 Inshore Rescue boats with CG numbers.

10 LIFEBOATS (TYPE 300A)

Name *Builders* *Commissioned*
BICKERTON Halmatic, Havant Aug 1989
SPINDRIFT Georgetown, PEI Oct 1993
SPRAY Industrie Raymond, Quebec Sep 1994
COURTENAY BAY (ex-Spuma) Industrie Raymond, Quebec Oct 1994
W JACKMAN (ex-Cap Aux Meules) Industrie Raymond, Quebec Sep 1995
W G GEORGE Industrie Raymond, Quebec Sep 1995
CAP AUX MEULES Hike Metal Products Ltd, Ontario Oct 1996
CLARK'S HARBOUR Hike Metal Products Ltd, Ontario Sep 1996
SAMBRO Hike Metal Products Ltd, Ontario Jan 1997
WESTPORT Hike Metal Products Ltd, Ontario May 1997

Measurement, tons: 34 gross
Dimensions, feet (metres): 52 x 17.5 x 4.6 (15.9 x 5.3 x 1.5)
Main machinery: 2 Caterpillar 3408BTA diesels; 1,070 hp (786 kW) sustained; 2 shafts
Speed, knots: 16-20 Range, n miles: 200 at 12 kt
Complement: 4 (2 officers)
Radars: Navigation: Furuno; I-band.

Comment: Seven based in Maritimes Region, two in Newfoundland and Labrador Region, one in Quebec Region. *Bickerton* has GRP hull, remainder aluminum



CLARKS HARBOUR 8/1996, Kathy Johnson / 0056102

31 LIFEBOATS (TYPE 300B)

Name *Builders* *Commissioned*
THUNDER CAPE Metalcraft Marine, Kingston Aug 2000
CAPE SUTIL Metalcraft Marine, Kingston Dec 1998
CAPE CALVERT Metalcraft Marine, Kingston Aug 1999
CAPE ST JAMES Metalcraft Marine, Kingston Nov 1999
CAPE MERCY Metalcraft Marine, Kingston Dec 2000
CAPE LAMBTON Metalcraft Marine, Kingston July 2001
CAPE STORM Metalcraft Marine, Kingston Nov 2002
CAPE FOX Victoria Shipyard Co Ltd, Victoria, BC May 2003
CAPE NORMAN Victoria Shipyard Co Ltd, Victoria, BC May 2003
CAPE DE RABAST Victoria Shipyard Co Ltd, Victoria, BC Aug 2003
CAPE ROZIER Victoria Shipyard Co Ltd, Victoria, BC Aug 2003
CAPE MUDGE Victoria Shipyard Co Ltd, Victoria, BC Nov 2003
CAPE FAREWELL Victoria Shipyard Co Ltd, Victoria, BC Nov 2003
CAPE COCKBURN Victoria Shipyard Co Ltd, Victoria, BC Jan 2004
CAPE SPRY Victoria Shipyard Co Ltd, Victoria, BC Apr 2004
CAPE NORD Victoria Shipyard Co Ltd, Victoria, BC Apr 2004
CAPE BRETON Victoria Shipyard Co Ltd, Victoria, BC Apr 2004
CAPE MCKAY Victoria Shipyard Co Ltd, Victoria, BC June 2004
CAPE CHAILLON Victoria Shipyard Co Ltd, Victoria, BC Oct 2004
CAPE PROVIDENCE Victoria Shipyard Co Ltd, Victoria, BC Oct 2004
CAPE COMMODORE Victoria Shipyard Co Ltd, Victoria, BC Oct 2004
CAPE ANN Victoria Shipyard Co Ltd, Victoria, BC Nov 2004
CAPE CAUTION Victoria Shipyard Co Ltd, Victoria, BC Dec 2004
CAPE DISCOVERY Victoria Shipyard Co Ltd, Victoria, BC Jan 2005
CAPE HEARNE Victoria Shipyard Co Ltd, Victoria, BC Feb 2005
CAPE DUNDAS Victoria Shipyard Co Ltd, Victoria, BC Mar 2005
CAPTOURMENTE Victoria Shipyard Co Ltd, Victoria, BC Apr 2005
CAP D'ESPOIR Victoria Shipyard Co Ltd, Victoria, BC June 2005
CAP PERCÉ Victoria Shipyard Co Ltd, Victoria, BC Aug 2005
CAPE EDENSAW Victoria Shipyard Co Ltd, Victoria, BC Sep 2005
CAPE KUPER Victoria Shipyard Co Ltd, Victoria, BC Oct 2005

Measurement, tons: 33.8 gross
Dimensions, feet (metres): 47.9 x 14 x 4.5 (14.6 x 4.27 x 1.37)
Main machinery: 2 Caterpillar 3186 diesels; 905 hp (675 kW) sustained; 2 shafts
Speed, knots: 22-25
Range, n miles: 200 n miles
Complement: 4
Radars: Navigation: Furuno 1942; I-band.

Comment: Multitask medium endurance lifeboat



THUNDER CAPE 2000, Canadian Coast Guard / 0104265

AIR CUSHION VEHICLES

Notes: Plans to acquire a new Air Cushion to replace *Waban Aku* were announced in 2007. The new craft, to enter service in 2009, is expected to be similar to the 28.5 m AP1-88/400 type that is already in service.

1 AP1-88/200 TYPE

Name WABAN-AKI **Builders** Westland Aerospace **Commissioned** 16 July 1987

Displacement, tons: 47.6 (light)
Dimensions, feet (metres): 80.4 x 36.7 x 19.6 (24.5 x 11.2 x 6.6, (height on cushion))
Main machinery: 4 Deutz diesels, 2,394 hp(m) (1.76 MW)
Speed, knots: 50; 35 cruising
Complement: 4 (3 officers)
Cargo capacity: 12 tons

Comment: *Waban-Aki* is based at Trois Rivières and capable of year round operation as a Navaid Tender for flood control operations in the St Lawrence. Fitted with a hydraulic crane. The name means People of the Dawn.



WABAN-AKI 4/1999, Canadian Coast Guard / 0056717

2 AP1-88/400 TYPE

SIPU MUIN **SIYAY**

Displacement, tons: 69 full load
Dimensions, feet (metres): 93.5 x 39.4 (28.5 x 12)
Main machinery: 4 Caterpillar 3412 TTA diesels; 3,650 hp(m) (2.68 MW) sustained
Speed, knots: 50; 35 cruising
Complement: 4
Cargo capacity: 22.6 tons

Comment: Contract awarded to GKN Westland in May 1996. Built at Hike Metal Products, Wheatley, Ontario and completed in August and December 1998 respectively. Well-deck size 8.2 x 4.6 m. There is a 5,000 kg load crane. *Sipu Mui* is based at Trois Rivières and the second at Sea Island, BC



SIPU MUIN 5/1998, Canada Coast Guard / 0017677

1 AP1-88/100 TYPE (TRAINING SHIP) (AXL)

PENAC (ex-Liv Viking)

Displacement, tons: 45.5 full load
Dimensions, feet (metres): 80.4 x 39.0 (24.5 x 11.9)
Main machinery: 2 Deutz BF 12L513 diesels, 1,050 hp(m) (785 kW) 2 MTU 12V 183TB32 diesels; 1,640 hp(m) (1.25 MW) sustained
Speed, knots: 50; 35 cruising
Complement: 7
Cargo capacity: 5.3 tons

Comment: Built by Hoverworks Ltd, Isle of Wight, UK in 1984. Procured by Canadian Coast Guard in 2004. Based in Vancouver, BC.



PENAC 6/2004, Canadian Coast Guard / 1042123

FISHERY RESEARCH SHIPS

10 + 3 FISHERY RESEARCH SHIPS

Name	Commissioned	Based	Measurement, tons
ALFRED NEEDLER	Aug 1982	Dartmouth, NS	925 grt
WILFRED TEMPLEMAN	Mar 1982	St John's, NL	925 grt
W E RICKER (ex-Callistratus)	Dec 1978	Nanaimo, BC	1,040 grt
TELEOST	1996	St John's, NL	
PANDALUS III	1986	St Andrew's, NB	13 grt
SHAMOOK	1976	St John's, NL	187 grt
OPILIO	1989	Shippagan, NB	74 grt
CALANUS II	1991	Rimouski, QC	160 grt
NEOCALIGUS	2001	Nanaimo, QC	98 grt

Comment: First four are classified as Offshore Fishery Science vessels, remainder as Near-shore Fishery Research vessels. *Shark* was decommissioned in 2006. Three new 87 m offshore fishery science vessels were funded in the 2006 and 2007 budgets. Bids for the design are expected to be sought in 2009 and the ships are to enter service 2011-12



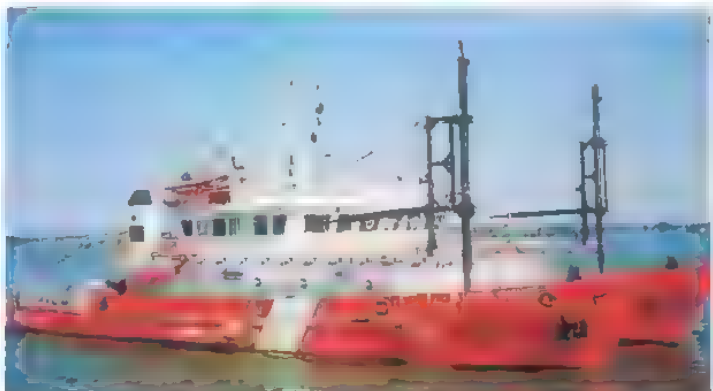
TELEOST 4/1999, Canadian Coast Guard / 0056713

SURVEY AND RESEARCH SHIPS

7 + 1 RESEARCH SHIPS

Name	Commissioned	Based	Displacement, tons
MATTHEW	1990	Dartmouth, NS	950
F C G SMITH	1986	Quebec, QC	300
HUDSON	1983	Dartmouth, NS	3,740
JOHN PTULLY	1985	Patricia Bay, BC	1,800
VECTOR	1967	Patricia Bay, BC	520
LIMNOS	1968	Burlington, ON	
FREDERICK G CREED	1988	Rimouski, QC	81

Comment: *Hudson* and *Tully* are classified as Offshore Oceanographic Science vessels. *Hudson* is to be replaced by a new 90 m vessel in 2013. *Matthew*, *Frederick G Creed*, *Limnos* and *Vector* are classified as Hydrographic Survey Vessels. *F C G Smith* is classified as a Channel Survey and Sounding Vessel



F C G SMITH 7/1998, C D Maginley / 0017673

ROYAL CANADIAN MOUNTED POLICE

Notes: The Marine Branch of the Royal Canadian Mounted Police is responsible for enforcement of Customs, Immigration, Shipping and Drug regulations as well as for standard policing duties in areas that are difficult to access by land. *Simmonds*, a 17 m catamaran, is on loan to the Canadian Coast Guard in the Great Lakes region. In addition there are some 377 smaller craft for use on inland waterways.

2 PATROL CRAFT (PB)

INKSTER MURRAY

Measurement, tons: 64 gross, 48 net
Dimensions, feet (metres): 64.8 × 22.0 × 7 (19.75 × 6.7 × 7)
Main machinery: *Inkster:* 2 Mann diesels 1,640 hp (1.2 MW). *Murray:* 2 Caterpillar diesels 2,100 hp (1.6 MW); 2 Arneson surface drives
Speed, knots: To be announced
Complement: 4

Comment: Catamaran design patrol craft. *Inkster* based on the Pacific Coast and *Murray* on the Atlantic coast.



INKSTER

6/2006, RCMP / 1159227

3 PATROL CRAFT (PB)

NADON HIGGIT LINDSAY

Measurement, tons: 61 gross, 46 net
Dimensions, feet (metres): 58.0 × 22.0 × 7 (17.7 × 6.7 × 7)
Main machinery: 2 Mann diesels 1,640 hp (1.2 MW); 2 Arneson surface drives
Speed, knots: to be announced
Complement: 4

Comment: Catamaran design patrol craft. All three based on the Pacific coast.



LINDSAY

6/2006, RCMP / 1159228

Cape Verde



Country Overview

A former Portuguese colony, the Republic of Cape Verde became independent in 1975. Situated in the Atlantic Ocean some 335 n miles due west of the western point of Africa, it has a land area of 1,557 square miles and consists of ten islands and a number of islets. These are divided into the northerly windward (Barlavento) and southerly leeward (Sotavento) groups. The windward group includes the islands of Santo Antão, São Vicente, Santa Luzia, São Nicolau, Sal and Boa Vista and the islets of Branco and Raso, the leeward group includes the islands of Santiago, Brava, Fogo and Maio and the islets of the

Secos group. Mindelo, on São Vicente, is the principal port and economic centre while Praia on Santiago is the capital and largest town. An archipelagic state, territorial seas (12 n miles) are claimed. A 200 n mile Exclusive Economic Zone (EEZ) has been claimed but the limits are not fully defined.

Headquarters Appointments

Commander, Coast Guard:
 Lieutenant Colonel Fernando Carvalho Pereira

Personnel

2009: 50

Bases

Praia, main naval base
 Mindelo (Isle de São Vicente), naval repair yard

Maritime Aircraft

One Dornier 228-212 and one Embraer EMB 110 Bandeirante are used for maritime surveillance.

PATROL FORCES

1 KONDOR I CLASS (COASTAL PATROL CRAFT) (PBO)

Name	No	Builders	Commissioned
VIGILANTE (ex-Kühlungsborn)	P 521 (ex-BG 32, ex-GS 07)	Peenewerft, Wolgast	1970

Displacement, tons: 360 full load
Dimensions, feet (metres): 170.3 × 23.3 × 7.2 (51.9 × 7.1 × 2.2)
Main machinery: 2 Russki/Kolomna Type 40DM diesels; 4,408 hp(m) (3.24 MW) sustained; 2 shafts; cp props
Speed, knots: 18
Range, n miles: 1,800 at 15 kt
Complement: 19 (3 officers)
Guns: 2 -25 mm (twin) (ZU 23)
Radars: Surface search: Kelvin Hughes Nuclaus 2 5000A; i-band.

Comment: Former GDR minesweeper taken over by the German Coast Guard, and then acquired by Cape Verde in September 1998. Armament refitted in Cape Verde in 1999. Started refit in 2007.



KONDOR I (Malta colours)

6/1997, Robert Pabst / 001/6/4

1 ESPADARTE CLASS (PETERSON MK 4 TYPE) (COASTAL PATROL CRAFT) (PB)

Name	No	Builders	Commissioned
ESPADARTE	P 151	Peterson Builders Inc	19 Aug 1993

Displacement, tons: 22 full load
Dimensions, feet (metres): 51.3 × 14.8 × 4.3 (15.6 × 4.5 × 1.3)
Main machinery: 2 Detroit 6V-92TA diesels; 520 hp (388 kW) sustained, 2 shafts
Speed, knots: 24
Range, n miles: 500 at 20 kt
Complement: 6 (1 officer)
Guns: 2 -12.7 mm MGs (twin), 2 -7.62 mm MGs
Radars: Surface search: Raytheon; i-band

Comment: Ordered from Peterson Builders Inc, under FMS programme on 25 September 1992. Option on three more not taken up. Aluminium hulls. The 12.7 mm mounting is aft with the smaller guns on the bridge roof.



Mk 4 CPC (US colours)

11/1993, Peterson Builders / 0081500

1 CHINESE 27 METRE CLASS (PATROL CRAFT) (PB)

<i>Name</i>	<i>No</i>	<i>Commissioned</i>
TAINHA	P 262	2000

Displacement, tons: 55
Dimensions, feet (metres): 88.6 x 13.1 x 3.9 (27 x 4 x 1.2)
Main machinery: 2 diesels; 1,000 hp (746 kW)
Complement: 9 (1 officer)
Guns: 2—12.7 mm MGs. 2—7.62 mm MGs.
Radars: Surface search/navigation: R 770 UA; I-band.

Comment: Transferred from China in 2004. Similar craft in service in Benin.



TAINHA
 6/2007, Cape Verde Coast Guard
 1167966



Cayman Islands

Country Overview

A British dependency since 1962, the island group is situated south of Cuba in the Caribbean Sea. It comprises three islands: Grand Cayman, containing the capital George Town, Little Cayman and Cayman Brac, located about 80 miles northeast of Grand Cayman. Territorial seas (12 n miles) and a Fishery Zone (200 n miles) are claimed. A governor, appointed by the British Crown, is responsible for external affairs, internal security, defence

and the police. The Marine section is a division of the Royal Cayman Islands Police (RCIP) and UK Customs Drugs Task Force. Its roles are Maritime Drug Interdiction, SAR, Safety, Conservation and Fishery Protection.

Personnel

2009. 15 (mixture of police and customs)

Headquarters Appointments

Commander Royal Cayman Islands Police (Marine):
 Brad Ebanks

Bases

Grand Cayman (main), Little Cayman, Cayman Brac.

POLICE

Notes: (1) Two SAFE Boats 38 ft interceptors were delivered in January 2009.
 (2) A Concept pursuit craft, *Derry's Pride*, with twin 225 hp Johnson outboards is based at Grand Cayman together with *Intrapid*, an 'Eduardono' Colombian craft, and *Typhoon*, a 24 ft RIB. Two Boston Whalers, *Lima 1* and *Miss Molly*, are based at Little Cayman and Cayman Brac respectively.



DERRY'S PRIDE 6/2001, RCIP / 0121307



LIMA 1 6/2001, RCIP / 0121305

1 DAUNTLESS CLASS (PB)

CAYMAN PROTECTOR

Displacement, tons: 17 full load
Dimensions, feet (metres): 47.9 x 14.1 x 3.3 (14.6 x 4.3 x 1)
Main machinery: 2 Caterpillar 3208TA diesels; 720 hp (mi) (529 kW) sustained; 2 shafts
Speed, knots: 26 **Range, n miles:** 400 at 20 kt
Complement: 11
Guns: 2—7.62 mm MGs.
Radars: Raytheon R40; I-band.

Comment: Built by SeaArk Marine, Monticello and acquired in July 1994. Aluminium construction. Based at Grand Cayman.



CAYMAN PROTECTOR 6/2001, RCIP / 0121305

1 SEA ARK 65 ft CUTTER (PB)

CAYMAN GUARDIAN

Displacement, tons: 27 standard
Dimensions, feet (metres): 65.0 x 18.0 x 5.5 (19.8 x 5.5 x 1.7)
Main machinery: 2 diesels; 2 shafts
Speed, knots: to be announced
Complement: 8
Radars: Navigation: Raymarine; I-band.

Comment: SeaArk Marine Dauntless RAM patrol craft acquired in December 2008. To be employed on border protection tasks. Aluminium construction.



CAYMAN GUARDIAN 12/2008, SeaArk Marine / 1335347

1 SEA ARK 38 ft CUTTER (PB)

CAYMAN DEFENDER

Displacement, tons: 10.1 full load
Dimensions, feet (metres): 38.0 x 13.0 x 3.7 (11.6 x 4.0 x 1.1)
Main machinery: 2 MAN diesels; 1,100 hp (820 kW)
Speed, knots: 33
Complement: 4
Radars: Navigation: Raymarine; I-band.

Comment: SeaArk Marine Dauntless RAM patrol craft acquired on 7 October 2008. To be employed on border protection tasks. Aluminium construction.



CAYMAN DEFENDER 10/2008, SeaArk Marine / 1335341

Chile

ARMADA DE CHILE



Country Overview

The Republic of Chile is situated in western South America. With an area of 292,135 square miles it has borders to the north with Peru and to the east with Bolivia and Argentina. Off the 2,305 n mile coastline with the Pacific Ocean lie the Chonos Archipelago, Wellington Island and the western portion of Tierra del Fuogo. Chiloan islands in the south Pacific include the Juan Fernández Islands, Easter Island, and Salas y Gómez. The capital and largest city is Santiago. Principal ports include Valparaiso, Talcahuano, Tomé, Antofagasta, San Antonio, Arica, Iquique, Coquimbo, San Vicente, Puerto Montt, and Punta Arenas. Territorial seas (12 n miles) and an EEZ (200 n miles) are claimed.

Headquarters Appointments

Commander-in-Chief:

Admiral Rodolfo Codina Diaz

Chief of Naval Staff:

Vice Admiral Sergio Robinson Prieto

Naval Operations Command:

Vice Admiral Gustavo Jordan Astaburuaga

Director General, Naval Personnel:

Vice Admiral Cristian Milar Drago

Director General, Naval Services:

Vice Admiral Cristian Gantes Young

Director General Maritime Territory and Merchant Marine:

Vice Admiral Edmundo Gonzales Robles

Flag Officer, Fleet:

Rear Admiral Federico Niemann Figari

Flag Officer, Submarines:

Rear Admiral Ellis Berg Pearce

Commander, Naval Infantry:

Rear Admiral Cristian del Real Pérez

Flag Officer, 1st Naval Zone:

Rear Admiral Robert Gibbons Hodgson

Flag Officer, 2nd Naval Zone:

Rear Admiral Eduardo Junge Pumpin

Flag Officer, 3rd Naval Zone:

Rear Admiral Felipe Ojeda Simons

Flag Officer, 4th Naval Zone:

Rear Admiral Francisco Guzmán Vial

Flag Officer, Aviation:

Rear Admiral Felipe Carvajal Carvallo

Diplomatic Representation

Naval Attaché in Ottawa:

Captain Alfredo Whittle Pinto

Naval Attaché in Beijing:

Captain Ivo Alexis Brito

Naval Attaché in London:

Captain José Miguel Romero Aguirre

Naval Attaché in Washington:

Rear Admiral Marcelo Barbieri Wiedmeier

Naval Attaché in Buenos Aires:

Captain Cristian Figan Oxley

Naval Attaché in Seoul:

Captain Jorge Eduardo Montenegro

Naval Attaché in Lima:

Captain Juan Carlos Pons

Naval Attaché in Madrid:

Captain Jorge Ugalde Jacques

Diplomatic Representation—continued

Naval Attaché in Brasilia:

Captain Hernán Miller

Naval Attaché in Quito:

Captain Alejandro Campos Calvo

Naval Attaché in Paris:

Captain Guillermo Luttings Mathieus

Naval Attaché in Panama City:

Captain Eduardo Felipe Encina

Personnel

(a) 2009 16,500 (11,988 officers)

(b) 3,400 Marines

(c) 2 years' national service (1,300)

Command Organisation

1st Naval Zone HQ at Valparaiso. From 26° 00' S to 34° 09' S.

2nd Naval Zone. HQ at Talcahuano. From 34° 09' S to 46° 00' S.

3rd Naval Zone. HQ at Punta Arenas. From 46° 00' S to South Pole

4th Naval Zone. HQ at Iquique. From 18° 21' S to 26° 00' S.

Coast Guard is fully integrated with the Navy.

Naval Air Stations and Organisation

Having won the battle to own all military aircraft flying over the sea, a fixed-wing squadron of about 20 CASA/ENAER Halcón is envisaged when finances permit.

Viña del Mar (Valparaiso); *Almirante Von Schroeders* (Punta Arenas); *Guardiamarina Zañartu* (Puerto Williams).

Four Squadrons: VP1: EMB-111, P-3A and C-295

HA1: NAS 332C Cougar

VC1: EMB-111, CASA-212 and O-2A

HU1, BO 105C, Bell 206B AS-365

VP1: PC 7

Infantería de Marina

Organisation: 4 detachments each comprising Amphibious Warfare, Coast Defence and Local Security. Also embarked are detachments of commandos, engineering units and a logistic battalion.

1st Marine Infantry Detachment 'Patricio Lynch'. At Iquique.

2nd Marine Infantry Detachment 'Miller'. At Viña del Mar

3rd Marine Infantry Detachment 'Sargento Aldea'. At Talcahuano.

4th Marine Infantry Detachment 'Cochrane'. At Punta Arenas

51 Commando Group. At Valparaiso

Some embarked units, commando and engineering units and a logistics battalion.

Bases

Valparaiso. Main naval base, schools, repair yard. HQ 1st Naval Zone. Air station

Bases—continued

Talcahuano. Naval base, schools, major repair yard (two dry docks, three floating docks), two floating cranes. HQ 2nd Naval Zone. Submarine base.

Punta Arenas. Naval base. Dockyard with slipway having building and repair facilities. HQ 3rd Naval Zone. Air station.

Iquique. Small naval base. HQ 4th Naval Zone.

Puerto Montt. Small naval base.

Puerto Williams (Beagle Channel). Small naval base. Air station.

Dawson Island (Magellan Straits). Small naval base.

Strength of the Fleet (including Coast Guard)

Type	Active	Building
Patrol Submarines	4	-
Frigates	8	-
Landing Ships (Tank)	3	-
Landing Craft	2	-
Fast Attack Craft (Missile)	7	-
Large Patrol Craft	7	1
Coastal Patrol Craft	50	-
Survey Ships	3	-
Training Ships	1	-
Transports	1	-
Tankers	1	-
Tenders	4	-

DELETIONS

Destroyers

2006 *Capitán Prat* (old), *Almirante Cochrane* (old)

Frigates

2006 *Ministro Zenteno*

2007 *Almirante Condell* (old), *Almirante Lynch* (old)

Patrol Forces

2006 *Fresia, Campos, Johnson*

Tugs

2007 *Leucaton*

PENNANT LIST

Notes: From 1997 pennant numbers have been painted on major warship hulls

Submarines

20 Thomson
21 Simpson
22 Carrera
23 O'Higgins

Frigates

05 Almirante Cochrane
06 Almirante Condell
07 Almirante Lynch
11 Capitán Prat
14 Almirante Latorre
15 Almirante Blanco Encalada
18 Almirante Riveros
19 Almirante Williams

Patrol Forces

30 Casma
31 Chipana
34 Angamos
36 Riquelme
37 Orella
38 Serrano
39 Uribe
73 Isaza
74 Videla
77 Cabrales
78 Sibbald
1601 Ona (CG)
1602 Yagan (CG)
1603 Atacalufe (CG)

1604 Hallel (CG)
1609 Aysen (CG)
1610 Corral (CG)
1611 Concepcion (CG)
1612 Caldera (CG)
1613 San Antonio (CG)
1614 Antofagasta (CG)
1615 Arica (CG)
1618 Coquimbo [1616] (CG)
1617 Natales (CG)
1618 Valparaiso (CG)
1619 Punta Arenas (CG)
1620 Talcahuano (CG)
1621 Quintero (CG)
1622 Chiloe (CG)
1623 Puerto Montt (CG)
1624 Iquique
1614 Diaz
1615 Barros
1618 Salinas
1617 Tallez
1618 Bravo
1620 Machado
1622 Troncoso
1623 Hudson
1901 Meulo (CG)
1902 Rapel (CG)
1903 Aconcagua (CG)
1904 Lauca (CG)
1905 Isluga (CG)
1907 Maullin (CG)
1908 Copiapó (CG)
1909 Cau-Cau (CG)
1910 Pudeto (CG)
1911 Robinson Crusoe (CG)

Survey Ships

46 Contra-almirante Oscar Vial Toro
60 Vidal Gormaz
63 George Slight Marshall

Training Ships

43 Esmeralda

Amphibious Forces

90 Elicura
92 Rancagua
93 Valdivia
94 Orompello
95 Chacabuco

Auxiliaries

41 Aquiles
42 Menno
53 Araucano
71 Micalvi
72 Ortiz
YFB 114 Grumeta Perez
116 Pisagua

Tugs/Supply Ships

ATF 66 Galvarino
ATF 67 Lautaro

SUBMARINES

Notes: There are some Swimmer Delivery Vehicles French Havas Mk 8 in service. This is the two-man version.

2 SCORPENE CLASS (SSK)

Name	No	Builders	Laid down	Launched	Commissioned
O'HIGGINS	23	DCN Cherbourg/IZAR	18 Nov 1999	1 Nov 2003	8 Sep 2005
CARRERA	22	IZAR, Cartagena/DCN	Nov 2000	24 Nov 2004	20 July 2006

Displacement, tons: 1,577 surfaced, 1,711 dived

Dimensions, feet (metres): 217.8 × 20.3 × 19
(66.4 × 6.2 × 5.8)

Main machinery: Diesel electric; 4 MTU 16V 396 SE84 diesels; 2,992 hp(m) (2.4 MW); 1 Jeumont Schneider motor; 3,808 hp(m) (2.8 MW); 1 shaft

Speed, knots: 20 dived; 12 surfaced

Range, n miles: 550 at 4 kt dived; 6,500 at 8 kt surfaced

Complement: 31 (6 officers)

Missiles: MBDA Exocet SM39 Block 2; launched from 21 in (533 mm) tubes; inertial cruise; active terminal homing to 50 km (27 n miles) at 0.9 Mach; warhead 165 kg.

Torpedoes: 6–21 in (533 mm) tubes. 18 WASS Black Shark torpedoes; wire (fibre-optic cable) guided; active/passive homing to 50 km (27 n miles) at 50 kt; warhead 250 kg.

Countermeasures: ECM; Argos AR 900, intercept.

Weapons control: UDS International SLBTICS.

Radars: Navigation: Sagem, I-band

Sonars: Hull mounted; active/passive search and attack, medium frequency

Programmes: Project Neptune. Contract awarded to DCN and Bazán on 18 December 1997 and became effective in April 1998. The bows of both boats were built at Cherbourg and the sterns at Cartagena. First steel cut for

O'Higgins on 22 July 1998 and final assembly by DCN began on 15 November 2002 when the stern arrived at Cherbourg. Final assembly of *Carrera* began on 22 March 2004 when the bow arrived at Cartagena. *O'Higgins* arrived at Valparaíso on 10 December 2005 and *Carrera* at Talcahuano on 13 December 2006

Modernisation: Procurement of Exocet SM 39 is reportedly under consideration.

Structure: Equipped with Sagem APS attack periscope, an SMS optronic search periscope and SISDEF datalink terminal. Diving depth more than 300 m (984 ft). AIP is not fitted.

Operational: Based at Talcahuano.



O'HIGGINS

3/2007, *Ships of the World* / 1305003

CARRERA

7/2006, *Diego Quevedo* / 1164536

2 THOMSON (TYPE 209/1300) CLASS (SSK)

Name	No	Builders	Laid down	Launched	Commissioned
THOMSON	20	Howaldtswerke	1 Nov 1980	28 Oct 1982	31 Aug 1984
SIMPSON	21	Howaldtswerke	16 Feb 1982	29 July 1983	18 Sep 1984

Displacement, tons: 1,260 surfaced; 1,390 dived
Dimensions, feet (metres): 185.2 × 20.3 × 18
 (59.5 × 6.2 × 5.5)

Main machinery: Diesel-electric; 4 MTU 12V 493 AZ80 GA31L diesels; 2,400 hp(m) (1.76 MW) sustained; 4 Pillor alternators; 1.7 MW; 1 Siemens motor; 4,600 hp(m) (3.38 MW) sustained; 1 shaft

Speed, knots: 11 surfaced; 21.5 dived

Range, n miles: 400 at 4 kt dived; 16 at 21.5 kt dived; 8,200 at 8 kt snorkel

Complement: 32 (5 officers)

Missiles: MBDA Exocet SM 39 Block 2; launched from 21 in (533 mm) torpedo tubes; inertial cruise; active terminal

homing to 50 km (27 n miles) at 0.9 Mach; warhead 165 kg

Torpedoes: 8–21 in (533 mm) bow tubes. 14 WASS Black Shark torpedoes; wire (fibre-optic cable) guided; active/passive homing to 50 km (27 n miles) at 50 kt; warhead 250 kg.

Countermeasures: ESM. Thomson-CSF DR 2000U; radar warning.

Weapons control: UDS International SUBTICS

Radars: Surface search: Thomson-CSF Calypso II; I-band.

Sonars: Atlas Elektronik CSU 3; hull-mounted; active/passive search and attack; medium frequency

Programmes: Ordered from Howaldtswerke, Kiel in 1980.

Modernisation: Thomson refit completed at Talcahuano in late 1990, Simpson in 1991. Refit duration about 10 months each. A major programme to upgrade and extend the service life of both boats to 2025 has been initiated. The work is to include the fitting of a UDS Subtics combat management system and a new fire-control system. Torpedo tubes are to be upgraded to enable the Whitehead Black Shark torpedoes and anti-ship missiles to be fired while platform improvements are likely to include a new engine-control system and battery set. Work on Simpson started in 2006 and is to complete by early 2008. Modernisation of Thomson is to be undertaken 2008–10.

Structure: Fin and associated masts lengthened by 50 cm to cope with wave size off Chilean coast.



SIMPSON

10/2007, Michael Nitz / 1170096

FRIGATES

2 LATORRE CLASS (FFGM)

Name	No	Builders	Laid down	Launched	Commissioned
ALMIRANTE LATORRE (ex-Jacob van Heemskerck)	14 (ex-F 812)	Koninklijke Maatschappij De Schelde, Flushing	21 Jan 1981	5 Nov 1983	15 Jan 1986
CAPITÁN PRAT (ex-Witte de With)	11 (ex-F 813)	Koninklijke Maatschappij De Schelde, Flushing	15 Dec 1981	25 Aug 1984	17 Sep 1986

Displacement, tons: 3,750 full load

Dimensions, feet (metres): 428 × 47.9 × 14.1 (20.3 screws)
 (130.5 × 14.6 × 4.3; 6.2)

Main machinery: COGOG; 2 RR Olympus TM3B gas turbines; 50,880 hp (37.9 MW) sustained
 2 RR Tyne RM1C gas turbines; 9,900 hp (7.4 MW) sustained; 2 shafts, LIPS cp props

Speed, knots: 30

Range, n miles: 4,700 at 18 kt on Tynes

Complement: 197 (23 officers)

Missiles: SSM: 4 McDonnell Douglas Harpoon Block 2 ●, active radar homing to 130 km (70 n miles) at 0.9 Mach; warhead 227 kg.

SAM: 40 GDC Pomona Standard SM-1MR; Block VI; Mk 13 Mod 1 launcher ●, command guidance; semi-active radar homing to 38 km (20.5 n miles) at 2 Mach.

Raytheon RIM-7P Sea Sparrow Mk 29 octuple launcher ●, semi-active radar homing to 16 km (8.5 n miles) at 2.5 Mach; warhead 39 kg, 24 missiles

Guns: 1 Signaal SGE-30 Goalkeeper ● with General Electric 30 mm 7-barrelled; 4,200 rds/min combined to 2 km. 2 Oerlikon 20 mm.

Torpedoes: 4–324 mm US Mk 32 (2 twin) tubes ● Honeywell Mk 46 Mod 5; anti-submarine; active/passive homing to 11 km (5.9 n miles) at 40 kt; warhead 44 kg.

Countermeasures: Decoys: 2 Loral Hycor Mk 36 SRBOC 6-tube fixed quad launchers ●; IR flares and chaff to 4 km (2.2 n miles). SLQ-25 Nixie towed torpedo decoy.

ESM/ECM. Sphinx and Ramses; intercept and jammer.
Combat data systems: Signaal SEWACO VI action data automation; Link 11 SHF SATCOM ● JMCIS

Radars: Air search: Signaal LW08 ●, D-band; range 264 km (145 n miles) for 2 m² target.

Air/surface search: Signaal Smart; 3D ●, F-band

Surface search: Signaal Scout ●, I-band.

Fire control: 2 Signaal STIR 240 ●, I/J/K-band; range 140 km (76 n miles) for 1 m² target.

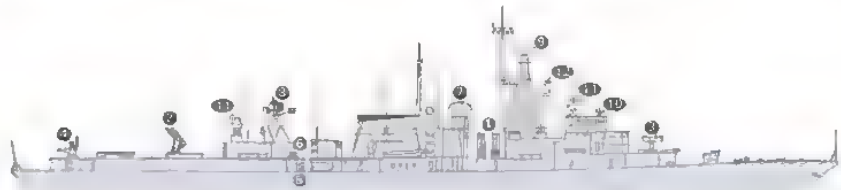
Signaal STIR 180 ●, I/J/K-band.

Sonars: Westinghouse SOS-509; hull-mounted; active search and attack; medium frequency.

Programmes: Contract signed on 26 March 2004 for the acquisition of two air-defence frigates. Latorre transferred on 16 December 2005 and arrived in Chile on 3 March 2006. Prat transferred on 17 July 2006 and arrived in Chile on 26 October 2006. 200 SM-1 missiles also reported acquired Harpoon Block II missiles procured separately from the US.

Operational: Command facilities for a task group commander and his staff.

CAPITÁN PRAT
 7/2006, A A de Kruijff
 1164534



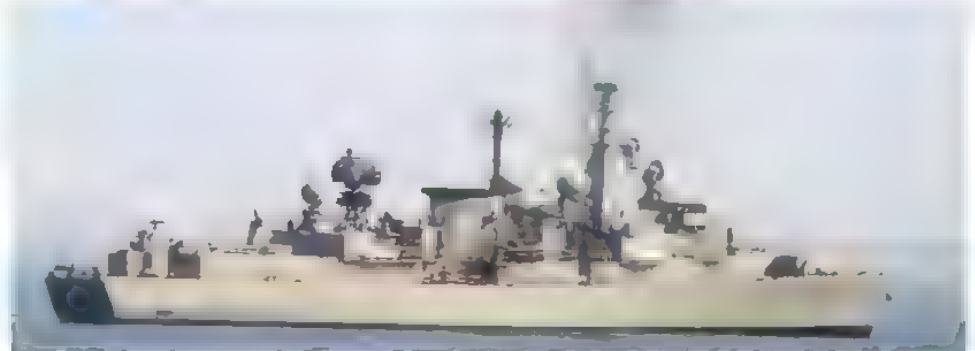
ALMIRANTE LATORRE

(Scale 1 : 1,200), Ian Sturton / 0114748



ALMIRANTE LATORRE

12/2005, Piet Cornelis / 1153044



2 BLANCO ENCALADA (KAREL DOORMAN) CLASS (FFGHM)

Name	No	Builders	Laid down	Launched	Commissioned
ALMIRANTE BLANCO ENCALADA (ex- <i>Abraham van der Hulst</i>)	15 (ex-F 832)	Koninklijke Maatschappij De Scheide, Flushing	8 Feb 1989	7 Sep 1991	15 Dec 1993
ALMIRANTE RIVEROS (ex- <i>Tjerk Hiddas</i>)	18 (ex-F 830)	Koninklijke Maatschappij De Scheide, Flushing	28 Oct 1986	9 Dec 1989	3 Dec 1992

Displacement, tons: 3,320 full load
Dimensions, feet (metres): 401.2 oa; 374.7 wl x 47.2 x 14.1 (122.3; 114.2 x 14.4 x 4.3)

Flight deck, feet (metres): 72.2 x 47.2 (22 x 14.4)

Main machinery: CODOG; 2 RR Spey SM1C, 33,800 hp (25.2 MW) sustained (early ships of the class will initially only have SM1A gas generators and 30,800 hp (23 MW) sustained available); 2 Stork-Wärtsilä 12SW280 diesels; 9,790 hp(m) (7.2 MW) sustained; 2 shafts; LIPS cp props

Speed, knots: 30 (Speys); 21 (diesels)
Range, n miles: 5,000 at 18 kt
Complement: 156 (16 officers) (accommodation for 163)

Missiles: SSM: 4 McDonnell Douglas Harpoon Block II launchers; active radar homing to 130 km (70 n miles) at 0.9 Mach; warhead 227 kg.

SAM: Raytheon RIM-7P Sea Sparrow Mk 48 vertical launchers; semi-active radar homing to 16 km (8.5 n miles) at 2.5 Mach; warhead 38 kg; 16 missiles. Canisters mounted on port side of hangar.

Guns: 1-3 in (76 mm)/62 OTO Melara compact Mk 100; 100 rds/min to 16 km (8.6 n miles) anti-surface; 12 km (6.5 n miles) anti-aircraft; weight of shell 6 kg. This is the version with an improved rate of fire.

Torpedoes: 4-324 mm US Mk 32 Mod 9 (2 twin) tubes (mounted inside the after superstructure); Honeywell Mk 46 Mod 5; anti-submarine; active/passive homing to 11 km (5.9 n miles) at 40 kt; warhead 44 kg.

Countermeasures: Decoys: 2 Loral Hycor SRBOC 6-tube fixed Mk 36 quad launchers; IR flares and chaff to 4 km (2.2 n miles).

SLQ-25 Nixie towed torpedo decoy.
ESM/ECM: Argo APECS II (includes AR 700 ESM); intercept and jammers.

Combat data systems: Signaal SEWACO VIIB action data automation; Link 11 WSC-6 twin aerials

Weapons control: Signaal IRSCAN infra-red detector (fitted in F 829 for trials and may be retrofitted in all in due course). Signaal VESTA helo transponder

Radars: Air/surface search: Signaal SMART; 3D, F-band Air search. Signaal LW08; D-band.

Surface search: Signaal Scout; I-band.
Navigation: Racal Decca 1226, I-band
Fire control: 2 Signaal STIR 180; I/J/K-band; range 140 km (76 n miles) for 1 m² target.



ALMIRANTE BLANCO ENCALADA

(Scale 1 : 1,200), Ian Sturton / 1164333



ALMIRANTE RIVEROS

3/2007, Piet Cornelis / 1335345

Sonars: Signaal PHS 36; hull-mounted; active search and attack; medium frequency.
 Thomson Sintra Anaconda DSBV 61; towed array; passive low frequency. LFAS may be fitted in due course.

Helicopters: 1 NAS 332SC Cougar

Programmes: Contract signed on 26 March 2004 for the acquisition of two frigates. *Blanco Encalada* transferred on 16 December 2005 and arrived in Chile on 3 March

2006. *Riveros* was handed over on 18 April 2007 and arrived in Chile on 1 August 2007

Structure: The VLS SAM is similar to Canadian Halifax and Greek MEKO classes. Both ships modified to operate Cougar helicopters. This includes lengthening and partly raising the helicopter hangar and replacement of the flight-deck grid with the ASIST system which includes 35 m traverse rails. A new horizon bar has also been installed

3 COCHRANE CLASS (TYPE 23) (FFGHM)

Name	No	Builders	Laid down	Launched	Commissioned
ALMIRANTE COCHRANE (ex- <i>Norfolk</i>)	05 (ex-F 230)	Yarrow Shipbuilders, Glasgow	14 Dec 1985	10 July 1987	1 June 1990
ALMIRANTE CONDELL (ex- <i>Marlborough</i>)	06 (ex-F 233)	Swan Hunter Shipbuilder, Wallsend-on Tyne	22 Oct 1987	21 Jan 1989	14 June 1991
ALMIRANTE LYNCH (ex- <i>Grafton</i>)	07 (ex-F 80)	Yarrow Shipbuilders, Glasgow	13 May 1993	5 Nov 1994	29 May 1997

Displacement, tons: 3,500 standard; 4,200 full load
Dimensions, feet (metres): 436.2 x 52.8 x 18 (screws); 24 (sonar) (133 x 16.1 x 5.5; 7.3)

Main machinery: CODLAG; 2 RR Spey SM1A (ex-F 230 and F 233) or SM1C (ex-F 80) gas turbines (see *Structure*); 31,100 hp (23.2 MW) sustained; 4 Paxman 12CM diesels; 8,100 hp (6 MW); 2 GEC motors; 4,000 hp (3 MW); 2 shafts

Speed, knots: 28, 15 on diesel-electric
Range, n miles: 7,800 miles at 15 kt
Complement: 181 (13 officers)

Missiles: SSM: 8 McDonnell Douglas Harpoon (2 quad) launchers; active radar homing to 130 km (70 n miles) at 0.9 Mach; warhead 227 kg (84C). 4 normally carried

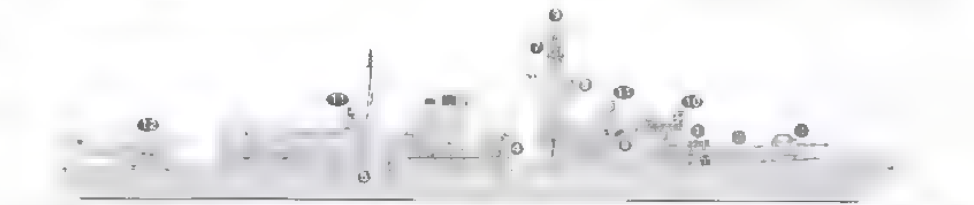
SAM: British Aerospace SeaWolf GWS 26 Mod 1 VLS; Command Line Of Sight (CLOS) radar/TV tracking to 6 km (3.3 n miles) at 2.5 Mach, warhead 14 kg; 32 canisters.

Guns: 1 Vickers 4.5 in (114 mm)/55 Mk 8 Mod 1; 25 rds/min to 27.5 km (14.8 n miles) anti-surface; weight of shell 21 kg Mk 8 Mod 1 being progressively fitted
 2 DES/MSI DS 30B 30 mm/75; 850 rds/min to 10 km (5.4 n miles) anti-surface; 3 km (1.6 n miles) anti aircraft, weight of shell 0.36 kg

Torpedoes: 4 Cray Marine 324 mm fixed (2 twin) tubes; Honeywell Mk 46 Mod 5; anti-submarine; active/passive homing to 11 km (5.9 n miles) at 40 kt; warhead 44 kg.

Countermeasures: Decoys: Outfit DLH; 4 Sea Gnat 6-barrelled 130 mm/102 mm launchers; DLF 2/3 offboard decoys.

ESM. Racal UAT; intercept



ALMIRANTE COCHRANE

(Scale 1 : 1,200), Ian Sturton / 1164334

Combat data systems: BAe SEMA Surface Ship Command System (DNA); Link 11.

Weapons control: BAe GSA 8B/GPEOD optronic director; GWS 80 (for SSM). GWS 26 (for SAM)

Radars: Air/surface search: Plessey Type 996(I); 3D; E/F-band.

Surface search: Racal Decca Type 1008; E/F-band.
 Navigation: Kelvin Hughes Type 1007; I-band
 Fire control: 2 Marconi Type 911; J/Ku-band
 IFF: 1010/1011 or 1018/1019

Sonars: Ferranti/Thomson Sintra Type 2050; bow-mounted; active search and attack.

Helicopters: 1 NAS 332C Cougar

Programmes: Formerly in UK Royal Navy service, letter of intent for purchase of the three ships signed by Chilean government in December 2004 followed by formal agreement on 7 September 2005. The contract includes

purchase of the three ships, pre-sale sanitisation and maintenance and a package of operator and maintainer training. BAE Systems to act as lead contractor with Fictet Support Limited to undertake overhauls in Portsmouth. Work started on *Cochrane* in late 2005; she was recommissioned on 22 November 2006, *Lynch* was recommissioned on 28 March 2007 and *Condeill* on 28 May 2008.

Modernisation: Most of the pre-transfer work was focused on the ships' power plants, with both diesel engines and gas turbines being removed for scheduled maintenance. Main gearwheel changes were also being effected on *Condeill* and *Lynch*. Mk 46 torpedoes are to be replaced by Eurotorp MU 90.

Structure: Incorporates stealth technology to minimise acoustic, magnetic, radar and IR signatures. The design includes a 7° slope to all vertical surfaces, rounded edges, reduction of IR emissions and a hull bubble system to reduce radiated noise.



ALMIRANTE LYNCH

7/2007, J Brodie / 1305002



ALMIRANTE CONDELL

7/2008*, Ian Harris 1335344

1 BROADSWORD CLASS (TYPE 22) (FFHM)

Name	No	Builders	Laid down	Launched	Commissioned
ALMIRANTE WILLIAMS (ex-Sheffield)	19 (ex-F 96)	Swan Hunter Shipbuilders, Wallsend-on-Tyne	29 Mar 1984	26 Mar 1986	26 July 1988
Displacement, tons: 4,100 standard; 4,800 full load		Guns: 1 Vickers 4.5 in (114 mm) 55 Mk 8; 25 rds/min to 22 km (11.9 n miles); weight of shell 21 kg. 2 Oerlikon 20 mm	Programmes: Originally successors to the UK Leander class, these ships entered RN service in 1987 but were withdrawn, half-way through their ships' lives, as a result of the 1998 UK Defence Review. Agreement for transfer to Chile ratified by the Chilean government in April 2003.		
Dimensions, feet (metres): 480.5 x 48.5 x 21 (146.5 x 14.8 x 6.4)		Torpedoes: 6-324 mm tubes.	Modernisation: The ship is to undergo a modernisation programme which started in March 2008 at ASMAR-Talcahuano Yard. This is to include installation of a new combat data system, Harpoon surface-to-surface missiles, and a 114 mm gun. The hangar and flightdeck are to be adapted to operate Cougar		
Main machinery: COGOG: 2 RR Olympus TM3B gas turbines; 50,000 hp (37.3 MW) sustained; 2 RR Tyne RM1C gas turbines, 9,900 hp (7.4 MW); 2 shafts; cp props		Countermeasures: Decoys: Outfit DLJ Sea Gnat. ESM UAT intercept. ECM Type 670	Structure: Broadsword Batch 2 ships were stretched versions of Batch 1.		
Speed, knots: 30; 18 on Tynes		Combat data systems: CACS 1.	Operational: The ship entered service on 5 September 2003.		
Complement: 273 (30 officers) (accommodation for 296)		Weapons control: To be announced.			
Missiles: SSM: 4 McDonnell Douglas Harpoon Block II; active radar homing to 130 km (70 n miles) at 0.9 Mach; warhead 227 kg.		Radars: Air/surface search: Marconi Type 967/968; D/E-band. Surface search: Racal Decca Type 2008; E/F-band.			
SAM: 2 British Aerospace Seawolf Block II (GWS 25 Mod 3 launcher); Command Line Of Sight (CLOS) with 2 channel radar tracking to 5 km (2.7 n miles) at 2+ Mach; warhead 14 kg.		Navigation: Kelvin Hughes Type 1008; I-band			
		Fire control: 2 Marconi Type 911; I-Ku-band (for Seawolf)			
		Sonars: Ferranti/Thomson Sintra Type 2050; hull-mounted, active search and attack.			
		Helicopters: 1 NAS 332SC Cougar.			



ALMIRANTE WILLIAMS

9/2003, B Sullivan / 0567435

SHIPBORNE AIRCRAFT

Numbers/Type: 8 Aerospatiale Dauphin AS 365N2
Operational speed: 150 kt (388 km/h).
Service ceiling: 15,000 ft (4,575 m).
Range: 410 n miles (758 km).

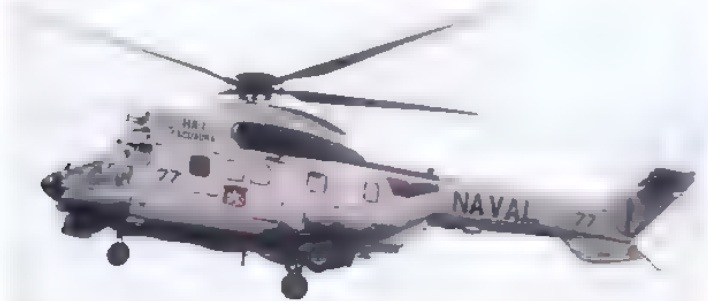
Role/Weapon systems: Multipurpose aircraft which replaced Bell 412 in SAR and surveillance roles. Three new aircraft were received in 2006 to replace older aircraft and a further four AS-365F (ex-Irish Corps) acquired in 2008.



AS-365 6/2006, Chilean Navy / 1164415

Numbers/Type: 5 Nurtanio (Aerospatiale) NAS 332C Cougar.
Operational speed: 151 kt (279 km/h).
Service ceiling: 15,090 ft (4,600 m).
Range: 335 n miles (620 km).

Role/Weapon systems: ASV/ASW helicopters; surface search and SAR secondary roles. All five aircraft undergoing modernisation and refurbishment from 2007 to extend service life until 2022. Two further new aircraft and one second-hand may be acquired. Sensors: Thomson-CSF Varam radar and Thomson Sintra HS-312 dipping sonar DR 2000 ESM. Weapons: ASW; 2 x Alliant Mk 46 Mod 2 torpedoes or depth bombs ASV; 1 or 2 x Aerospatiale AM 39 Exocet missiles.



COUGAR 7/2001, Maritime Photographia / 0121314

Numbers/Type: 4 MBB BO105C.
Operational speed: 113 kt (210 km/h).
Service ceiling: 8,845 ft (3,000 m).
Range: 407 n miles (754 km).

Role/Weapon systems: Coastal patrol helicopter for patrol, training and liaison duties; SAR as secondary role. Sensors: Bendix search radar. Weapons: Unarmed.



BO 105C 11/2001, Freddie Phillips / 053M054

Numbers/Type: 4 Bell 206B JetRanger.
Operational speed: 115 kt (213 km/h).
Service ceiling: 13,500 ft (4,115 m).
Range: 368 n miles (682 km).

Role/Weapon systems: Some tasks and training carried out by torpedo-armed liaison helicopter; emergency war role for ASW. To be replaced by Bell 412. Weapons: ASW, 1 x Mk 46 torpedo or 2 depth bombs.



JETRANGER 7/2001, Maritime Photographia / 0121315

LAND-BASED MARITIME AIRCRAFT (FRONT LINE)

Notes: (1) In addition there are one EMB-110 and three Casa Aviocar 212/300 support aircraft.
 (2) The Air Force has one Boeing 707 converted for AEW duties.

Numbers/Type: 3 Embraer EMB-111 Bandeirante.
Operational speed: 194 kt (360 km/h).
Service ceiling: 25,500 ft (7,770 m).
Range: 1,590 n miles (2,945 km).

Role/Weapon systems: Designated EMB-111N for peacetime EEZ and wartime MR. Sensors: Eaton-AIL AN/APS-128 search radar, Thomson-CSF DR 2000 ESM, searchlight. Weapons: Strike; 6 x 127 mm or 28 x 70 mm rockets.

Numbers/Type: 7 Pilatus PC-7 Turbo-Trainer.
Operational speed: 270 kt (500 km/h).
Service ceiling: 32,000 ft (9,755 m).
Range: 1,420 n miles (2,630 km).

Role/Weapon systems: Training includes simulated attacks to exercise ships' AA defences; emergency war role for strike operations. Sensors: None. Weapons: 4 x 127 mm or similar rockets and machine gun pods.

Numbers/Type: 3 Lockheed P-3A Orion
Operational speed: 410 kt (760 km/h).
Service ceiling: 28,300 ft (8,625 m).
Range: 4,000 n miles (7,410 km).

Role/Weapon systems: Long-range MR for surveillance and SAR. First one delivered from US in March 1993 followed by seven more of which one has been modified for transport, two are in reserve and two are used for spares. Sensors: Three aircraft upgraded with new radar, ESM and FLIR. APS-115 radar. Weapons: Armed with Harpoon from mid-2007.



ORION 6/2003, Chilean Navy / 0568794

Numbers/Type: 9 Cessna 0-2A Skymaster.
Operational speed: 130 kt (241 km/h).
Service ceiling: 5,000 ft (1,524 m).
Range: 550 n miles (1,019 km).

Role/Weapon systems: Maritime coastal patrol and training acquired in 1998/99. Sensors: None. Weapons: May be equipped with 4 weapons stations in due course.



SKYMASTER 6/1999, Chilean Navy / 0056723

Numbers/Type: 3 EADS CASA C-295 Persuader.
Operational speed: 260 kt (482 km/h).
Service ceiling: 13,540 ft (4,125 m).
Range: 840 n miles (1,555 km).

Role/Weapon systems: Three maritime surveillance aircraft (stretched versions of CN-235) ordered on 18 October 2007. There is an option for a further five aircraft. To be equipped with Fully Integrated Tactical System (FITS). Sensors to be announced.



EADS CASA C-295 10/2007, EADS / 1170095

PATROL FORCES

Notes: It is planned to procure three new corvettes, possibly derived from the Fassmer OPV (Coast Guard) design. Such ships would be more heavily armed and would replace the Casma class fast attack craft.

3 CASMA (SAAR 4) CLASS (FAST ATTACK CRAFT—MISSILE) (PGG)

Name	No	Builders	Commissioned
CASMA (ex-Romah)	LM 30	Haifa Shipyard	Mar 1974
CHIPANA (ex-Kashef)	LM 31	Haifa Shipyard	Oct 1973
ANGAMOS (ex-Reshef)	LM 34	Haifa Shipyard	Apr 1973

Displacement, tons: 415 standard, 450 full load
Dimensions, feet (metres): 190.7 × 24.9 × 9.2 (58.1 × 7.6 × 2.8)
Main machinery: 4 MTU 16V 396 diesels; 13,029 hp(m) (9.58 MW) (30 and 31); 4 MTU 16V 596TB91 diesels, 15,000 hp(m) (11.3 MW) (34); 4 shafts
Speed, knots: 32. **Range, n miles:** 1,650 at 30 kt; 3,700 at 18 kt
Complement: 46 (8 officers)

Missiles: SSM: 4 IAI Gabriel I or II; radar or optical guidance; semi-active radar homing to 20 km (10.8 n miles) (I) or 36 km (20 n miles) (II); at 0.7 Mach, warhead 75 kg HE.
Guns: 2 OTO Melara 3 in (76 mm)/62 compact; 85 rds/min to 16 km (8.7 n miles) anti-surface; 12 km (6.5 n miles) anti-aircraft; weight of shell 6 kg.
 2 Oerlikon 20 mm; 800 rds/min to 2 km
 2—12.7 mm MGs

Countermeasures: Decoys: 4 Rafael LRCR chaff decoy launchers.

ESM: Eta Electronics MN-53; intercept.

ECM: Eta Rattler; jammer

Radars: Surface search: Eta EL 2208C; E/F-band.

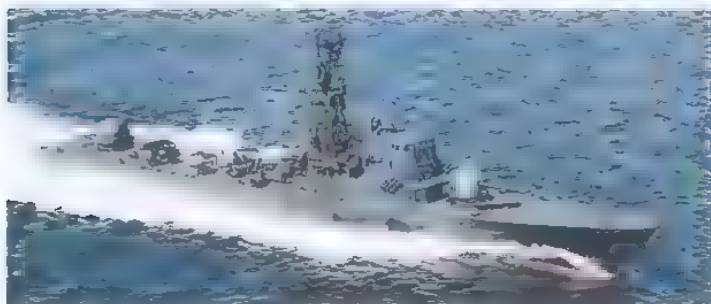
Navigation: Raytheon 20X; I-band

Fire control: Selenia Orion RTN 10X, I/J-band.

Programmes: One transferred from Israel December 1979 and second in January 1981. Two more acquired from Israel 1 June 1997 but one (ex-Terishish) was cannibalised for spares in 1998

Modernisation: New engines fitted in the first pair in 2000. Weapons control systems have been upgraded in LM 30 and LM 34. Similar refit of LM 31 completed by 2003.

Operational: All operate in Third Naval Zone (Beagle Channel).



CASMA 9/2000, MTU / 0094035

4 RIQUELME (TIGER) CLASS (TYPE 148) (FAST ATTACK CRAFT—MISSILE) (PGG)

Name	No	Builders	Commissioned
RIQUELME (ex-Wolf)	LM 36 (ex-P 6149)	CMN Cherbourg	26 Feb 1974
ORELLA (ex-Elster)	LM 37 (ex-P 6154)	CMN Cherbourg	14 Nov 1974
SERRANO (ex-Tiger)	LM 38 (ex-P 6141)	CMN Cherbourg	30 Oct 1972
URIBE (ex-Luchs)	LM 39 (ex-P 6143)	CMN Cherbourg	8 Apr 1973

Displacement, tons: 234 standard; 265 full load
Dimensions, feet (metres): 154.2 × 23 × 8.9 (47 × 7 × 2.7)
Main machinery: 4 MTU 16V 396 diesels; 13,029 hp(m) (9.58 MW) sustained; 4 shafts
Speed, knots: 31. **Range, n miles:** 570 at 30 kt; 1,600 at 15 kt
Complement: 30 (4 officers)

Missiles: SSM: 4 Aerospaiale MM 38 Exocet (2 twin) launchers; inertial cruise; active radar homing to 42 km (23 n miles) at 0.9 Mach; warhead 165 kg, sea-skimmer

Guns: 1 OTO Melara 3 in (76 mm)/62 compact; 85 rds/min to 16 km (8.6 n miles) anti-surface, 12 km (6.5 n miles) anti-aircraft; weight of shell 6 kg
 1 Bofors 40 mm/70; 330 rds/min to 12 km (6.5 n miles) anti-surface; 4 km (2.2 n miles) anti-aircraft; weight of shell 0.96 kg; fitted with GRP dome (1984).
 2—12.7 mm MGs.

Mines: Laying capability.

Countermeasures: Decoys: Woika chaff launcher.

Combat data systems: PALIS and Link 11.

Weapons control: CSEE Panda optical director. Thomson-CSF Vega PCET system, controlling missiles and guns.

Radars: Air/surface search: Thomson-CSF Triton; G-band, range 33 km (18 n miles) for 2 m² target.

Navigation: SMA 3 RM 20; I-band; range 73 km (40 n miles).

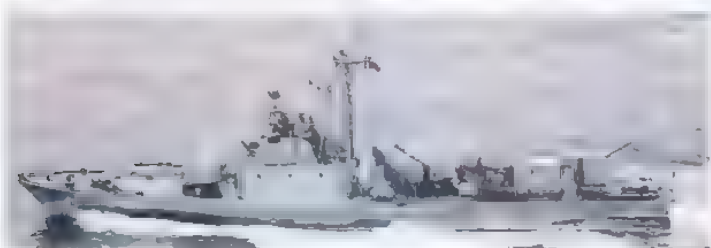
Fire control: Thomson-CSF Castor; I/J-band.

Programmes: First pair transferred from Germany on 27 August 1997 and sailed in a transport ship on 2 September 1997. Four more transferred on 22 September 1998 and sailed 11 October. These four were all damaged during a storm in transit, and the two best were taken into service, with the other pair (Pelikan and Kranich) being used for spares. The ship names have prefixed ranks but these are not used.

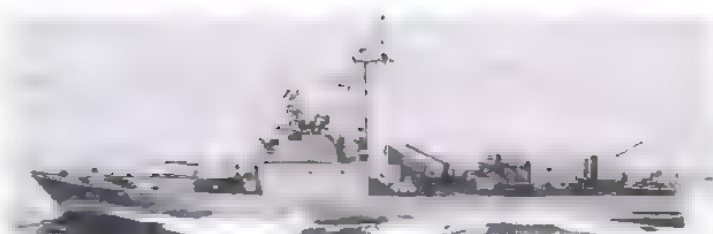
Modernisation: New engines fitted in 2000. Speed reduced to 31 kt.

Structure: Similar to Combattante II craft. EW equipment was removed prior to transfer.

Operational: Operate in 4th Naval Zone (Iquique). Exocet missiles were not part of the transfer but have been acquired separately



URIBE 7/2001, Maritime Photographic / 0121316



SERRANO 7/2001, Maritime Photographic / 0121317

8 GRUMETE DIAZ (DABUR) CLASS (COASTAL PATROL CRAFT) (PB)

DIAZ 1814	TELLEZ 1817	TRONCOSO 1822
BOLADOS 1815	BRAVO 1818	HUDSON 1823
SALINAS 1816	MACHADO 1820	

Displacement, tons: 39 full load
Dimensions, feet (metres): 64.9 × 18 × 5.9 (19.8 × 5.5 × 1.8)
Main machinery: 2 Detroit 12V 71TA diesels, 840 hp (627 kW) sustained; 2 shafts
Speed, knots: 19
Range, n miles: 450 at 13 kt
Complement: 8 (2 officers)
Guns: 2 Oerlikon 20 mm or 2—12.7 mm MGs.
Radars: Surface search: Racal Decca Super 101 Mk 3; I-band.

Comment: All have LPC numbers and Grumete precedes the ships' names. First six transferred from Israel and commissioned 3 January 1991. Second batch of four more transferred and commissioned 17 March 1995. A RIB inspection boat is carried on the stern. Deployed in 4th Naval Zone (Iquique) and in 2nd Naval Zone and operate in the Chiloé area. All underwent life extension refits in 2001–02 at Valparaíso and Puerto Montt. Two craft deleted in 2006. Service lives end by 2012.



HUDSON 7/2001, Maritime Photographic / 0121321

6 MICALVI CLASS (LARGE PATROL CRAFT) (PB/AEM)

Name	No	Builders	Launched	Commissioned
MICALVI	PSG 71	ASMAR, Talcahuano	12 Sep 1992	30 Mar 1993
ORTIZ	PSG 72	ASMAR, Talcahuano	23 July 1993	15 Dec 1993
ISAZA	PSG 73	ASMAR, Talcahuano	7 Jan 1994	31 May 1994
VIDELA (ex-Mora)	PMD 74	ASMAR, Talcahuano	21 Apr 1994	11 Aug 1994
CABRALES	PSH 77	ASMAR, Talcahuano	4 Apr 1996	29 June 1996
SIBBALD	PSG 78	ASMAR, Talcahuano	5 June 1996	29 Aug 1996

Displacement, tons: 518 full load
Dimensions, feet (metres): 139.4 × 27.9 × 9.5 (42.5 × 8.5 × 2.9)
Main machinery: 2 Caterpillar 3512 TA diesels, 2,560 hp(m) (1.88 MW) sustained; 2 shafts
Speed, knots: 15. **Range, n miles:** 4,200 at 12 kt
Complement: 23 (5 officers) plus 10 spare
Guns: 1 Bofors 40 mm/60 2 Derlikon 20 mm.
Radars: Surface search: Racal Decca; I-band

Comment: First four built under design project Taitao. Last pair built for export but bought by the Navy. Multipurpose patrol vessels with a secondary mission of transport and servicing navigational aids. Provision for bow thruster, sonar and mine rails. Can carry 35 tons cargo in holds and 18 tons in containers. Crane lift of 2.5 tons. The ships' names all have prefixed ranks but these are not used. Micalvi and Ortiz were classified as missile tenders in 1999 but reclassified as patrol craft in 2004. Cabrales has been converted for use as a survey vessel. Videla has been modified to provide medical support.



ORTIZ 7/2001, Maritime Photographic 0534129



MICALVI 11/2001, Freddie Phillips / 0534131

AMPHIBIOUS FORCES

Notes: There are plans to acquire a multipurpose vessel capable of force-projection and disaster-relief roles. The broad requirement is for a ship of up to 10,000 tons with a flightdeck capable of operating four medium lift helicopters, a dock and Ro-Ro capabilities. The ship is likely to be procured on the second-hand market and would replace *Valdivia*.

1 NEWPORT CLASS (LSTH)

Name	No	Builders	Laid down	Launched	Commissioned	Recommissioned
VALDIVIA (ex-San Bernardino)	93 (ex-LST 1189)	National Steel & Shipbuilding Co	12 July 1969	28 Mar 1970	27 Mar 1971	30 Sep 1995

Displacement, tons: 4,975 light; 8,450 full load
Dimensions, feet (metres): 522.3 (hull) × 69.5 × 17.5 (aft) (159.2 × 21.2 × 5.3)

Main machinery: 6ALCO 16-251 diesels, 16,500 hp (12.3 MW) sustained; 2 shafts; cp props; bow thruster
Speed, knots: 20 **Range, n miles:** 14,250 at 14 kt
Complement: 257 (13 officers)

Military lift: 400 troops; 500 tons vehicles; 3 LCVPs and 1 LCPL on davits

Radars: Surface search. Raytheon SPS-67; G-band.

Navigation: Marcon; LN66; I/J-band

Helicopters. Platform only

Programmes: Transferred from the US by lease on 30 September 1995. A second of class was offered but not accepted due to its poor condition.

Structure: The hull form required to achieve 20 kt would not permit bow doors, thus these ships unload by a 112 ft ramp over their bow. The ramp is supported by twin derrick arms. A ramp just forward of the superstructure connects the lower tank deck with the main deck and a vehicle passage through the superstructure provides

access to the parking area amidships. A stern gate to the tank deck permits unloading of amphibious tractors into the water, or unloading of other vehicles into an LCU or on to a pier. Vehicle stowage covers 19,000 sq ft. Length over derrick arms is 562 ft (171.3 m); full load draught is 11.5 ft forward and 17.5 ft aft. Bow thruster fitted to hold position offshore while unloading amphibious tractors.

Operational: Damaged by grounding in mid-1997, but subsequently repaired.



VALDIVIA

1/1999, van Ginderen Collection / 0056726

2 MAIPO (BATRAL) CLASS (LSTH)

Name	No	Builders	Launched	Commissioned
RANCAGUA	92	ASMAR, Talcahuano	6 Mar 1982	8 Aug 1983
CHACABUCO	95 (ex-93)	ASMAR, Talcahuano	16 July 1985	15 Apr 1986

Displacement, tons: 873 standard; 1,409 full load

Dimensions, feet (metres): 260.4 × 42.7 × 8.2 (79.4 × 13 × 2.5)

Main machinery: 2 Caterpillar diesels; 4,012 hp (m) (2.95 MW) sustained; 2 shafts, cp props

Speed, knots: 16 **Range, n miles:** 3,500 at 13 kt

Complement: 43 (5 officers)

Military lift: 180 troops; 12 vehicles; 350 tons

Guns: 2 Bofors 40 mm/60. 1 Oerlikon 20 mm. 2–81 mm mortars.

Radars: Navigation: Decca 1229; I/J-band.

Helicopters. Platform for 1 Bell 206B or BO 105C.

Comment: First laid down in 1980 to standard French design with French equipment. Have 40 ton bow ramps and vehicle stowage above and below deck. Both ships underwent life-extension refits in 2002–03.



CHACABUCO

12/2004, Globke Collection / 1047869

2 ELICURA CLASS (LSM)

Name	No	Builders	Commissioned
ELICURA	90	Talcahuano	10 Dec 1968
OROMPELLO	94	Dade Dry Dock Co, MI	15 Sep 1964

Displacement, tons: 290 light, 750 full load

Dimensions, feet (metres): 145 × 34 × 12.8 (44.2 × 10.4 × 3.9)

Main machinery: 2 Cummins VT-17-700M diesels, 900 hp (660 kW); 2 shafts

Speed, knots: 10.5. **Range, n miles:** 2,900 at 9 kt

Complement: 20

Military lift: 350 tons

Guns: 3 Oerlikon 20 mm (can be carried).

Radars: Navigation: Raytheon 1500B, I/J-band.

Comment: Two of similar class operated by Chilean Shipping Co. Oil fuel, 77 tons.



ELICURA

10/2001, Freddie Philips / 0534137

SURVEY SHIPS

Notes: Replacement of the Antarctic support ship *Oscar Viel Toro* is under consideration.

1 TYPE 1200 CLASS (AGS/AGOBH)

Name	No	Builders	Commissioned
CONTRE-ALMIRANTE OSCAR VIEL TORO (ex-Norman McLeod Rogers)	AP 48	Canadian Vickers, Montreal	Oct 1960

Displacement, tons: 6,320 full load

Measurement, tons: 4,179 gross; 1,847 net

Dimensions, feet (metres): 294.9 × 62.5 × 20 (89.9 × 19.1 × 6.1)

Main machinery: 4 Fairbanks-Morse 38D8-1/8-12 diesels, 8,496 hp (6.34 MW) sustained;

4 GE generators; 4.8 MW; 2 Ruston RK3CZ diesels; 7,250 hp (5.6 MW) sustained, 2 GE

generators; 2.78 MW; 2 GE motors; 12,000 hp (8.95 MW); 2 shafts

Speed, knots: 15

Range, n miles: 12,000 at 12 kt

Complement: 33

Guns: 2 Oerlikon 20 mm.

Helicopters: 1 BO 105C

Comment: Acquired from the Canadian Coast Guard on 16 February 1995. The ship was formerly based on the west coast at Victoria, BC, and was laid up in 1993. Replaced the dated *Piloto Pardo* as the Antarctic patrol and survey ship.



CONTRE-ALMIRANTE OSCAR VIEL TORO

6/2004, Chilean Navy / 1044093

1 ROBERT D CONRAD CLASS (AGOR)

Name	No	Builders	Commissioned
VIDAL GORMAZ (ex-Thomas Washington)	AGOR 60 (ex-AGOR 10)	Marinette Marine, WI	27 Sep 1965

Displacement, tons: 1,490 full load
 Dimensions, feet (metres): 208.9 x 40 x 15.3 (63.7 x 12.2 x 4.7)
 Main machinery: Diesel-electric; 2 FBM diesel generators; 1 Reliance motor; 1,000 hp (746 kW); 1 shaft
 Speed, knots: 12
 Range, n miles: 14,500 at 10 kt
 Complement: 48 (10 officers and 17 scientists)
 Guns: 2 Oerlikon 20 mm.
 Radars: Navigation: Decca 252/6; I-band. Raytheon R-84, I-band.

Comment: Transferred from US on 28 September 1992. This is the first class of ships designed and built by the US Navy for oceanographic research. Fitted with instrumentation and laboratories to measure gravity and magnetism, water temperature, sound transmission in water, and the profile of the ocean floor. Special features include 10 ton capacity boom and winches for handling over-the-side equipment; 620 hp gas turbine (housed in funnel structure) for providing 'quiet' power when conducting experiments; can propel the ship at 6.5 kt. Ships of this class are in service with several other navies. To be replaced by a new vessel in about 2010.



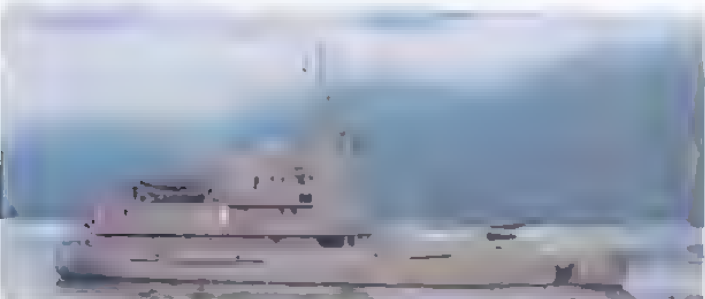
VIDAL GORMAZ 6/2008*, Chilean Navy / 1335350

1 BUOY TENDER (ABU)

Name	No	Builders	Commissioned
GEORGE SLIGHT MARSHALL (ex-MV Vigilant)	BRS 63	Netherlands	July 1978

Displacement, tons: 1,100 full load
 Dimensions, feet (metres): 173.9 x 36.7 x 11.5 (53 x 11.2 x 3.5)
 Main machinery: 2 Ruston 6AP230 diesels; 1,380 hp (1 MW); 2 shafts; bow thruster
 Speed, knots: 10
 Range, n miles: 4,600 at 5 kt
 Complement: 20
 Guns: 2 Oerlikon 20 mm.
 Radars: Navigation: Decca 252/6; I-band.

Comment: Acquired from the UK Mersey Harbour Board and recommissioned 5 February 1997. Carries a 15 ton derrick.



GEORGE SLIGHT MARSHALL 6/2008*, Chilean Navy / 1335349

0 + 1 OCEANOGRAPHIC RESEARCH SHIP (AGOR)

Name	No	Builders	Laid down	Launched	Commissioned
—	—	ASMAR, Talcahuano	2008	2008	Nov 2010

Measurement, tons: 3,020 grt
 Dimensions, feet (metres): 243.1 x 51.2 x 17.7 (74.1 x 15.6 x 5.4)
 Main machinery: Diesel electric; 3 Wärtsilä 8L20 diesel generators; 6,435 hp (4.8 MW); 2 Ansaldo motors; 4,023 hp (3.0 MW); 1 shaft; 1 bow thruster (450 kW); 1 stern thruster (450 kW)
 Speed, knots: 14.5
 Range, n miles: 10,000 at 12 kt
 Complement: 43 (9 officers) plus 25 scientists
 Radars: Surface search: To be announced
 Navigation: To be announced.

Comment: Project Medusa: Contract signed with ASMAR Talcahuano on 28 December 2007 for the construction of an oceanographic and fisheries research vessel to replace Vidal Gormez. The ST-367 design was developed by Skipsteknisk of Norway. The ship is equipped with four laboratories while the hydroacoustic research and positioning equipment is to be provided by Kongsberg Simrad. This includes: multibeam echosounders for deep and medium depth water, singlebeam echosounder for deep water, sub-bottom profiler, omni-directional sonar for biomass, surface sound velocity profiler and an acoustic Doppler current profiler.



ST-367 1/2008*, Skipsteknisk / 1294329

TRAINING SHIPS

1 SAIL TRAINING SHIP (AXS)

Name	No	Builders	Commissioned
ESMERALDA (ex-Don Juan de Austria)	BE 43	Bazan, Cadiz	15 June 1954

Displacement, tons: 3,420 standard, 3,754 full load
 Dimensions, feet (metres): 371.0 x 44.6 x 23 (113.7 x 13.7 x 7)
 Main machinery: 1 Burmeister & Wain diesel; 1,400 hp(m) (1.03 MW); 1 shaft
 Speed, knots: 13. Range, n miles: 11,600 at 10 kt
 Complement: 306 (23 officers and 79 cadets)
 Guns: 4 Hotchkiss saluting guns.

Comment: Four-masted schooner originally intended for the Spanish Navy. Near sister ship of Juan Sebastian de Elcano in the Spanish Navy. Refitted Saldanha Bay, South Africa, 1977. Sail area, 26,910 sq ft.



ESMERALDA 6/2007, Chris Sattler / 1170094

AUXILIARIES

Notes: Plans to replace the replenishment ship *Araucano* are under consideration. The most likely option is procurement on the second-hand market. Contenders include ex-US Navy Henry J Kaiser class *Andrew Higgins* AO 190.

3 FLOATING DOCKS (YFD)

Name	No	Commissioned	Lift
INGENIERO MERY (ex-ARD 25)	131	1944 (1973)	3,000 tons
MUTILLA (ex-ARD 32)	132	1944 (1960)	3,000 tons
TALCAHUANO (ex-ARD 5)	133	1944 (1999)	3,000 tons

Comment: There is also a Floating Dock *Marinero Gutierrez* with a 1,200 ton lift. Built in 1991

1 TRANSPORT SHIP (APH)

Name	No	Builders	Launched	Commissioned
AQUILES	AP 41	ASMAR, Talcahuano	4 Dec 1987	15 July 1988

Displacement, tons: 2,767 light; 4,550 full load
 Dimensions, feet (metres): 337.8 x 55.8 x 18 (103 x 17 x 5.5; max)
 Main machinery: 2 Krupp MaK 8 M 453B diesels; 7,080 hp(m) (5.10 MW) sustained; 1 shaft; bow thruster
 Speed, knots: 18
 Complement: 80
 Military lift: 250 troops
 Helicopters: Platform for up to Cougar size

Comment: Ordered 4 October 1985. Can be converted rapidly to act as hospital ship.



AQUILES 7/2001, Maritime Photographic / 0121377

For details of the latest updates to *Jane's Fighting Ships* online and to discover the additional information available exclusively to online subscribers please visit jfs.janes.com

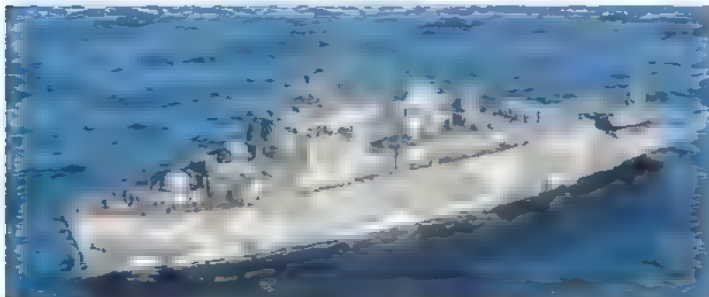
124 Chile/Auxiliaries—Tugs

1 ÄLVSBERG CLASS (SUPPORT SHIP) (AGP/ASH)

Name	No	Builders	Launched	Commissioned
MERINO (ex-Älvsborg)	42 (ex-A 234, ex-M 02)	Karlskronavarvet	11 Nov 1969	6 Apr 1971

Displacement, tons: 2,660 full load
Dimensions, feet (metres): 303 1 × 48.2 × 13.2 (92.4 × 14.7 × 4)
Main machinery: 2 Nohab-Polar 112 VS diesels, 4,200 hp(m) (3.1 MW); 1 shaft; cp prop; bow thruster, 350 hp(m) (257 kW)
Speed, knots: 18
Complement: 52 (accommodation for 205)
Guns: 3 Bofors 40 mm/70 SAK 48.
Countermasures: Decoys: 2 Philax chaff/IR launchers.
Radars: Raytheon; E/F-band.
Surface search: Philips 9GR 600; I-band
Fire control: Philips 9LV 200 Mk 2; I/J-band.
Navigation: Terma Scantec 009, I-band.
Helicopters: Platform for 1 medium.

Comment: Ordered in 1968 as a minelayer. Transferred from the Swedish Navy in November 1996, having been paid off in 1995. Recommissioned 7 February 1997. Originally designed as a minelayer with a capacity of 300 mines. Converted to act as a general support ship with improved accommodation and workshops. Acts as a depot ship for submarines and attack craft. The full name is *Almirante José Toribio Merino Castro*.



MERINO 7/2001, Maritime Photographic / 0121328

1 REPLENISHMENT SHIP (AOR)

Name	No	Builders	Commissioned
ARAUCANO	AO 53	Burmeister & Wain, Copenhagen	10 Jan 1967

Displacement, tons: 23,000 full load
Dimensions, feet (metres): 497.6 × 74.9 × 29.8 (151.7 × 22.8 × 8.8)
Main machinery: 1 Burmeister & Wain Type 62 VT 2BF140 diesel; 10,800 hp(m) (794 MW); 1 shaft
Speed, knots: 17. Range, n miles: 12,000 at 15.5 kt
Complement: 130 (14 officers)
Cargo capacity: 21,126 m³ liquid; 1,444 m³ dry
Guns: 4 Bofors 40 mm/60 (2 twin)
Radars: Navigation. Racal Decca; I-band.

Comment: Launched on 21 June 1966. Single-hulled design.



ARAUCANO 7/2001, Chilean Navy / 0121329

1 HARBOUR TRANSPORT (YFB)

Name	No	Builders	Commissioned
GRUMETE PEREZ	YFB 114	ASMAR, Talcahuano	12 Dec 1975

Displacement, tons: 165 full load
Dimensions, feet (metres): 80 × 22 × 8.6 (24.4 × 6.7 × 2.6)
Main machinery: 1 diesel; 370 hp(m) (272 kW); 1 shaft
Speed, knots: 10
Complement: 6
Guns: 1 Oerlikon 20 mm can be carried
Radars: Navigation: Furuno; I-band.

Comment: Transferred to Seaman's School as harbour transport. Modified fishing boat design.



GRUMETE PEREZ 8/1997, Chilean Navy / 0012168

1 SUPPLY SHIP (AKSL)

Name	No	Builders	Commissioned
PISAGUA	116	SiMAR, Santiago	11 July 1995

Displacement, tons: 195 full load
Dimensions, feet (metres): 73.2 × 19.7 × 4.9 (22.3 × 6 × 1.5)
Main machinery: 1 diesel, 1 shaft
Speed, knots: 8. Range, n miles: 500 at 8 kt
Cargo capacity: 50 tons
Radars: Navigation: Furuno; I-band

Comment: LCU design operated by the Seaman's School, Quiriquina Island as a general purpose stores ship.



PISAGUA 8/1997, Chilean Navy / 0012169

TUGS

Notes: Small harbour tugs *Reyes*, *Cortés* (both 100 tons and built in 1960) and *Galvez* (built in 1975), and the small personnel transport *Buzo Sobenes* BRT 112 are also in commission.



BUZO SOBENES 7/1997, Chilean Navy / 0012170

2 VERITAS CLASS (TUG/SUPPLY VESSELS) (ATF)

Name	No	Builders	Commissioned
GALVARINO (ex-Maersk Traveller)	ATF 66	Aukra Bruk, Aukra	1974
LAUTARO (ex-Maersk Tander)	ATF 67	Aukra Bruk, Aukra	1973

Displacement, tons: 941 light; 2,380 full load
Dimensions, feet (metres): 191.3 × 41.4 × 12.8 (58.3 × 12.6 × 3.9)
Main machinery: 2 Krupp MaK 8 M 453AK diesels; 6,400 hp(m) (4.7 MW); 2 shafts, cp props; bow thruster
Speed, knots: 14
Complement: 11 plus 12 spare berths
Cargo capacity: 1,400 tons
Guns: 1 Bofors 40 mm/70 can be carried.
Radars: Navigation: Terma Pilot 7T-48, Furuno FR 240; I-band.

Comment: *Janequero* and *Galvarino* delivered from Maersk and commissioned into Navy 26 January 1988. *Lautaro* delivered in 1991. *Janequero* since deleted. Bollard pull, 70 tonnes; towing winch, 100 tons. Fully air conditioned. Designed for towing large semi-submersible platform in extreme weather conditions. Ice strengthened. *Lautaro* underwent refit at ASMAR October 2006 to January 2007.



GALVARINO 7/2001, Maritime Photographic / 0121330

COAST GUARD

Notes: There are also large numbers of harbour and SAR craft.

1 + 1 (2) OFFSHORE PATROL VESSELS (PSO)

Name	No	Builders	Launched	Commissioned
PILOTO PARDO	PZM 81	ASMAR, Talcahuano	14 June 2007	13 June 2008
COMANDANTE TORO	PZM 82	ASMAR, Talcahuano	15 Oct 2008	June 2009

Displacement, tons: 1,728 full load
Dimensions, feet (metres): 264.4 x 42.6 x 12.5 (80.6 x 13.0 x 3.8)
Main machinery: 2 Wärtsilä 12V26 diesels; 10,950 hp (8.2 MW); 2 shafts; LIPS cp props; 2 bow thrusters
Speed, knots: 20
Range, n miles: 8,600 at 12 kt
Complement: 35 + 30 passengers
Guns: 1—40 mm/70, 6—12.7 mm MGs.
Radars: Surface search/navigation: Sperry Marine Bridgemaster E, E/F/I-bands.
Fire control: To be announced.
Helicopters: AS 365 or BO 105.

Programmes: Project Danubio IV. Contract signed on 20 May 2005 with Fassmer GmbH & Co. and Astilleros y Maestranzas de la Armada (ASMAR) for the design and construction of two patrol vessels. Fassmer is providing the design and construction assistance for the vessels which are under construction at Talcahuano Yard. Two further units are planned for delivery in 2010 and 2011.

Structure: Steel construction. The design includes stealth features. Upper-deck layout features a hangar, flight deck, crane, two 7 m RIBs, container storage and a special rescue zone.

Operational: PZM 81 based at Talcahuano.



PILOTO PARDO 6/2008*, Chilean Navy / 1335348

18 PROTECTOR CLASS (WPB)

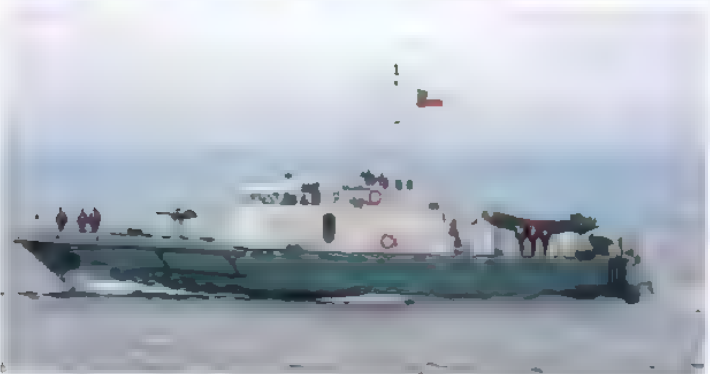
ALACALUFE LEP 1603	COQUIMBO LSG 1616
HALLEF LEP 1604	PUERTO NATALES LSG 1617
AYSÉN LSG 1609	VALPARAÍSO LSG 1618
CORRAL LSG 1610	PUNTA ARENAS LSG 1619
CONCEPCIÓN LSG 1611	TALCAHUANO LSG 1620
CALDERA LSG 1612	QUINTERO LSG 1621
SAN ANTONIO LSG 1613	CHILÓE LSG 1622
ANTOFAGASTA LSG 1614	PUERTO MONTT LSG 1623
ARICA LSG 1615	IQUIQUE LSG 1624

Displacement, tons: 120 full load
Dimensions, feet (metres): 107.3 x 22 x 6.6 (33.1 x 6.6 x 2)
Main machinery: 2 MTU MDEC 2,000 diesels; 5,200 hp(m) (3.82 MW); 2 shafts
Speed, knots: 22
Range, n miles: 800 at 18 kt
Complement: 10 (2 officers)
Guns: 1—12.7 mm MG
Radars: Navigation: Raytheon R-84, I-band.

Comment: All built under licence from FBM at ASMAR, Talcahuano, in conjunction with FBM Marine. There are minor differences between LEP 1603-4 and the rest. First commissioned 24 June 1989 and last on 10 March 2004. A class of 19 (Project Danube) is envisaged. All conduct coastal patrols between Arica and Puerto Williams.



ARICA 12/2004, Globke Collection / 1047868



ALACALUFE 6/2003, Chilean Navy / 0569805

1 ASMAR 1160 (SEARCH AND RESCUE CRAFT) (SAR)

TOKERAU LSR 1700

Displacement, tons: 7.8 standard; 10 full load
Dimensions, feet (metres): 41.5 x 12.8 x 2.1 (12.7 x 3.9 x 0.65)
Main machinery: 2 Volvo Penta TAMD-61A diesels; 612 hp (456 kW); 2 Hamilton waterjets
Speed, knots: 20
Range, n miles: 310 at 17 kt
Complement: 4 plus 32 survivors
Radars: Navigation: Raytheon R-84; I-band.

Comment: Built by Asmar Talcahuano and entered service in 1992. GRP hull and superstructure with inflatable surrounding bulwark. Carries extensive navigation, diving and first-aid equipment.



TOKERAU 6/2008*, Chilean Navy / 1335347

6 TYPE 44 CLASS (WPB)

PELLUHUE LSR 1703	QUEITAO LSR 1706
ARAUCO LSR 1704	GUAITECA LSR 1707
CHACAO LSR 1705	CURAUMILA LSR 1708

Displacement, tons: 18 full load
Dimensions, feet (metres): 44 x 12.8 x 3.6 (13.5 x 3.9 x 1.1)
Main machinery: 2 Detroit 6V-38 diesels; 185 hp (136 kW); 2 shafts
Speed, knots: 14
Range, n miles: 215 at 10 kt
Complement: 3

Comment: Acquired from the US and recommissioned on 31 May 2001



QUEITAO 6/2008*, Chilean Navy / 1335346

2 COASTAL PATROL CRAFT (WPB)

ONA LEP 1601	YAGAN LEP 1602
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Displacement, tons: 79 full load
Dimensions, feet (metres): 80.7 x 17.4 x 5.6 (24.6 x 5.3 x 1.7)
Main machinery: 2 MTU 8V 331 TC82 diesels; 1,300 hp(m) (960 kW) sustained; 2 shafts
Speed, knots: 18
Range, n miles: 415 at 15 kt
Complement: 5
Guns: 2—12.7 mm MGs.
Radars: Navigation: Raytheon R-84, I band.

Comment: Built by Asenav and commissioned in 1980.



YAGAN 6/2003, Chilean Navy / 0569804

10 INSHORE PATROL CRAFT (WPB)

MAULE LPM 1901	MAULLÍN LPM 1907
RAPEL LPM 1902	COPIAPO LPM 1908
ACONCAGUA LPM 1903	CAU CAU LPM 1909
LAUCA LPM 1904	PUDETO LPM 1910
ISLUGA LPM 1905	ROBINSON CRUSOE LPM 1911

Displacement, tons: 14 full load
Dimensions, feet (metres): 43.3 x 11.6 x 3.5 (13.2 x 3.5 x 1.1)
Main machinery: 2 MTU D-2566 MTE diesels; 470 hp(m) (350 kW) sustained; 2 shafts
Speed, knots: 18
Range, n miles: 280 at 14 kt
Guns: 1—12.7 mm MG.
Radars, Navigation: Raytheon; I-band

Comment: LPM 1901–1910 ordered in August 1981. Completed by Asenav 1982–83. LPM 1911 is a smaller 12 m craft built by Ast Sitecna, Puerto Montt, and commissioned 19 July 2000.



ACONCAGUA 12/2004, Giobke Collection / 10A/06/

4 + 11 DEFENDER CLASS (RESPONSE BOATS) (PBF)

PM 2050 PM 2052–2054

Displacement, tons: 2.7 full load
Dimensions, feet (metres): 25.0 x 8.5 x 3.8 (7.6 x 2.6 x 1.1)
Main machinery: 2 Honda outboard motors; 450 hp (335 kW)
Speed, knots: 46
Range, n miles: 175 at 35 kt
Complement: 4
Guns: 2—7.62 mm MGs
Radars, Navigation: Furuno 1834; I-band.

Comment: High-speed inshore patrol craft of aluminium construction and foam collar built by SAFE Boats International, Port Orchard, Washington. Four delivered 2007–08 and a further 11 are to be delivered 2009–14.



PM 2050

7/2001, Maritime Photographic / 0171331



PM 2050 6/2007, Chilean Navy / 1792714

1 + 19 ARCHANGEL CLASS (RESPONSE BOAT) (PBF)

LPM 4201

Displacement, tons: 12.6
Dimensions, feet (metres): 42.5 x 13.3 x 7.2 (12.9 x 4.1 x 2.3)
Main machinery: 2 Caterpillar C9 diesels, 550 hp (409 kW), 2 Hamilton 322 waterjets
Speed, knots: 36
Range, n miles: 300 at 25 kt
Complement: 6
Guns: 2—7.62 mm MGs.
Radars, Navigation: Furuno; I-band.

Comment: High-speed inshore patrol craft of aluminium construction and foam collar built by SAFE Boats International, Port Orchard, Washington. First delivered in 2008 and 19 further to be delivered 2009–14.



ARCHANGEL CLASS 6/2008, Chilean Navy / 1335343

15 RODMAN 800 CLASS (WPB)

PM 2031–2045

Displacement, tons: 4 full load
Dimensions, feet (metres): 29.2 x 9.8 x 3.6 (8.9 x 3 x 1.1)
Main machinery: 2 Volvo diesels; 300 hp(m) (220 kW); 2 shafts
Speed, knots: 28
Range, n miles: 150 at 25 kt
Complement: 3
Guns: 1—12.7 mm MG.
Radars, Navigation: Raytheon; I-band.

Comment: Built by Rodman Polyships, Vigo and all delivered by 17 May 1996.

China

PEOPLE'S LIBERATION ARMY NAVY (PLAN)



Country Overview

The People's Republic of China, proclaimed on 1 October 1949, is the world's third-largest country by area (3,695,000 square miles) and the largest by population. It is bordered to the north by Kyrgyzstan, Kazakhstan, Mongolia and Russia, to the south by Vietnam, Laos, Myanmar, India, Bhutan, Nepal and North Korea and to the west by Pakistan, Afghanistan and Tajikistan. It has a 7,830 n mile coastline with the Yellow, East China and South China seas. There are more than 3,400 offshore islands of which Hainan is the largest. Sovereignty over Taiwan, still formally a province of China, is also claimed. Ownership of some or all of the Spratly Islands is disputed between China, Brunei, Taiwan, Vietnam, Malaysia and the Philippines although a code of conduct was mutually brokered in 2002. The principal ports are Shanghai (largest city), Fuzhou, Qingdao, Tianjin, Guangzhou and Hangzhou which is linked to the capital Beijing by the Grand Canal. Overall there are 54,000 n miles of navigable inland waterways including the Yangtze River on which the port of Wuhan is situated. Territorial seas (12 n miles) are claimed. A 200 n mile EEZ has also been claimed but the limits have not been defined.

Headquarters Appointments

Commander-in-Chief of the Navy:

Admiral Wu Shengli

Political Commissar of the Navy:

Admiral Liu Xiaojiang

Deputy Commanders-in-Chief of the Navy:

Vice Admiral Zhao Xingta
 Vice Admiral Zhang Yongyi
 Vice Admiral Zhang Zhannan
 Vice Admiral Ding Yiping
 Vice Admiral Wang Yucheng

Fleet Commanders

North Sea Fleet:

Rear Admiral Tian Zhong

East Sea Fleet:

Rear Admiral Xu Hongmeng

South Sea Fleet:

Vice Admiral Su Shiliang

Personnel

- (a) 2009: 250,000 officers and men, including 25,000 naval air force, 8-10,000 marines (28,000 in time of war) and 28,000 for coastal defence
 (b) 2 years' national service for sailors afloat; 3 years for those in shore service. Some stay on for up to 15 years. 41,000 conscripts

Operational Numbers

Because numbers of vessels are kept in operational reserve, the Chinese version of the order of battle tends to show fewer ships than are counted by Western observers.

Organisation

Each of the North, East and South Sea Fleets has two submarine divisions, three DD/FF divisions and one MCMV division. The North also has one Amphibious Division, and the other Fleets have two each. The South has two Marine Infantry Brigades.

Bases

North Sea Fleet. Major bases: Qingdao (HQ), Huludao, Jiangezhuang, Guzhen Bay, Lushun, Xiaopingdao. Minor bases: Weihai Wei, Qingshan, Luda, Lianyungang, Ling Shan, Ta Ku Shan. Changshandao, Luozhuang, Dayuanjiadun, Dalian

East Sea Fleet. Major bases: Ningbo (HQ), Zhoushan, Shanghai, Daxie, Fujian. Minor bases: Zhenjianguan, Wusong, Xinxiang, Wenzhou, Sanduao, Xiemen, Xingxiang, Quandou, Wen Zhou SE, Wuhan, Dinghai, Jiaotou
 South Sea Fleet. Major bases: Zhanjiang (HQ), Yulin (Hainan Island), Huangfu, Hong Kong, Yalong (Hainan Island), Guangzhou (Canton). Minor bases: Haikou, Shantou, Humen, Kuanchuang, Tsun, Kuan Chung, Mawai, Beihai, Ping Tan, San Chou Shih, Tang-Chiah Huan, Longmen, Bailong, Dongcun, Beimaqing, Xiechuandao, Yuchi

Coast Defence

A large number of HY-2 (CSSC-3) and HY-3 (CSSC-301) SSMs in 20 semi-fixed armoured sites. 36 Coastal Artillery regiments.

Equipment Procurement

Although often listed under the name of the designer, equipment has not necessarily been supplied direct from the parent company. It may have been acquired from a third party or by reverse engineering.

Training

The main training centres are:

Dalian: Naval Vessel Academy
 Guangzhou (Canton): Naval Arms Command College
 Qingdao: Submarine Academy
 Wuhan: Naval Engineering University
 Nanjing: Naval Staff College
 Yan Tai: Aviation Engineering College

Marines

There are two brigades based at Haisu and subordinate to the Navy. Each has three Infantry regiments and one Artillery regiment.

Naval Air Force

With 25,000 officers and men and over 800 aircraft, this is a considerable naval air force primarily land-based. There is

a total of eight Divisions with 27 Regiments split between the three Fleets. Some aircraft are laid up unrepared.

Air bases include:

North Sea Fleet: Dalian, Qingdao, Jinxi, Jiyuan, Laiyang, Jiaoxian, Xingtai, Laishan, Anyang, Changzhi, Liangxiang and Shan Hai Guan

East Sea Fleet: Danyang, Daishan, Shanghai (Dachang), Ningbo, Luqiao, Feidong and Shitangqiao

South Sea Fleet: Foluo, Haikou, Lingshui, Sanya, Gurping, Jialaishi and Lingling

Strength of the Fleet

Type	Active (Reserve)	Building (Planned)
SSBN	1	5 (1)
SSB	1	-
SSN	6	(3)
Patrol Submarines	46	2 (2)
Aircraft carriers	0	1 (1)
Destroyers	27	-
Frigates	49	2
Fast Attack Craft (Missile)	94	5
Patrol Craft	181	-
Minesweepers (Ocean)	27 (22)	-
Mine Warfare Drones	4 (42)	-
Minelayer	1	-
Hovercraft	10	-
LFD	1	-
LSTs	27	-
LSMs	54	-
LCMs-LCUs	176	-
Training Ships	2	-
Troop Transports (AP/AH)	6	-
Submarine Support Ships	11	-
Salvage and Repair Ships	1	-
Supply Ships	19	-
Fleet Replenishment Ships	6	-
Support Tankers	77	-
Hospital Ship	1	(1)
Icebreakers	4	-

DELETIONS

Submarines

2006 8 Romeo, 1 Ming
 2008 7 Romeo, 1 Mod Romeo

Destroyers

2007 Xian

Frigates

2007 Change Da (to CG), Shaoying (to CG)

PENNANT LIST

Submarines	516	Jiujiang	567	Xiangfen	946	Songshan
406 Xie	517	Nanping	568	Chaochu	947	-
	518	Jian	570	Huangshan	948	Xueshan
	519	Changzhi			949	Hongshan
Destroyers	521	Jiaxing	Patrol Forces		950	Taishan
107 Yinchuan	522	Lianyungang	770 Yangjiang		990	Wudangshan
108 Xining	523	Putian	771 Shunde		992	Huadingshan
109 Kaifeng	524	Sanming	772 Nanhai		993	Luoxiaoshan
110 Dalian	525	Maanshan	773 Panyu		994	Daryunshan
112 Harbin	526	Wenzhou	774 Lianjiang		996	Wangyangshan
113 Qingdao	527	Luoyang	776 Xinhui		998	Laotieshan
116 Shenyang	528	Mianyang			997	Yunwanshan
116 Shijiazhuang	529	Xuzhou			998	Kunlunshan
131 Nanjing	530	Zhoushan				
132 Hefei	533	Taizhou	Amphibious Forces			
133 Chongqing	534	Jinhua	908 Yandanshan			
134 Zunyi	535	Huangshi	909 Jiuhuashan			
136 Hangzhou	536	Wuhu	910 Huanggangshan			
137 Fuzhou	537	Cangzhou	911 Tianzhushan			
138 Taizhou	539	Anqing	912 Daqingshan			
139 Ningbo	540	Huainan	913 Baxianshan			
161 Changsha	541	Huaibei	918 -			
162 Nanning	542	Tongling	927 Yuntaishan			
163 Nanchang	543	Dandong	928 Wufengshan			
164 Guilin	544	Siping	929 Zijinshan			
165 Zhanjiang	545	Linfen	930 Lingyanshan			
166 Zhuhai	551	Maoming	931 Dongtongshan			
167 Shenzhen	552	Yibin	932 Helanshan			
168 Guangzhou	553	Shaoguan	933 Liupanshan			
169 Wuhan	554	Anshun	934 Danxiashan			
170 Lanzhou	555	Zhaotong	935 Xuefengshan			
171 Haikou	557	Jishou	936 Haiyangshan			
	558	Zigong	937 Qingchengshan			
	559	Baihai	938 Putuoshan			
Frigates	560	Dongguan	939 Tiantaishan			
511 Nantong	561	Shantou	941 Shengshan			
512 Wuxi	562	Jiangmen	942 Lushan			
513 Huayin	563	Foshan	943 -			
514 Zhenjiang	564	Yichang	944 Yushan			
515 Xiemen	565	Yulin	945 Huashan			
	566	Huizhou				

Survey and Research Ships

851 Dongdiao
 891 Bi Sheng
 892 Hua Luogeng
 900 Beidiao

Training Ships

81 Zhenghe
 82 Shichang

Principal Auxiliaries

506 Yongxingdao
 861 Changxingdao
 862 Chongmingdao
 863 Yongxingdao
 881 Hongzhu
 882 Fengchang
 885 Qinghai Hu
 886 Qiandao Hu
 887 Weishan Hu
 888 Fuxian Hu
 920 Dazhi

SUBMARINES

Strategic Missile Submarines

Notes: The fourth test flight of a JL-2 missile was successfully accomplished on about 12 June 2006. The firing was made from a submarine, probably the Golf class SSB, off Qingdao and impacted in the western desert. The first launch from a Jin-class submarine is expected once missile flight testing has been completed, probably in 2009.

0 + 5 (1) JIN CLASS (TYPE 094) (SSBN)

Name	No	Builders	Laid down	Launched	Commissioned
-	-	Bohai Shipyard, Huludao	2001	28 July 2004	Mar 2007
-	-	Bohai Shipyard, Huludao	2003	2006	2009
-	-	Bohai Shipyard, Huludao	2004	2009	2011
-	-	Bohai Shipyard, Huludao	2006	2011	2013
-	-	Bohai Shipyard, Huludao	2007	2012	2014

Displacement, tons: 8,000
Dimensions, feet (metres), 449.5 x 38.7 x 7.5
 (1370 x 11.8 x 2.3)

Main machinery: Nuclear; 2 PWR; 150 MW; 2 turbines; 1 shaft
Speed, knots: To be announced
Complement: 140

Missiles: SLBM; 12 JL-2 (CSS-NX-5); 3-stage solid-fuel rocket; stellar inertial guidance to over 8,000 km (4,320 n miles); single nuclear warhead of 1 MT or 3-8 MIRV of smaller yield. CEP 300 m approx.

Torpedoes: 6-21 in (533 mm tubes).

Countermeasures: Decoy: ESM.

Radars: Surface search

Sonars: Hull mounted passive/active; flank and towed arrays.

Programmes: The first of class became operational as a submarine in mid-2007 and as a ballistic-missile submarine in about 2009-10, depending on the successful introduction into service of the JL-2 missile. Four further boats are thought to be under construction and are likely to commission at two year intervals. A class of six is expected.

Structure: Likely to be based on the Type 093 SSN design which in turn is believed to be derived from the Russian Victor III design. The dimensions of the hull assume the incorporation of a 30 m 'missile plug' of 12 tubes for the 42 ton JL-2 missiles.

Operational: Likely to be based at Yalong, Hainan Island. While the performance of the missile is speculative, its range may prompt a change in operating concept to a 'bastion' patrol approach. The second of class began sea trials in 2008.



JIN CLASS

12/2006 / 1167755

JIN CLASS
10/2007
1165717

1 XIA CLASS (TYPE 092) (SSBN)

Name	No	Builders	Laid down	Launched	Commissioned
XIA	406	Bohai Shipyard, Huludao	1978	30 Apr 1981	1987

Displacement, tons: 6,500 dived
Dimensions, feet (metres), 393.6 x 33 x 26.2
 (120 x 10 x 8)

Main machinery: Nuclear; turbo-electric; 1 PWR; 90 MW; 1 shaft

Speed, knots: 22 dived
Complement: 140

Missiles: SLBM; 12 JL-1 (CSS-N-3); inertial guidance to 2,150 km (1,160 n miles); warhead single nuclear 250 kT.

Torpedoes: 6-21 in (533 mm) bow tubes. Yu-3 (SET-65E); active/passive homing to 15 km (8.1 n miles) at 40 kt; warhead 205 kg.

Countermeasures: ESM Type 921-A; radar warning

Radars: Surface search Snoop Tray; I-band.

Sonars: Trout Cheek, hull-mounted; active/passive search and attack; medium frequency

Programmes: A second of class was reported launched in 1982 and an unconfirmed report suggests that one of the two was lost in an accident in 1985

Modernisation: Started major update in late 1995 at Huludao, thought to include fitting improved JL-1A missile with increased range but this has not been confirmed

Structure: Diving depth 300 m (985 ft).

Operational: First test launch of the JL-1 missile took place on 30 April 1982 from a submerged pontoon near Huludao (Yellow Sea). Second launched on 12 October 1982, from the Golf class trials submarine. The first firing from Xia was in 1985 and was unsuccessful (delaying final acceptance into service of the submarine) and it was not until 27 September 1988 that a satisfactory launch took place. Based in the North Sea Fleet at Jianggezhuang. Following a refit which completed in late 1998, was reported to be operational as a submarine in 2003 although firing of a JL-1 missile has not been reported and its status as a ballistic-missile submarine is uncertain.



XIA

2002, Ships of the World / 0579138

1 GOLF CLASS (TYPE 031) (SSB)

200

Displacement, tons: 2,350 surfaced; 2,950 dived**Dimensions, feet (metres):** 319.9 × 28.2 × 21.7
(97.5 × 8.6 × 6.6)**Main machinery:** Diesel-electric; 3 Type 37-D diesels;
6,000 hp(m) (4.41 MW); 3 motors; 5,500 hp(m) (4 MW);
3 shafts**Speed, knots:** 17 surfaced; 13 dived**Range, n miles:** 6,000 surfaced at 15 kt**Complement:** 86 (12 officers)**Missiles:** SLBM: 1 JL-2 (CSS-NX-5); 3-stage solid fuel;
stellar inertial guidance to 8,000 km (4,320 n miles);single nuclear warhead of 1 MT or 3-8 MIRV of smaller
yield. CEP 300 m approx.**Torpedoes:** 10-21 in (533 mm) tubes (8 bow, 4 stern).
12 Type Yu-4 (SAET-60); passive homing to 15 km (8.1 n
miles) at 30 kt; warhead 309 kg**Radars:** Navigation: Snoop Plate; I-band**Sonars:** Pike Jaw; hull-mounted; active/passive search;
medium frequency.**Programmes:** Ballistic missile submarine similar but not
identical to the deleted USSR Golf class. Built at Dalian
and launched in September 1966.**Modernisation:** Refitted in 1995 to take the JL-2 missile.**Operational:** This was the trials submarine for the JL-1
ballistic missile which was successfully launched to
1,800 km in October 1982. Continues to be available
as a trials platform for the successor missile JL-2 and
probably conducted a test firing on 12 June 2005. Based
in the North Sea Fleet.

GOLF 200

2002, *Ships of the World* / 0579137

Attack Submarines

Notes. Following the entry into service of two units of the Shang class, it is believed that further attack submarines are under consideration. These are likely to be to a modified evolutionary design, possibly to be known as the Type 095 class.

2 SHANG CLASS (TYPE 093) (SSN)

Name	No	Builders	Laid down	Launched	Commissioned
-	-	Bohai Shipyard, Huludao	1994	24 Dec 2002	Dec 2006
-	-	Bohai Shipyard, Huludao	2000	Dec 2003	June 2007

Displacement, tons: 6,000 dived**Dimensions, feet (metres):** 351 × 36 × 24.6
(107 × 11 × 7.5)**Main machinery:** Nuclear: 2 PWR; 150 MW; 2 turbines; 1 shaft**Speed, knots:** 30 dived**Complement:** 100**Missiles:** SSM: YJ-82 (C-801A); radar active homing to
40 km (22 n miles) at 0.9 Mach, warhead 165 kg.**Torpedoes:** 6-21 in (533 mm) bow tubes; combination of
Yu-3 (SET-65E); active/passive homing to 15 km (8.1 n
miles) at 40 kt; warhead 205 kg and Yu-4; active/passive
homing to 15 km (8.1 n miles) at 30 kt; warhead 309 kg.
Yu-6 wake-homing torpedo may also be carried.**Countermeasures:** Decoys. ESM.**Radars:** Surface search**Sonars:** Hull mounted passive/active; flank and towed
arrays.**Programmes:** Designed in conjunction with Russian
experts. Prefabrication started in late 1994 and the first
launch took place in late 2002. The boats entered service
in 2006 and 2007 respectively.**Structure:** Performance is likely to be similar to the double-
hulled Russian Victor III design.**Operational.** Sea trials of the first of class began in 2005
and of the second boat in 2006. Both based at Yalong,
Hainan Island

SHANG CLASS

6/2007 / 1165715



SHANG CLASS

6/2007 / 1165715

4 HAN CLASS (TYPE 091/091G) (SSN)

No	Builders	Laid down	Launched	Commissioned
402	Bohai Shipyard, Huludao	1974	1977	Jan 1980
403	Bohai Shipyard, Huludao	1980	1983	21 Sep 1984
404	Bohai Shipyard, Huludao	1984	1987	Nov 1988
405	Bohai Shipyard, Huludao	1987	8 Apr 1990	Dec 1990

Displacement, tons: 4,500 surfaced; 5,550 dived
Dimensions, feet (metres): 314.9; 331.4 (404 onwards) x 32.8 x 24.2 (96.0, 101.0 x 10 x 7.4)
Main machinery: Nuclear; turbo-electric; 1 PWR; 90 MW; 1 shaft
Speed, knots: 25 dived, 12 surfaced
Complement: 75

Missiles: SSM: YJ-82 (C-801A); inertial cruise; active radar homing to 40 km (22 n miles) at 0.9 Mach; warhead 165 kg.
Torpedoes: 6-21 in (533 mm) bow tubes; combination of Yu-3 (SET-65E); active/passive homing to 15 km (8.1 n miles) at 40 kt; warhead 205 kg and Yu-4; active/passive homing to 15 km (8.1 n miles) at 36 kt; warhead 309 kg
Mines: 36 in lieu of torpedoes.
Countermeasures: ESM: Type 921-A, radar warning.
Radars: Surface search; Snoop Tray; I-band
Sonars: Trout Cheek; hull-mounted, active/passive search and attack; medium frequency.
 DUUX-5; passive ranging and intercept, low frequency.

Programmes: First of this class delayed by problems with the power plant. Although completed in 1974 she was not fully operational until the 1980s.

Modernisation: The basic Russian ESM equipment was replaced by a French design. A French intercept sonar set has been fitted.

Structure: From 404 onwards the hull has been extended by some 5 m although this was not to accommodate missile tubes as previously reported. SSMs may be fired from the torpedo tubes. Diving depth 300 m (985 ft).

Operational: Three based in North Sea Fleet at Jianggezhuang, one based at the new submarine base



HAN 404

5/1996, Ships of the World / 05062/1

at Yalong, Hainan Island, in 2005. 403 and 404 started mid-life refits in 1998 which completed in early 2000. 405 started mid-life refit in 2000 and was reported completed in 2002. Torpedoes are a combination of older

straight running and more modern Russian homing types. The first of class 401 was reported to have been decommissioned in 2003 and it is expected that others will follow now that the Type 093 has entered service.



HAN 402

1990 / 06067/16

Patrol Submarines

Notes: An unknown number of midget submannes are reported in service

2 + 2 (2) YUAN CLASS (TYPE 041) (SSG)

Name	No	Builders	Laid down	Launched	Commissioned
-	330	Wuhan Shipyard	-	31 May 2004	2006
-	-	Wuhan Shipyard	-	31 Aug 2007	2009
-	-	Wuhan Shipyard	-	Nov 2007	2010
-	-	Wuhan Shipyard	-	Apr 2008	2011

Displacement, tons: To be announced
Dimensions, feet (metres): 236.2 x 27.5 x 7 (72.0 x 8.4 x 7)
Main machinery: Diesel-electric; 4 diesels; 1 motor; 2 Stirling AIP (to be confirmed); 1 shaft
Speed, knots: To be announced
Complement: To be announced

Missiles: SSM: YJ-82 (C-801A); inertial cruise; active radar homing to 40 km (22 n miles) at 0.9 Mach; warhead 165 kg.
Torpedoes: 6-21 in (533 mm) bow tubes. Combination of Yu-4 (SAET-50), active/passive homing to 15 km (8.1 n miles) at 30 kt; warhead 309 kg and Yu-3 (SET65E),

active/passive homing to 15 km (8.1 n miles) at 40 kt; warhead 205 kg. Yu-6 wake-homing torpedoes may also be fitted

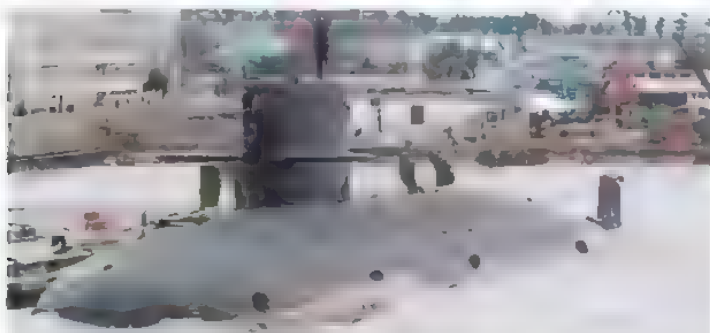
Countermeasures: To be announced.
Weapons control: To be announced.
Radars: To be announced
Sonars: Bow-mounted, active/passive search and attack, medium; medium frequency. Flank array; passive search, low frequency.

Programmes: A new class of submarine of which the first of class was launched in May 2004. Production of the second of class was delayed by trials of

the first of class. Series production is expected to proceed.

Structure: The boat appears to be a Chinese indigenous design. Shorter and broader than the Song class, it exhibits some of the features of the Russian Kilo class design including a teardrop-shaped hull with a distinctive 'hump' and large fin. The teardrop shape suggests a pressurised double hull construction. The stern of the boat resembles the Song class; the single shaft has a seven-bladed propeller. The submarine is covered with anechoic tiles. The submarine is believed to incorporate air-independent propulsion using Stirling engine technology.

Operational: Sea trials of the first of class started in 2005.



YUAN CLASS

1/2008* / 13356/96



YUAN CLASS

4/2005, Ships of the World / 11970/71

13 SONG CLASS (TYPE 039/039G) (SSG)

No	Builders	Laid down	Launched	Commissioned
320	Wuhan Shipyard	1991	25 May 1994	June 1999
321	Wuhan Shipyard	1995	11 Nov 1999	Apr 2001
322	Wuhan Shipyard	1996	28 June 2000	Dec 2001
323	Wuhan Shipyard	1998	May 2002	Nov 2003
324	Wuhan Shipyard	1999	28 Nov 2002	Dec 2003
325	Wuhan Shipyard	2001	3 Dec 2002	2004
314	Wuhan Shipyard	2001	19 May 2003	2004
315	Wuhan Shipyard	2002	29 Sep 2003	2004
316	Wuhan Shipyard	2002	28 Aug 2004	2005
328	Wuhan Shipyard	2002	July 2004	2005
328	Jiangnan Shipyard, Shanghai	2002	Aug 2004	2005
327	Wuhan Shipyard	2003	Sep 2004	2006
329	Jiangnan Shipyard, Shanghai	2003	Nov 2004	2006

Displacement, tons: 1,700 surfaced; 2,250 dived

Dimensions, feet (metres): 246 × 24.6 × 17.5
(74.9 × 7.5 × 5.3)

Main machinery: Diesel-electric; 4 MTU 16V 396 SE, 6,092

hpim) (4.48 MW) diesels; 4 alternators; 1 motor; 1 shaft

Speed, knots: 15 surfaced; 22 dived

Complement: 60 (10 officers)

Missiles: SSM: YJ-82 (C-801A); radar active homing to 40 km (22 n miles) at 0.9 Mach; warhead 165 kg

Torpedoes: 6–21 in (533 mm) tubes. Combination of Yu-4 (SAET-50); passive homing to 15 km (8.1 n miles) at 30 kt; warhead 309 kg and Yu-3 (SET-65E); active/passive homing to 15 km (8.1 n miles) at 40 kt; warhead 205 kg. Yu-6 wake-homing torpedoes may also be fitted.

Mines: In lieu of torpedoes.

Countermeasures: ESM Type 921-A; radar warning

Radars: Surface search: I-band.

Sonars: Bow-mounted; passive/active search and attack, medium frequency.

Flank array; passive search; low frequency.

Programmes: First of class (Type 039) started sea trials in August 1995, as a result of which substantial modifications were made. Second of class (Type 039G) trials started in early 2000 and third in early 2001. Fourth commissioned in 2003 while fifth and sixth conducted trials in late 2003. Construction of the seventh hull is understood to have started in 2001 and of the eighth, ninth and tenth hulls in 2002. The twelfth hull is reported to have started construction at Wuhan in 2003. The building programme appears to have been switched to Jiangnan Shipyard, Shanghai, where the eleventh and thirteenth boats were built. Further units of the class are not expected.

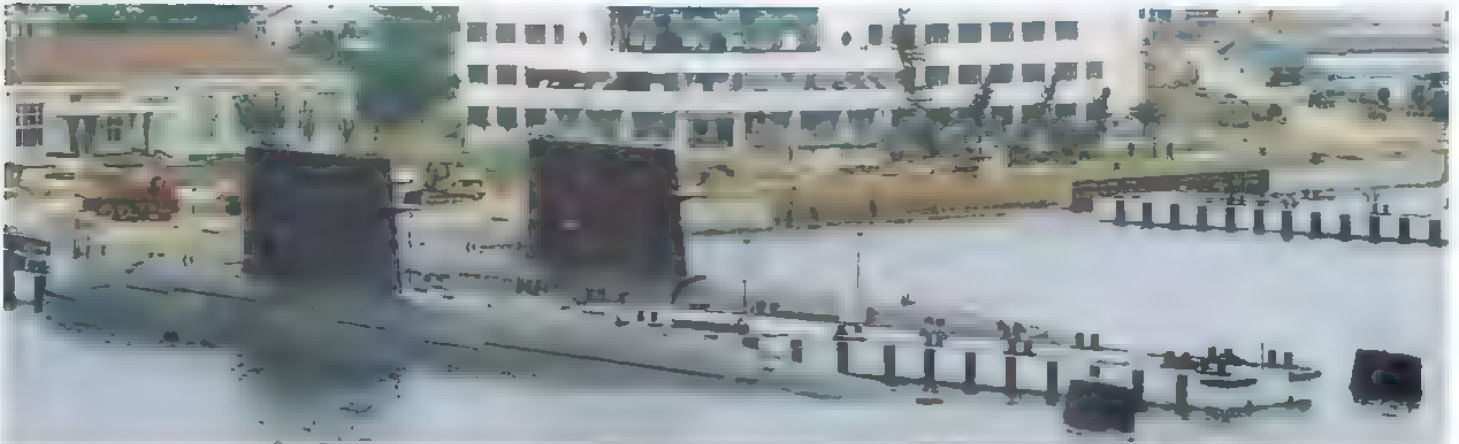
Structure: Comparable in size to Ming class but with a single skew propeller and an integrated spherical bow sonar. The forward hydroplanes are mounted below the bridge, which is on a step lower than the part of the fin that contains the masts in earlier boats. The fin is of a different shape (no cutaway) in later boats. Some of the details are speculative and the latest hulls of the class may have benefited from experience gained with the Kilos. The diesel engines are likely to be reverse engineered. Sonars are reported to be of French design.



SONG CLASS

4/2004, *Ships of the World* / 1042142

SONG CLASS

1/2007, *Ships of the World* / 1166772

SONG CLASS 315 and 316

6/2005, *Hachiro Nakai* / 1152050

SONG CLASS

6/2004 / 1042169

12 KILO CLASS (PROJECT 877EKM/636) (SSG)

No	Builders	Laid down	Launched	Commissioned
364 (ex-B 171)	Nizhny Novgorod	-	-	Feb 1995
365 (ex-B 177)	Nizhny Novgorod	-	31 Mar 1985	Aug 1995
366	Admiralty, St Petersburg	-	24 Apr 1997	6 Jan 1998
367	Admiralty, St Petersburg	-	18 June 1998	11 Dec 1998
368	Admiralty, St Petersburg	-	27 May 2004	20 Oct 2004
369	Admiralty, St Petersburg	-	19 Aug 2004	5 May 2005
370	Severodvinsk Shipyard	29 May 2003	21 May 2005	22 Dec 2005
371	Admiralty, St Petersburg	-	28 Feb 2005	18 July 2005
372	Nizhny Novgorod	1991	17 May 2004	Oct 2005
373	Admiralty, St Petersburg	-	24 May 2005	Oct 2005
374	Severodvinsk Shipyard	29 May 2003	27 July 2005	27 Dec 2005
375	Admiralty, St Petersburg	-	26 Aug 2005	30 May 2006

Displacement, tons: 2,325 surfaced; 3,076 dived
Dimensions, feet (metres): 238.2; 242.1 (Project 636) x 32.5 x 21.7 (72.6; 73.8 x 9.9 x 6.6)
Main machinery: Diesel-electric; 2 diesels; 3,650 hp(m) (2.68 MW); 2 generators; 1 motor; 6,900 hp(m) (4.34 MW); 1 shaft; 2 auxiliary motors; 204 hp(m) (150 kW); 1 economic speed motor; 130 hp(m) (95 kW)
Speed, knots: 17 dived; 10 surfaced
Complement: 52 (13 officers)

Missiles: SLCM. Novator Alfa Klub SS-N-27 (3M-54E1); active radar homing to 180 km (97.2 n miles) at 0.7 Mach (cruise) and 2.5 Mach (attack); warhead 450 kg.

Torpedoes: 6-21 in (533 mm) tubes. 18 torpedoes. Combination of TEST 71/96, wire-guided; active/passive homing to 15 km (8.1 n miles) at 40 kt; warhead 205 kg and 53-65; passive wake homing to 19 km (10.3 n miles) at 45 kt; warhead 300 kg

Mines: 24 in lieu of torpedoes.

Countermeasures: ESM Squid Head or Brick Pulp; radar warning.

Weapons control: MVU-119 EM Murena TFCS

Radars: Surface search. SnoopTray; I-band

Sonars: Shark Teeth; hull-mounted, passive/active search and attack; medium frequency
 Mouse Roar; hull-mounted, active attack; high frequency

Programmes: The first four boats were ordered in mid-1993. The first two are Project 877 hulls built for a former Warsaw Pact country and subsequently cancelled. The first one departed the Baltic in December 1994 and arrived by transporter ship in February 1995. The second was delivered by the same method in November 1995. The third and fourth are of the newer Project 636 design. The first of these two left the Baltic by transporter in November 1997 and arrived in January 1998. The second followed in December 1998 arriving on 1 February 1999. A contract for a further eight 636 or 636M variants armed with SS-N-27 was signed on 3 May 2002. The first of these was originally laid down at Nizhny Novgorod for the Russian Navy, but was never completed due to lack of funding.

She is likely to be the last submarine to have been built at the shipyard. Five of the boats were built by Admiralty Yard, St Petersburg and the remaining two boats at Severodvinsk. The programme was completed in 2006.

Modernisation: The first four submarines are to be refitted in Russian shipyards. Upgrades are likely to include installation of the Klub (3M54) (SS-N-27) anti-ship missile system.

Structure: Latest export version of the elderly Kilo design and has better weapon systems co-ordination and improved accommodation than the earlier ships of the class. Double-hull construction with six watertight compartments. Normal diving depth is 240 m with 300 m available in emergency. At least two torpedo tubes can fire wire-guided weapons. An SA-N-8 SAM launcher may be fitted on top of the fin. Some modifications have been carried out after arrival in China including a possible new ESM

Operational: The first four based at Xiangshan in the East Sea Fleet. Of the remaining eight boats, four are likely to be based in the East Sea Fleet and four in the South Sea Fleet.



KILO CLASS

1/2008*, A Sheldon-Duplatz / 1335695



KILO CLASS (in transit)

6/2006 / 1164401

19 MING CLASS (TYPE 035) (SS)

352-354

356-363

305-308

310-313

Displacement, tons: 1,584 surfaced; 2,113 dived
Dimensions, feet (metres), 249.3 × 24.9 × 16.7
 (76 × 7.6 × 5.1)

Main machinery: Diesel-electric; 2 diesels, 5,200 hp(m)
 (3.82 MW); 2 shafts

Speed, knots: 15 surfaced; 18 dived; 10 snorkeling

Range, n miles: 8,000 at 8 kt snorkeling; 330 at 4 kt dived

Complement: 57 (10 officers)

Torpedoes: 8-21 in (533 mm) (6 fwd, 2 aft) tubes.
 Combination of Yu-4 (SAET-50); passive homing to 15 km
 (8.7 n miles) at 30 kt; warhead 309 kg, and Yu-1 (53-51) to
 9.2 km (5 n miles) at 39 kt or 3.7 km (2.1 n miles) at 51 kt;
 warhead 400 kg; 16 weapons.

Mines: 32 in lieu of torpedoes.

Raders: Surface search SnoopTray; i-band

Sonars: Pike Jaw; hull-mounted; active/passive search and
 attack, medium frequency
 DUUX 5; passive ranging and intercept; low frequency

Programmes: First three completed between 1971 and
 1979 one of which was scrapped after a fire and another
 (232) has been decommissioned. These were Type
 ES5C/D. Building resumed at Wuhan Shipyard in 1987
 at the rate of one per year to a modified design ES5E.
 The programme was thought to have ended with hull
 number 14 (363) launched in May 1996, but 305 was
 launched in June 1997 followed by 306 in September
 1997, 307 in May 1998, 308 in October 1998, 310 in June
 2000, 311 in September 2000, 312 in May 2001 and 313 in

April 2002. The expected launch of a further boat in 2003
 did not take place and, in view of the 'Kilo' programme,
 this programme has probably been discontinued.

Structure: Diving depth, 300 m (985 ft). Only the later
 models have the DUUX 5 sonar. Hull 20 is reported to
 have a 2 m extension to its machinery space.

Operational: Thirteen are based in the North Sea Fleet at
 Lushun, Qingdao and Xiapingdao. From 305 onwards,
 based in the South Sea Fleet. Some have moved to
 Xiachuandao. Fitted with Magnavox SATNAV. All
 onboard 361 (70 officers and men) killed in an accident
 in April 2003. The cause of the accident is believed to
 have been carbon monoxide poisoning. After repairs
 at Dalian, the submarine became operational again
 in 2004.



MING CLASS

3/2008 / 1335651



MING CLASS

3/2006, Lemechko Collection / 1166769

AIRCRAFT CARRIERS

Notes: (1) The former Russian aircraft carrier *Minsk* is a tourist attraction at Shenzhen.
 (2) Building of an indigenous aircraft carrier is expected to start by 2010 with a view to entering service in about 2015.

0 + 1 KUZNETSOV (OREL) (PROJECT 1143.5/6) CLASS (CVGM)

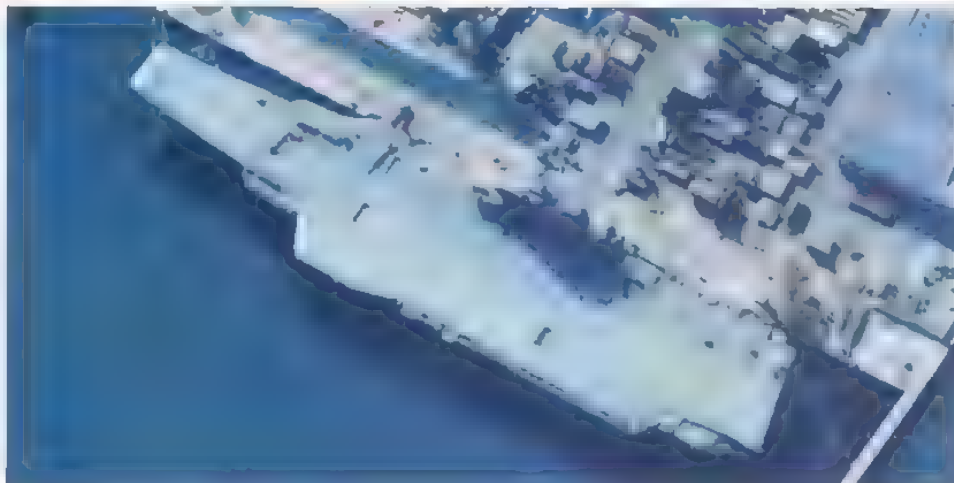
Name	No	Builders	Laid down	Launched	Commissioned
SHI LANG (ex-Varyag, ex-Riga)	83	Nikolayev South, Ukraine	6 Dec 1985	6 Dec 1988	2008

Displacement, tons: 45,900 standard; 58,500 full load
 Dimensions, feet (metres): 999 oa; 918.6 wl x 229.7 oa,
 121.4 wl x 34.4 (304.5, 280 x 70; 37 x 10.5;
 Flight deck, feet (metres): 999 x 229.7 (304.5 x 70)
 Main machinery: 8 boilers; 4 turbines; 200,000 hp(m)
 (147 MW); 4 shafts
 Speed, knots: 30
 Range, n miles: 3,850 at 29 kt; 8,500 at 18 kt
 Complement: 1,960 (200 officers plus 626 aircrew plus
 40 flag staff)

Missiles: SAM: To be announced
 Guns: To be announced
 A/S mortars: To be announced.
 Countermeasures: Decoys: ESM/ECM: To be announced.
 Weapons control: To be announced.
 Radars: Air search: To be announced
 Air/surface search: To be announced
 Surface search: To be announced.
 Navigation: To be announced.
 Fire control: To be announced
 Aircraft control: To be announced.
 Tacan: To be announced.
 IFF: To be announced.
 Sonars: To be announced.

Fixed-wing aircraft: 18 Su-33 Flanker D.
 Helicopters: To be announced

Programmes: Procurement of an aircraft carrier capability has been a high priority for the Chinese Navy since the 1990s. Ex-Varyag, the second of the Kuznetsov class (the first of class, Admiral Kuznetsov, remains in service in the Russian Navy) was between 70 and 80 per cent complete by early 1993 when building was terminated after an unsuccessful attempt by the Russian Navy to fund completion. Subsequently the ship was bought by China and, having been towed through the Bosphorus on 2 November 2001, arrived at Dalian in March 2002. Since then, there have been conflicting reports about Chinese plans for the ship but, following its emergence from dock in mid-2005 painted



SHI LANG

2/2008 / 1335660

in military colours, it is likely that it is intended to bring the ship into operational service. Work in 2006 included the apparent application of a non-skid surface to the flight deck and, by mid-2008, the exterior of the ship was looking relatively shipshape. However the overall project appears to be taking longer than expected. A further 2-3 months docking period is probably required to fit shafts and/or propellers. In November 2008, it was reported that Chinese negotiations to acquire an initial batch of 14 Su-33 for training were nearing completion. A further 36 modernised aircraft may be acquired at a later date.

Structure: The hangar is 183 x 29.4 x 7.5 m and can hold up to 18 Flanker aircraft. There are two starboard side lifts,

a ski jump of 14° and angled deck of 7°. There are four arrestor wires. The ship has some 16.5 m of freeboard. Operational: Initial sea trials could start in 2009 after which an extensive period of trials and training is likely to follow. It is unlikely that the ship will begin operational flying training until at the earliest 2010. The ship's (unconfirmed) pennant number suggests that her initial status will be as a training ship. The aircraft inventory is not yet known but is likely to comprise a mixture of Russian-built fixed-wing aircraft and helicopters. The ship's name has also not been confirmed, Admiral Shi Lang was commander-in-chief of the Manchu fleets which conquered Taiwan in 1681.

DESTROYERS

2 LUZHOU CLASS (TYPE 051C) (DDGHM)

Name	No	Builders	Laid down	Launched	Commissioned
SHENYANG	115	Dalian Shipyard	2002	28 Dec 2004	Oct 2006
SHIJIAZHANG	116	Dalian Shipyard	2003	26 July 2005	Mar 2007

Displacement, tons: 7,000 full load
 Dimensions, feet (metres): 508.5 x 55.8 x 19.7
 (155.0 x 17.0 x 6.0)
 Main machinery: To be announced
 Speed, knots: To be announced
 Complement: To be announced

Missiles: SSM: 8 C-802 (YJ-83) 2 quad ●; active radar homing to 180 km (86 n miles) at 0.9 Mach; warhead 165 kg; sea skimmer.

SAM: 6 (2 forward, 4 aft) SA-N-20 Grumble (Rif-M) ● circular vertical launchers; 8 rounds per launcher; command guidance; semi-active radar homing to 150 km (81 n miles); warhead 90 kg; altitude 27,432 m (90,000 ft). 48 missiles

Guns: 1-3.9 in (100 mm) 56 ●. 25 rds/min to 22 km (12 n miles); weight of shell 15.6 kg.
 2 Type 730 ● 30 mm 7 barrels per mounting; 4,200 rds/min combined to 1.5 km.

A/S mortars: To be announced.

Countermeasures: Decoys: 2-18 tube launchers. 2-10 tube launchers.

Combat data systems: To be announced. SATCOM

Weapons control: Band Stand ●; I-band (datalink for C-802).
 Radars: Air search: Top Plate (Frogat MAE-3) ●, 3D; E-band.
 Air/surface search: Type 364 Seagull C ●; G-band.



SHENYANG

(Scale 1 : 1,200), Ian Sturton / 1164337

Fire control: Tomb Stone (Volna); I/J-band (for Rif-M) ●. Band Stand (Moral ME) ●. I-band (for C-802) Type 344 (MR 34), I-band (for 100 mm) Type 347G(2) (LR 66), I-band (for Type 730)
 Navigation: To be announced
 Sonars: Bow mounted, to be announced

Helicopters: Platform only.

Programmes: The requirement for these ships arose from a need to address AAW deficiencies. It may predate the Luyang programmes and could have been delayed by procurement of the SAM system.

Structure: Design appears to be based on the Type 051B/Luhai DDG but to be less stealthy than the Luyang classes, although the dimensions are similar. Two VLS launchers are installed in the platform in front of the bridge and four in the aft superstructure. The AAW system is controlled by a Tomb Stone (Flap Lid) phased-array radar installed on a structure behind the aft mast. The number of SSMs is limited to eight due to lack of space between the forward funnel and aft mast.

Operational: Both ships conducted sea trials in 2006. Based in the North Sea Fleet.



SHENYANG

1/2008, Ships of the World / 1335655

4 SOVREMENNY CLASS (PROJECT 956E/956EM) (DDGHM)

Name	No	Builders	Laid down	Launched	Commissioned
HANGZHOU (ex-Vazhny, ex-Yekaterinburg)	136 (ex-698)	North Yard, St Petersburg	4 Nov 1988	23 May 1994	25 Dec 1999
FUZHOU (ex-Alexandr Nevsky)	137	North Yard, St Petersburg	22 Feb 1989	16 Apr 1999	16 Jan 2001
TAIZHOU	138	North Yard, St Petersburg	27 June 2002	27 Apr 2004	28 Dec 2005
NINGBO	139	North Yard, St Petersburg	2003	23 July 2004	28 Sep 2006

Displacement, tons: 7,940 full load
 Dimensions, feet (metres): 611.8 x 56.8 x 21.3
 (156 x 17.3 x 6.5)

Main machinery: 4 KVN boilers; 2 GTZA-874 turbines; 99,500 hp(m) (73.13 MW) sustained; 2 shafts, bow thruster
 Speed, knots: 32. Range, n miles: 2,400 at 32 kt; 4,000 at 14 kt
 Complement: 296 (25 officers) plus 60 spare

Missiles: SSM: 8 Raduga SS-N-22 Sunburn (Moskit 3M-80E) (2 quad) launchers; active/passive radar homing to 160 km (240 in 138, 139) (87 (130) n miles) at 2.5 (4.5 for attack) Mach; warhead 300 kg; sea-skimmer.
 SAM: 2 SA-N-7 Gadfly (Uragan) 9M38M1 Smerch: command/semi-active radar and IR homing to 25 km (13.5 n miles) at 3 Mach; warhead 70 kg; altitude 15-14,020 m (50-46,000 ft), 44 missiles. Multiple channels of fire
 2 CADS-N-1 (Kashtan) (138, 139); each has 30 mm galling combined with 8 SA-N-11 (Grisson) and Hot Flash/Hot Spot radar/optronic director. Laser beam guidance for missiles to 8 km (4.4 n miles); warhead 9 kg; 9,000 rds/min to 1.5 km for guns.

Guns: 4 (2 (138, 139)) 130 mm/56 (2 (1) twin) AK 130; 70 rds/min to 22 km (12 n miles); weight of shell 33.4 kg
 4-30 mm/65 AK 630 (136, 137); 6 barrels per mounting, 3,000 rds/min combined to 2 km.

Torpedoes: 4-21 in (533 mm) (2 twin) tubes.
 A/S mortars: 2 RBU 1000 6-barrelled; range 1,000 m; warhead 55 kg, 120 rockets carried Torpedo countermeasure.

Mines: Mine rails for up to 40.
 Countermeasures: Decoys: 8 PK 10 and 2 PK 2 chaff launchers

ESM/ECM: 4 Foot Ball, 6 Half Cup laser warner
 Weapons control: 1 China optronic director and laser rangefinder; Band Stand; I-band datalink for SS-N-22, Bell Nest, 2 Light Bulb and 2 Tee Pump datalinks.

Radars: Air search: Top Plate (Fregat MAE-31); 3D; E-band Surface search: 3 Palm Frond; I-band.
 Fire control: 6 Front Dome (MR-90); H/I-band (for SA-N-7), Band Stand (Mineral ME); I-band (for SS-N-22); Kite Screech; H/I/K-band (for 130 mm guns); 2 Bass Tilt; H/I-band (for 30 mm guns).

Sonars: Bull Horn (Platina) and Whale Tongue; hull-mounted, active search and attack; medium frequency.

Helicopters: 1 Harbin Zhi-9C Haitun or Kamov Ka-28 Helix.

Programmes: After prolonged negotiations, a contract was signed in September 1996 for two uncompleted Russian Sovremenny class destroyers. These were hulls 18 and 19. Progress was held up for a time because China wanted KA-28 helicopters included, and the Russians demanded extra payment for the aircraft. Delisted Russian units of the class may have been cannibalised



HANGZHOU

(Scale 1 : 1,200), Ian Sturton / 1164870



TAIZHOU

(Scale 1 : 1,200), Ian Sturton / 1164871



FUZHOU

12/2005, Ships of the World / 1163060

for some equipment. A contract for the procurement of two more ships was signed on 3 January 2002. The keel of the first modified Sovremenny class was laid down on 27 June 2002. An option for two further ships is unlikely to be taken up.

Structure: These are the first Chinese warships to have a data system link. The optronic director is probably a Chinese version of Squeeze Box. The second two ships (Project 956EM) are to a modified design which include variations in weapon fit including replacement of the AK 630 system with 'Kashtan' (with associated Cross Dome target indication radar) CWS and a reduction

to one forward AK 130 turret. The flight deck has been extended. Two single-armed launchers for SA-N-7 are retained. An updated SS-N-22 system with 240 km range is also fitted.

Operational: 138 arrived in China on 16 February 2000 and 137 in February 2001. SS-N-22 test fired on 15 September 2001. 138 was delivered on 28 December 2005 and 139 in late 2006. All four ships are based in the East Sea Fleet.

Opinion: The main role of these ships is anti-surface warfare although they also possess a good AAW capability. Together with the new AAW destroyers, they represent a step-change in Chinese naval capabilities.



SOVREMENNY 139

12/2006, Ships of the World / 1166770



SOVREMENNY 139

10/2006, B Prézélin / 1164322

2 LUYANG I (TYPE 052B) CLASS (DDGHM)

Name	No	Builders	Laid down	Launched	Commissioned
GUANGZHOU	168	Jiangnan Shipyard, Shanghai	2001	25 May 2002	18 July 2004
WUHAN	169	Jiangnan Shipyard, Shanghai	2001	9 Sep 2002	18 July 2004

Displacement, tons: 7,000 full load
Dimensions, feet (metres): 508.5 x 55.8 x 19.7 (165 x 17 x 6)
Main machinery: CODOG; 2 Ukraine DA80 gas turbines, 48,600 hp(m) (35.7 MW); 2 diesels; 8,840 hp(m) (6.5 MW); 2 shafts; cp props
Speed, knots: 29
Range, n miles: 4,500 at 15 kt
Complement: 280 (40 officers)

Missiles: SSM: 16 C-802 (YJ-83/CSS-N-8 Saccade) 4 quad ●; mid-course guidance and active radar homing to 150 km (81 n miles) at 0.9 Mach; warhead 165 kg; sea skimmer.
SAM: SA-N-12 Grizzly (Shtil-1) 9M38M2 ●; command/semi-active radar and IR homing to 35 km (18.9 n miles) at 3 Mach; warhead 70 kg; 2 magazines (forward and aft) 48 missiles.

Guns: 1—3.9 in (100 mm)/56 ●; 25 rds/min to 22 km (12 n miles); weight of shell 15.6 kg.
 2—30 mm Type 730 ●; 7 barrels per mounting; 4,200 rds/min combined to 1.5 km.

Torpedoes: 6—324 mm B 515 (2 triple tubes ●; Yu-2/5/6, active/passive homing to 11 km (5.9 n miles) at 40 kt; warhead 44 kg

A/S mortars: 4 multiple rocket launchers (possibly multirole) ●

Countermeasures: Decoys: 4—18 tube 100 mm launchers ●. ESM SRW 210A.

ECM: Type 984 (I-band jammer), Type 985 (E/F-band jammer)

Combat data systems: To be announced SATCOM.

Weapons control: Band Stand (Mineral ME) ●; I-band; datalink (for C-803)

Radars: Air search: Top Plate (Fregat MAE-3); 3D, ●; E/F-band

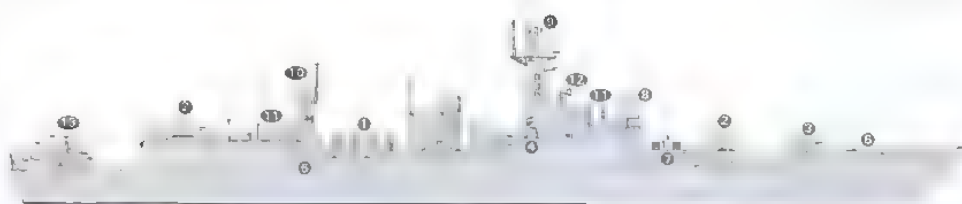
Air/surface search: Type 364 Seagull C ●; G-band
Fire control: 4 Front Dome (Orekh) ●; H/I-band (for SA-N-12).

Band Stand (Mineral ME) ●; I-band (for C-802)

Type 344 (MR 34) ●; I-band (for 100 mm)

2 Type 347G(2) (LR 66); I-band (for Type 730).

Navigation: To be announced.



GUANGZHOU

(Scale 1 : 1,200), Ian Sturton / 1170050



WUHAN

6/2007 / 1166873

Sonars: Bow mounted. To be announced

Helicopters: 1 Harbin Zhi-9A Haitun or Kamov KA-28 Helix ●.

Programmes: Construction of new multirole destroyers with medium-range air defence capability started in 2001.

Structure: Based on 'Luhai' design but with more advanced stealth features. The aft superstructure contains the hangar on the port side and aft missile magazine to starboard.

Operational: Based in the South Sea Fleet.



GUANGZHOU

9/2007, R G Sharpe / 1166778



GUANGZHOU

9/2007, B Prézellin / 1166780

2 LUYANG II (TYPE 052C) CLASS (DDGHM)

Name	No	Builders	Laid down	Launched	Commissioned
LANZHOU	170	Jiangnan Shipyard, Shanghai	June 2002	29 Apr 2003	18 July 2004
HAIKOU	171	Jiangnan Shipyard, Shanghai	Nov 2002	29 Oct 2003	20 July 2005

Displacement, tons: 7,000 full load
Dimensions, feet (metres): 508.5 x 55.8 x 19.7 (155 x 17 x 6)
Main machinery: CODOG; 2 Ukraine DA80 gas turbines; 48,600 hp(m) (35.7 MW); 2 diesels; 8,840 hp(m) (6.5 MW); 2 shafts; cp props
Speed, knots: 29
Range, n miles: 4,500 at 15 kt
Complement: 280 (40 officers)

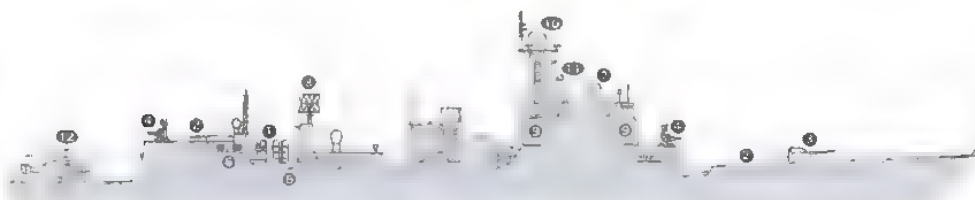
Missiles: SSM: 8 C-602 (YJ-62) ● 2 quad; inertial GPS guidance and terminal active radar homing to 280 km (161 n miles) at 0.8 Mach, warhead 300 kg.
SAM: HHQ-9 ●; 8 vertical fixed sextuple launchers (6 forward, 2 aft); command guidance; semi-active radar homing to 100 km (54 n miles) at 3 Mach; warhead 90 kg; 48 missiles
Guns: 1—3.9 in (100 mm)/56 ●; 25 rds/min to 22 km (12 n miles); weight of shell 15.6 kg.
 2—30 mm Type 730 ●; 7 barrels per mounting; 4,200 rds/min combined to 1.5 km
Torpedoes: 6—324 mm B 515 (2 triple) tubes ●; Yu-2/5/6; active/passive homing to 11 km (5.9 n miles) at 40 kt; warhead 44 kg.
A/S mortars: 4 multiple rocket launchers (possibly multirole) ●
Countermeasures: ESM/ECM: NRJ-6A
Combat data systems: To be announced SATCOM
Weapons control: Band Stand (Mineral ME) ●; I-band; datalink for YJ-62
Radars: Air search: Type 517 Knife Rest ●; A-band.
 Air search/fire control: Type 346 phased arrays ●; 3D; G-band
 Air/surface search: Type 364 Seagull C ●; G-band.
 Fire control: Type 344 (MR 34) ●; 1 band (for 100 mm). Band Stand ●; I-band (for YJ-62).
 2 Type 347G(2) (LR 66); I-band (for Type 730)
Navigation: To be announced
Sonars: Bow mounted. To be announced

Helicopters: 2 Harbin Zhi-9A Haitun or Kamov KA-28 Helix ●.

Programmes: The second phase of the destroyer construction programme which introduces the long-range HHQ-9 missile system into service.

Structure: Appears to share the same basic hull design as the Type 052B destroyers which in turn are based on the Luhai class. As well as incorporating stealth features, the design includes a taller forward superstructure in which the four phased array antennas are installed. The helicopter hangar is on the port side of the aft superstructure. Details are speculative and firm details of both the SAM and SSM systems are yet to be confirmed. The CIWS systems are on raised platforms forward and on top of the hangar

Operational: Based in the South Sea Fleet.



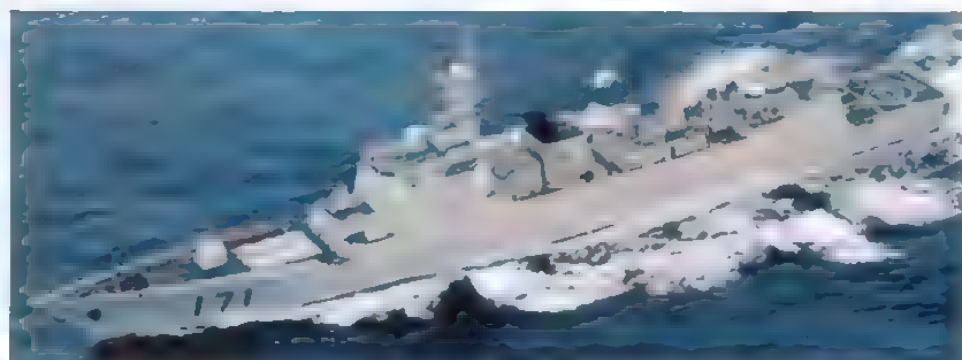
LANZHOU

(Scale 1 : 1,200), Ian Sturton / 11/0051



HAIKOU

1/2007, Ships of the World, 115/731



HAIKOU
6/2007
1335694

Name	No	Builders	Laid down	Launched	Commissioned
SHENZHEN	167	Dalian Shipyard	July 1996	16 Oct 1997	4 Jan 1999

Displacement, tons: 6,000 full load
Dimensions, feet (metres): 505 x 52.5 x 19.7 (154 x 16 x 6)
Main machinery: CODOG; 2 Ukraine gas turbines, 48,600 hp(m) (35.7 MW); 2 MTU 12V 1163 TB 83 diesels, 8,840 hp(m) (6.5 MW) sustained; 2 shafts; cp props
Speed, knots: 29 **Range, n miles:** 4,500 at 14 kt
Complement: 250 (42 officers)

Missiles: SSM: 16 C-802 (YJ-83/CSS-N-8 Saccade) ●; mid-course guidance and active radar homing to 150 km (81 n miles) at 0.9 Mach; warhead 165 kg; sea skimmer.
SAM: 1 HQ-7 (Crotale) octuple launcher ●; CSA-N-4 line of sight guidance to 13 km (7 n miles) at 2.4 Mach; warhead 14 kg. Possible reloading hatch aft of the HQ-7 launcher.
Guns: 2—3.9 in (100 mm)/56 (twin) ●; 25 rds/min to 22 km (12 n miles); weight of shell 15.6 kg.
 8 37 mm/53 Type 76A (4 twin) ●; 180 rds/min to 8.5 km (4.6 n miles) anti-aircraft; weight of shell 1.42 kg.
Torpedoes: 6—324 mm B515 (2 triple) tubes ●; Yu-2/5/6; active/passive homing to 11 km (5.9 n miles) at 40 kt; warhead 44 kg.
Countermeasures: Decoys: 2 Type 946 15-tube 100 mm chaff launchers ●
 2 Type 947 10-tube 130 mm chaff launchers.
 ESM Type 826
 ECM Type 984, I-band jammer; Type 985; E/F-band jammer.
Combat data systems: Thomson-CSF Tavitac; SATCOM.
Weapons control: 2 GDG 776 optronic directors.
Radars: Air search: Type 517 Knife Rest ●; A-band.
 Air search: Type 381C Rice Shield ●; G-band.
 Air/surface search: Type 360 Seagull S ●; E/F-band.
 Fire control: Type 344 (MR 34) ●; I-band (for SSM and 100 mm).
 2 Type 347G(1) Rice Bowl ●; I-band (for 37 mm).
 Type 345 (MR 35) ●; I/J-band (for HQ-7).
Navigation: Racal/Decca 1290; I-band.
Sonars: DUBV-23; hull mounted; active search and attack; medium frequency.

Helicopters: 2 Harbin Zhi-9C Haitun ● or Kamov Ka-28 Helix

1 LUHAI CLASS (TYPE 051B) (DDGHM)

Name	No	Builders	Laid down	Launched	Commissioned
SHENZHEN	167	Dalian Shipyard	July 1996	16 Oct 1997	4 Jan 1999



SHENZHEN

(Scale 1 : 1,200), Ian Sturton / 06/69749



SHENZHEN

12/2007, Hachiro Nakai / 1166774

Programmes: Follow-on from the Luhai class. Although the only ship of its class, it would appear to be the baseline design for the Type 051C destroyers.

Structure: Apart from the second funnel and octuple SSM launchers, there are broad similarities with the smaller

Luhai. Anti-aircraft guns are all mounted aft allowing more space in front of the bridge which seems to show a reloading hatch for HQ-7

Operational: Based at Zhanjiang in South Sea Fleet. Out of area deployment to Europe in 2001.

2 LUHU (TYPE 052) CLASS (DDGHM)

Name	No	Builders	Laid down	Launched	Commissioned
HARBIN	112	Jiangnan Shipyard, Shanghai	Nov 1990	Oct 1991	July 1994
QINGDAO	113	Jiangnan Shipyard, Shanghai	Jan 1993	Oct 1993	Mar 1996

Displacement, tons: 4,600 full load
Dimensions, feet (metres): 472.4 x 52.5 x 16.7
 (144 x 16 x 5.1)

Main machinery: CODOG 2 GE LM 2500 gas turbines (112), 55,000 hp (41 MW) sustained or 2 Ukraine gas turbines (113) 48,600 hp(m) (35.7 MW), 2 MTU 12V 1163 TB83 diesels; 8,840 hp(m) (6.5 MW) sustained; 2 shafts; cp props

Speed, knots: 31
Range, n miles: 5,000 at 15 kt
Complement: 266 (38 officers)

Missiles: SSM. 16 C-802 (YJ 83/CSS-N-8) Saccade ●; mid-course guidance and active radar homing to 150 km (81 n miles) at 0.9 Mach, warhead 165 kg; sea-skimmer. SAM: 1 HQ-7 (Crotale) octuple launcher ●; CSA-4; line of sight guidance to 13 km (7 n miles) at 2.4 Mach, warhead 14 kg. 32 missiles.

Guns: 2-3.9 in (100 mm)/56 (twin) ●; 25 rds/min to 22 km (12 n miles); weight of shell 15.6 kg. 8-37 mm/63 Type 76A (4 twin) ●; 180 rds/min to 8.5 km (4.6 n miles) anti-aircraft, weight of shell 1.42 kg.

Torpedoes: 6-324 mm Whitehead B515 (2 triple) tubes ● Yu-2 (Mk 48 Mod 1); active/passive homing to 11 km (5.9 n miles) at 40 kt; warhead 44 kg.

A/S mortars: 2 FQF 2500 ● 12-tubed fixed launchers; range 1,200 m; warhead 34 kg. 120 rockets.

Countermeasures: Decoys. 2 Type 946; 15 barrelled 100 mm chaff launchers.

ESM Rapids.
 ECM Scimitar.

Combat data systems: Thomson-CSF Tevitic action data automation SATCOM. Link W

Weapons control: 2 GDG-775 optronic directors ●

Radars: Air search: Type 518 (navalised REL-2) ●; D-band. Air/surface search: Type 363S Sea Tiger ●; E/F-band.

Surface search: Type 362 (ESR 1) ●; I-band
 Fire control: Type 344 (MR 34) ●; I-band (for SSM and 100 mm)

2 Type 347G(1) Rice Bowl ●; I-band (for 37 mm).
 Type 345 (MR 35) ●; I/J-band (for HQ-7).

Navigation: Racal Decca 1290; I-band.

Sonars: DUBV-23; Hull-mounted, active search and attack, medium frequency.

DUBV-43 VDS; active attack; medium frequency.

Helicopters: 2 Harbin Zhi-9C Haitun ●

Programmes: Class of two ordered in 1985 but delayed by priority being given to export orders for Thailand

Modernisation: Harbin completed refit in early 2003. Qingdao completed similar refit in 2005. Both fitted with a new low radar profile 100 mm gun turret.

Structure: The most notable features are the SAM launcher, improved radar and fire-control systems and a modern 100 mm gun. Gas turbines for the second of class came from the Ukraine. The HQ-7 launcher is a Chinese copy of Crotale DCN Samaha 110N helo handling system. Harbin has a dome-shaped radome on the superstructure while Qingdao has cylindrical antennae in the same position.

Both are likely to be ECM systems.

Operational: Both based in North Sea Fleet



HARBIN (Scale 1 : 1,200), Ian Sturton / 0569255



QINGDAO 9/2007 1335697



HARBIN 10/2008*, Michael Nitz / 1335603



HARBIN 10/2007, Chris Sattler / 115694/

10 LUDA (TYPES 051/051D/051Z) CLASS (DDGM/DDGHM)

YINCHUAN	107
XINING	108
NANJING	131
HEFEI	132

CHONGQING	133
ZUNYI	134
CHANGSHA	161
NANNING	162

NANCHANG	163
GUILIN	164

Displacement, tons: 3,250 standard; 3,670 full load
Dimensions, feet (metres): 433.1 x 42 x 15.1
 (132 x 12.8 x 4.6)
Main machinery: 2 or 4 boilers; 2 turbines; 72,000 hp(m)
 (53 MW); 2 shafts
Speed, knots: 32
Range, n miles: 2,970 at 18 kt
Complement: 280 (45 officers)

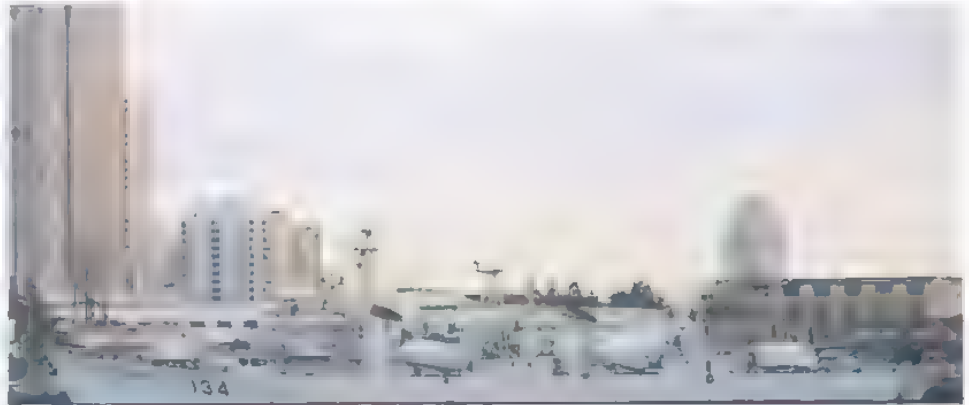
Missiles: SSM: 6 HY-2 (C-201) (CSS-C-3A Seersucker) (2 triple) launchers ●; active radar or IR homing to 95 km (51 n miles) at 0.9 Mach; warhead 513 kg.
Guns: 4 USSR 5.1 in (130 mm)/58 (2 twin) ●; 20 rds/min to 28 km (15 n miles); weight of shell 33.4 kg.
 8 China 57 mm/70 (4 twin); 120 rds/min to 12 km (6.5 n miles); weight of shell 6.31 kg or 8 China 37 mm/63 (4 twin) ●; 180 rds/min to 8.5 km (4.6 n miles); weight of shell 1.42 kg.
 8 USSR 25 mm/60 (4 twin) ●; 270 rds/min to 3 km (1.6 n miles) anti-aircraft; weight of shell 0.34 kg
Torpedoes: 6-324 mm Whitehead B515 (2 triple tubes) (fitted in some); Yu-2 (Mk 46 Mod 1); active/passive homing to 11 km (5.9 n miles) at 40 kt; warhead 44 kg
A/S mortars: 2 FQF 2500 12-tubed fixed launchers ●; 120 rockets, range 1,200 m; warhead 34 kg. Similar in design to the RBU 1200
Depth charges: 2 or 4 BMB projectors; 2 or 4 racks.
Mines: 38
Combat data systems: ZKJ-1 (132)
Radars: Air search: Type 515 Bean Sticks ●; A-band. Type 381 Rice Shield ● (132); 3D, G-band. Similar to Hughes SPS 39A
 Surface search: Type 354 Eye Shield ●, G-band. Type 352 Square Tie (not in all); I-band.
 Navigation: Fin Curve or Racal Decca 1290, I-band.
 Fire control: Wasp Head (also known as Wok Won) or Type 343 Sun Visor B (series 2) ●; I-band. 2 Type 347G Rice Bowl ●; I-band
IFF: High Pole.
Sonars: Pegas 2M and Tamir 2, hull-mounted; active search and attack; high frequency.

Programmes: The first Chinese-designed destroyers of such a capability to be built. First of class completed in 1971. 107 to 108 built at Luda; 131 to 134 at Shanghai and 161 to 164 at Guangzhou. Similar to the doleated USSR Kotlin class. The programme was much retarded after 1971 by drastic cuts in the defence budget. In early 1977 building of series two of this class was put in hand and includes those after 108, with the latest 164 completed in April 1990. The order of completion was 160 (scrapped), 161, 107, 162, 131, 108, 132, 163, 133, 134 and 164.
Modernisation: Equipment varies considerably from ship to ship. The original Type 051 ships are 107, 131, 161 and 162. Type 051D ships are 108, 133, 134, 163 and 164. 132 is a command ship (Type 051Z) fitted with ZKJ-1 command system and Rice Screen (Type 381A) 3-D radar
Structure: Electronics vary in later ships. Some ships have 57 mm guns, others 37 mm. SAM is fitted in *Kaifeng* and *Dalian* in X gun position.
Operational: Capable of foreign deployment, although command and control is limited. Underway refuelling is practised. Basing: 107, 108 n North Sea Fleet, 161-164 in South Sea Fleet and 131-134 in East Sea Fleet. 160 was damaged by an explosion in 1978, and was scrapped. 106 decommissioned on 11 October 2007 and 105 in December 2007.



HEFEI

(Scale 1 : 1,200), Ian Sturton / 0056749



ZUNYI

12/2007, Chris Sattler / 1335691



ZUNYI

5/2007 / 1156871



YINCHUAN

6/2007 / 1156870

4 LUDA (TYPE 051DT/051G/051G II) CLASS (DDG)

Name	No	Builders	Laid down	Launched	Commissioned
KAIFENG	109	Dalian Shipyard	—	—	—
DALIAN	110	Dalian Shipyard	—	—	—
ZHANJIANG	165	Dalian Shipyard	1988	1990	1991
ZHUHAI	166	Dalian Shipyard	1988	1990	1991

Displacement, tons: 3,250 standard; 3,730 full load
Dimensions, feet (metres): 433.1 × 42 × 15.3
 (132 × 12.8 × 4.7)
Main machinery: 2 boilers; 2 turbines; 72,000 hp(m)
 (53 MW); 2 shafts
Speed, knots: 32
Range, n miles: 2,970 at 18 kt
Complement: 280 (45 officers)

Missiles: SSM: 16 C 801A (YJ 81/CSS-N-4) (Sardine) ●, active radar homing to 95 km (51 n miles) at 0.9 Mach; warhead 165 kg; sea-skimmer
SAM: 1 HQ-7 (Crotale) octuple launcher ●, line of sight guidance to 13 km (7 n miles) at 2.4 Mach; warhead 14 kg
Guns: 2 USSR 5.1 in (130 mm)/54 (109, 110) ●, 20 rds/min to 28 km (15 n miles); weight of shell 33.4 kg
 4—3.9 in (100 mm)/56 (2 twin) (165, 166) ●, 18 rds/min to 22 km (12 n miles); weight of shell 15 kg
 6 China 57 mm/63 (3 twin) (109, 110) ●, 120 rds/min to 12 km (6.5 n miles); weight of shell 6.31 kg
 6 China 37 mm/63 Type 76A (3 twin) (165, 166) ●, 180 rds/min to 8.5 km (4.6 n miles); weight of shell 1.42 kg.
Torpedoes: 6—324 mm Whitehead B515 (2 triple tubes) ●, Yu-2 (Mk 48 Mod 1); active/passive homing to 11 km (5.9 n miles) at 40 kt; warhead 44 kg.
A/S mortars: 2 FOF 2500 12-tubed fixed launchers ●, 120 rockets; range 1,200 m, warhead 34 kg Similar in design to the RBU 1200
Countermeasures: Decoys: 2 Type 946, 15 barrelled 100 mm chaff launchers.
ESM: Type 825; intercept
ECM: Type 981; jammer.
Combat data systems: Thomson-CSF Tavitac with Vega FCS (109); ZKJ-1 (110); ZKJ 4A (165); ZKJ 4B (166)
Radars: Air search: Type 517 Knife Rest ●, A-band.
Surface search: Type 363 Sea Tiger S (109), Type 354 Eye Shield (165, 166) ●, E/F-band.
Navigation: Racal Decca 1290, I-band.
Fire control: Type 344 (MR 34) (165, 166) ●, I-band (for SSM and 100 mm).
 Type 343G Sun Visor (109, 110) ●, I-band.
 Type 347G(1) Rice Bowl ●, I-band (for 57/37 mm).
 Type 345 (MR 35) ●, I/J-band (for HQ-7).
IFF: High Pole.
Sonars: DUBV 23 (165, 166); hull-mounted; active search and attack, medium frequency.

Programmes: Updated Luda designs sometimes known collectively as the Luda III class.

Modernisation: 109 redesignated Type 051DT after being fitted with Tavitac, Sea Tiger radar and HQ-7 (Crotale). In 1999, she was further modified to receive 16 C0801A missiles, Type 825 ESM, Type 981 ECM and Type 946 chaff launchers. 110 subsequently modernised with ZKJ-1 command system and an otherwise similar configuration as 109. 165 underwent extensive modernisation 2001-03. Principal enhancements include the replacement of YJ-1 by four quadruple YJ-81 missiles, the installation of an



ZHANJIANG

(Scale 1 : 1,200), Ian Sturton / 05/24117



KAIFENG

(Scale 1 : 1,200), Ian Sturton / 0126350



DALIAN

6/2007 / 1166865

octuple HQ-7 SAM launcher in place of the aft (X turret) 37 mm gun and the replacement of the 130 mm guns with twin 100 mm guns fore and aft. 165 is reported to have undergone a similar upgrade.

Structure: The VDS sonar is a copy of DUBV 43.
Operational: Basing: 109 and 110 in North Sea Fleet; 165 and 166 in South Sea Fleet.

FRIGATES

2 JIANGKAI I (TYPE 054) CLASS (FFGHM)

Name	No	Builders	Laid down	Launched	Commissioned
MAANSHAN	525	Hudong-Zhonghua Shipyard, Shanghai	Dec 2001	11 Sep 2003	18 Feb 2005
WENZHOU	526	Huangpu Shipyard, Guangzhou	Feb 2002	13 Nov 2003	26 Sep 2006

Displacement, tons: 3,500 standard; 3,900 full load
Dimensions, feet (metres): 433.2 × 49.2 × 16.4
 (132.0 × 15.0 × 5.0)
Main machinery: CODAD, 4 SEMT-Pielstick diesels; 2 shafts
Speed, knots: 27. Range, n miles: 3,800 at 18 kt
Complement: 190

Missiles: SSM: 8 C-802 (YJ-83/CSS-N-8 Seccade) ●, mid-course guidance and active radar homing to 150 km (81 n miles) at 0.9 Mach; warhead 165 kg; sea skimmer
SAM: 1 HQ-7 (Crotale) ●, CSA-N-4 line-of-sight guidance to 13 km (7 n miles) at 2.4 Mach; warhead 14 kg.
Guns: 1—3.9 in (100 mm)/56 ●, 25 rds/min to 22 km (12 n miles), weight of shell 15.6 kg
 4—300 mm/65 AK 630 ●, 6 barrels per mounting, 3,000 rds/min combined to 2 km.
Torpedoes: 6—324 mm B515 (2 triple) tubes, Yu-26/7; active/passive homing to 11 km (5.9 n miles) at 40 kt; warhead 44 kg.
Countermeasures: to be announced
Combat data systems: to be announced
Radars: Air/surface search: Type 360 Seagull S ●, E/F-band.
 Surface search: Type 364 Seagull C ●, G-band.
Fire control: Type 344 (MR 34) ●, I-band (for SSM and 100 mm).
 Type 345 (MR 35) ●, I/J-band (for HQ-7).
 Type 347G(1) Rice Bowl ●, I-band (for AK 630)
Navigation: RM-1290; I-band.
Sonars: to be announced

Helicopters: 1 Harbin Zhi-9C Haitun ●.

Programmes: Two vessels of a new general purpose frigate class which followed the Jiangwei II class. Further ships are unlikely.

Structure: A new design incorporating stealth features.
Operational: Assigned to the East Sea Fleet.



MAANSHAN

(Scale 1 : 1,200), Ian Sturton / 1164338



WENZHOU

1/2007, Ships of the World / 1167733



WENZHO

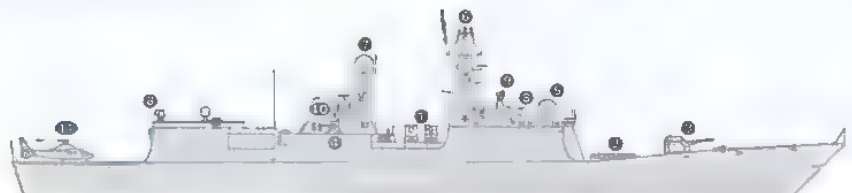
1/2007, *Ships of the World* / 1167734

4 + 2 JIANGKAI II (TYPE 054A) CLASS (FFGHM)

Name	No	Builders	Laid down	Launched	Commissioned
ZHOUSHAN	530	Huangpu Shipyard, Guangzhou	2005	30 Sep 2006	29 Jan 2008
XUZHOU	529	Hudong-Zhonghua Shipyard, Shanghai	2006	21 Dec 2006	2008
HUANGSHAN	570	Huangpu Shipyard, Guangzhou	2006	18 Mar 2007	2008
CHAOHU	568	Hudong-Zhonghua Shipyard, Shanghai	2006	23 May 2007	9 July 2008
-	-	Huangpu Shipyard, Guangzhou	2007	2008	2009
-	-	Hudong-Zhonghua Shipyard, Shanghai	2007	2010	2011

Displacement, tons: 3,500 standard, 3,900 full load
Dimensions, feet (metres): 433.2 x 52.5 x 16.4 (134.0 x 16.0 x 5.0)
Main machinery: CODAD, 4 SEMT Pielstick 16PA 6V 280 STC, 28,200 hp (20.7 MW); 2 shafts
Speed, knots: 27
Range, n miles: 3,800 at 18 kt
Complement: To be announced

Missiles: SSM: 8 C-802 (YJ-83/CSS-N-8 Saccade) ①; mid-course guidance and active radar homing to 150 km (81 n miles) at 0.9 Mach; warhead 165 kg; sea skimmer.
SAM: HHQ-16 ②. 1 (forward) 32 cell vertical launch system (possible cold launch)
Guns: 1-3 in (76 mm) ③.
 2-30 mm Type 730 ④; 7 barrels per mounting; 4,200 rde/min combined to 1.5 km.
Torpedoes: 6-324 mm B515 (2 triple) tubes, Yu-2/6/7; active/passive homing to 11 km (5.9 n miles) at 40 kt; warhead 44 kg
Countermeasures: Decoys: 2-24 barrelled launchers.
Combat data systems: To be announced
Weapons control: Band Stand (Mineral ME) ⑤; I-band; datalink for C-803



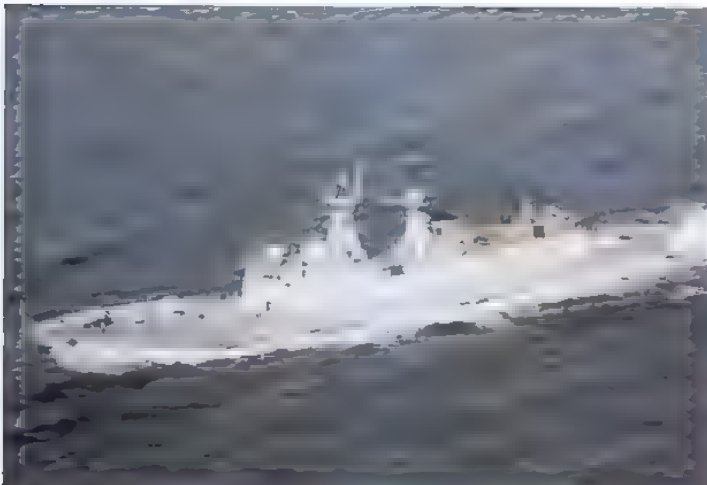
JIANGKAI II

(Scale 1 : 1,200), Ian Sturton / 1335659

Radars: Air search: Top Plate (Fregat MAE-3) ⑥; 3D; E/F-band.
 Air/surface search: Type 364 Seagull C ⑦; G-band.
Fire control: 4 Front Dome (Orekh) ⑧; H/I-band for HHQ-16.
 Band Stand (Mineral ME) ⑤; I-band (for YJ-83).
 Type 344 (MR 34) ⑨; I-band (for 76 mm gun).
 2 Type 347G(2) (LR 66) ⑩; I-band for Type 730.
Navigation: RM 1290, I-band.
Sonars: To be announced.

Helicopters: 1 Harbin Zhi-9A Haitun ⑪.

Programmes: Follow-on ships to the two ships of the Jiangkai I class. The modified design includes a VLS launcher for the SAM system. Under construction at two shipyards, it is likely that this design will be built in sufficient numbers to replace the ageing Jianghu class frigates. The construction of hull 6 at Hudong Shipyard has been delayed by up to a year by the collapse of a crane in 2008.
Operational: Zhoushan and Xuzhou based in East Sea Fleet and Huangshan and ChaoHu in South Sea Fleet.



JIANGKAI II

6/2007 / 1166849



JIANGKAI II

2/2008, *Ships of the World* / 1335655

4 JIANGWEI I (TYPE 053 H2G) CLASS (FFGHM)

Name	No	Builders	Laid down	Launched	Commissioned
ANQING	539	Hudong Shipyard, Shanghai	Nov 1990	July 1991	Dec 1991
HUAINAN	540	Hudong Shipyard, Shanghai	Jan 1991	Oct 1991	July 1992
HUAIBEI	541	Hudong Shipyard, Shanghai	July 1992	Apr 1993	Aug 1993
TONGLING	542	Hudong Shipyard, Shanghai	Dec 1992	Sep 1993	Apr 1994

Displacement, tons: 2,250 full load
Dimensions, feet (metres): 366.5 × 40.7 × 15.7
 (111.7 × 12.4 × 4.8)
Main machinery: 2 Type 18E 390 diesels; 24,000 hp(m)
 (17.65 MW) sustained; 2 shafts
Speed, knots: 27. **Range, n miles:** 4,000 at 18 kt
Complement: 170

Missiles: SSM: 6 YJ-1 (Eagle Strike) (C-801) (CSS-N-4 Sardine) or C-802 (YJ-83) (2 triple) launchers ●; active radar homing to 40 km (22 n miles) or 150 km (81 n miles) (C-802) at 0.9 Mach; warhead 165 kg; sea-skimmer.

SAM: 1 HQ-61 sextuple launcher ●; RF 61 (CSA-N-2); semi-active radar homing to 10 km (5.5 n miles) at 2 Mach. Similar to Sea Sparrow. May be replaced in due course.

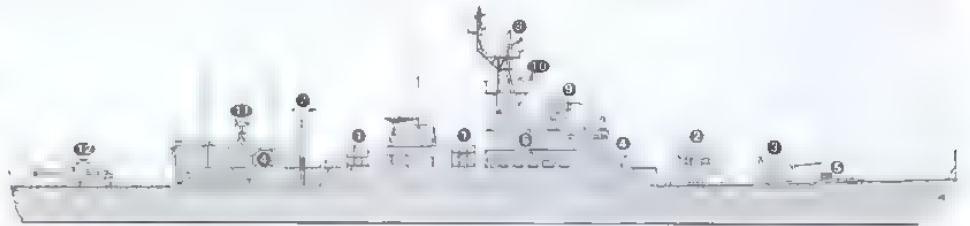
Guns: 2 China 3.9 in (100 mm)/56 (twin) ●; 25 rds/min to 22 km (12 n miles); weight of shell 15.6 kg
 8 China 37 mm/63 Type 76A (4 twin) ●; 180 rds/min to 8.5 km (4.6 n miles) anti-aircraft; weight of shell 1.42 kg.

A/S mortars: 2 Type 87 ● 6-tubed launchers.

Countermeasures: Decoys: 2 China Typo 845 26-barrelled chaff launchers ●.

ESM: RWD8, intercept.

ECM: NJ81-3, jammer. Similar to Scimitar.



HUAIBEI

(Scale 1 : 900), Ian Sturton / 0130723

Radars: Air search: Type 517 Knife Rest ●; A-band.
 Air/surface search: Type 360 Seagull S ●; E/F-band.
 Fire control: Type 343 (Wok Won) (Waap Head) ●; I-band (for 100 mm)
 Type 342 (Fog Lamp) ●; I/J-band (for SAM)
 Type 347G(1) Rice Bow ●; I/J band (for 37 mm).
 Navigation: Racal Decca 1290, I-band

Sonars: Echo Type 5; hull-mounted; active search and attack; medium frequency.

Helicopters: 2 Harbin Z-9C (Dauphin) ●

Programmes: Programme started in 1988. First one conducted sea trials in late 1991. Four of the class built before the design moved on to the Jiangwei II

Modernisation: SAM system has been unsatisfactory and may be replaced in due course.

Structure: The sextuple launcher is a multiple launch SAM system using the CSA-N-2 missile.

Operational: All based in the East Sea Fleet at Dinghai



HUAIBEI

4/2000, Ships of the World / 0103658

10 JIANGWEI II (TYPE 053H3) CLASS (FFGHM)

Name	No	Builders	Laid down	Launched	Commissioned
JIAXIN	521 (ex-597)	Hudong Shipyard, Shanghai	Oct 1996	10 Aug 1997	Nov 1998
LIANYUNGANG	522	Hudong Shipyard, Shanghai	Dec 1996	8 Aug 1997	Feb 1999
PUTIAN	523	Hudong Shipyard, Shanghai	June 1997	10 Aug 1998	Oct 1999
SANMING	524	Hudong Shipyard, Shanghai	Dec 1997	Dec 1998	Nov 1999
YICHANG	564	Huangpu Shipyard, Guangzhou	Dec 1997	Oct 1998	Dec 1999
YULIN	565	Huangpu Shipyard, Guangzhou	May 1998	Apr 1999	Mar 2000
HUAIHUA (ex-Yulin)	566	Hudong Shipyard, Shanghai	May 2000	Jan 2001	Mar 2002
XIANGFAN	587	Huangpu Shipyard, Guangzhou	Mar 2001	Aug 2001	Sep 2002
LUOYANG	527	Hudong Shipyard, Shanghai	2003	1 Oct 2004	2005
MIANYANG	528	Huangpu Shipyard, Guangzhou	2003	30 May 2004	2005

Displacement, tons: 2,250 full load
Dimensions, feet (metres): 366.5 × 40.7 × 15.7
 (111.7 × 12.4 × 4.8)
Main machinery: 2 Type 18E 390 diesels; 24,000 hp(m)
 (17.65 MW) sustained; 2 shafts
Speed, knots: 27
Range, n miles: 4,000 at 18 kt
Complement: 170

Missiles: SSM: 8 YJ-1 (Eagle Strike) (C-801) (CSS-N-4 Sardine) or C-802 (YJ-83) (2 quad) launchers ●; active radar homing to 40 km (22 n miles) or 150 km (81 n miles) (C-802) at 0.9 Mach; warhead 165 kg; sea-skimmer

SAM: 1 HQ-7 (Crotale) octuple launcher ●; CSA-N-4 line of sight guidance to 13 km (7 n miles) at 2.4 Mach; warhead 14 kg

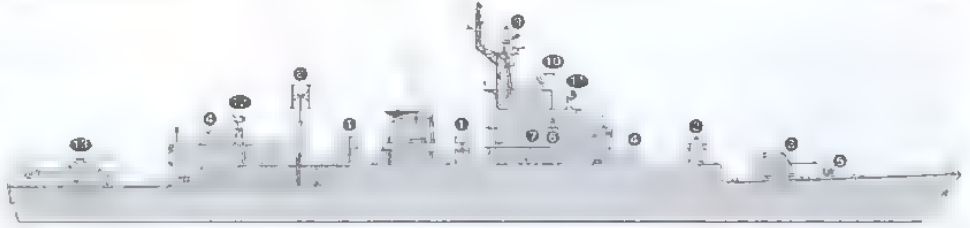
Guns: 2 China 3.9 in (100 mm)/56 (twin) ●; 25 rds/min to 22 km (12 n miles); weight of shell 15.6 kg
 8 China 37 mm/63 Type 76A (4 twin) ●; 180 rds/min to 8.5 km (4.6 n miles) anti-aircraft; weight of shell 1.42 kg.

A/S mortars: 2 RBU 1200 ●; 5-tubed fixed launchers; range 1,200 m; warhead 34 kg.

Countermeasures: Decoys 2 SRBOC Mk 36 6-barrelled chaff launchers ●; 2 China 26-barrelled chaff launchers ●.

ESM: SR-210; intercept

ECM: 981-3 noise jammer. RWD-8 deception jammer.



JIANGWEI II

(Scale 1 : 900), Ian Sturton / 1335658

Combat data systems: ZKJ 3C, SATCOM.

Weapons control: JM 83H optronic director

Radars: Air search: Type 517 Knife Rest ●; A-band

Air/surface search: Type 360 Seagull S ●; E/F-band.

Fire control: Type 343G (Wok Won), Type 344 (MR 34) (527, 528) ●; I-band (for SSM and 100 mm).

Type 345 (MR 35) ●; I/J-band (for HQ-7).

Type 347G(1) Rice Bowl ●; I/J-band (for 37 mm).

Navigation: 2 RM-1290; I-band

Sonars: Echo Type 5; hull-mounted; active search and attack; medium frequency.

Helicopters: 2 Harbin Z-9C (Dauphin) ●

Programmes: Follow-on to the Jiangwei class, building some four years later. The building programme appeared to have been terminated after eight ships but reports indicate that two further ships are under construction. Further units are possible.

Structure: An improved SAM system, updated fire-control radars and a redistribution of the after anti-aircraft guns are the obvious differences from the original Jiangwei. New Type 99 turret fitted in 522 and to be retro-fitted to the remainder of the class.

Operational: Basing 521-524 and 527-528 in East Sea Fleet; 564-567 in South Sea Fleet

Sales: Four under construction for Pakistan



LUOYANG

10/2008, Guy Toremans / 1335690



LIANYUNGANG

3/2007, Paul Daly / 1166845



SANMING

3/2007, Paul Daly / 1166844

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25 JIANGHU I/II/V (TYPE 053H/053H1/053H1G) CLASS (FFG)

Name	No	Name	No	Name	No
NANTONG	511	TAIZHOU (II)	533	ZHAOTONG (II)	555
WUXI	512	JINHUA (II)	534	JISHOU (II)	557
HUAYIN	513	DANDONG (II)	543	ZIGONG (V)	558
ZHENJIANG	514	LINFEN	545	BEIHAI (V)	559
XIAMEN	515	MAOMING	551	DONGGUAN (V)	560
JIUJIANG	516	YIBIN	552	SHANTOU (V)	561
NANPING	517	SHAOGUAN (II)	553	JIANGMEN (V)	562
JIAN	518	ANSHUN (II)	554	FOSHAN (V)	563
CHANGZHI	519				

Displacement, tons: 1,425 standard; 1,702 full load

Dimensions, feet (metres): 338.5 × 35.4 × 10.2
(103.2 × 10.8 × 3.1)

Main machinery: 2 Type 12E 390V diesels; 14,400 hp (m) (10.6 MW) sustained; 2 shafts

Speed, knots: 26

Range, n miles: 4,000 at 15 kt; 2,700 at 18 kt

Complement: 200 (30 officers)

Missiles: SSM: 4 HY-2 (C-201) (CSSC-3 Seersucker) (2 twin launchers ●; active radar or IR homing to 80 km (43.2 n miles) at 0.9 Mach; warhead 513 kg.

Guns: 2 or 4 China 3.9 in (100 mm)/58 (2 single ● or 2 twin ●), 25 rds/min to 22 km (12 n miles); weight of shell 15.6 kg.

12 China 37 mm/63 (6 twin ●) (8 (4 twin), in some); 180 rds/min to 8.5 km (4.6 n miles) anti-aircraft; weight of shell 1.42 kg.

A/S mortars: 2 RBU 1200 5-tubed fixed launchers (4 in some) ●; range 1,200 m; warhead 34 kg.

Depth charges: 2 BMB-2 projectors; 2 racks (in some).

Mines: Can carry up to 60

Countermeasures: Decoys: 2 RBOC Mk 33 6-barrelled chaff launchers or 2 China 26-barrelled launchers.

ESM: Jug Pair or Watchdog; radar warning.

Weapons control: Wok Won director (in some) ●.

Radars: Air search Type 517 Knife Rest ●; A-band.

Air/surface search: Type 354 Eye Shield (MX 902) ●; G-band

Type (unknown) ●; I-band.

Surface search/fire control: Type 352 Square Tie ●, I band.

Navigation: Don 2 or Fin Curve or Rascal Decca, I band

Fire control: Type 347G Rice Bowl (in some) ●, I/J-band

Type 343 (Wok Won) (Wasp Head) (in some) ●, I-band.

IFF: High Pole A, Yard Reko or Square Head

Sonars: Echo Type 5; hull-mounted; active search and attack; medium frequency.

Programmes: Pennant numbers changed in 1979. All built in Shanghai starting in the mid-1970s at the Hudong, Jiangnan and Huangpu shipyards. Ships were completed in the following order: 515, 516, 517, 511, 512, 513, 514, 518, 519, 520, 551, 552, 533, 534, two for Egypt, 543, 553, 554, 555, 545, 556 (to Bangladesh), 557, 544, 558, 560, 561, 559, 562 and 563. The last of class 563 completed in February 1996. Reports that construction had restarted in 1997 were incorrect.

Modernisation: Equipment varies considerably from ship to ship. The Type 053H ships are 511-519 and 551 and 552. These are equipped with SY-1 or SY-2 SSM, single 100 mm guns and SJD-3 sonar. Type 053H1 ships are 533, 534, 543, 553, 554, 555 and 557. These are similar to Type 053H but are equipped with twin 100 mm guns and SJD-5 (Echo 5) sonar. Type 053H1G ships are 558-563. These are similar to Type 053H1 but are equipped with 37 mm enclosed gun mounts. A larger bridge structure suggests a possible CIC compartment. The designation of the Air/Surface search radar in Type 053H1G is not yet known but it bears similarities to the I-band MR-36A which has been promoted as a replacement for Type 352 'Square Tie'. 516 appears to have been modified for a shore bombardment role having been fitted with a new twin 100 mm mounting and seven 122 mm MLRs. 559 may also be similarly converted. 509 and 510 have been converted to a Coast Guard role.

Structure: All of the class have the same hull dimensions. Previously reported Type numbers have been superseded by the following designations:

Type I has at least five versions. Version 1 has an oval funnel and square bridge wings; version 2 a square funnel with bevelled bridge face; version 3 an octagonal



ZHENJIANG (TYPE 053H)

(Scale 1 : 900), Ian Sturton / 0529151



TAIZHOU (TYPE 053H1)

(Scale 1 : 900), Ian Sturton / 0130728



DONGGUAN (TYPE 053H1G)

(Scale 1 : 900), Ian Sturton / 0130771



HUAYIN (TYPE 053H)

12/2007, Chris Sattler / 1170059

funnel; version 4 reverts back to the oval funnel and version 5 has a distinctive fluting arrangement with cowls on the funnel, as well as gunhouses on the 37 mm guns. Some have bow bulwarks.

Type II. See separate entry.

Types III and IV. See separate entry.

Operational: 520 paid off in 1993. Basing: 511-519, 543 and 545 in North Sea Fleet, 533-534 in East Sea Fleet and 551, 555 and 557-563 in the South Sea Fleet.

Sales: Two have been transferred to Egypt, one in September 1984, the other in March 1985, and one, *Xiangtan* 556, to Bangladesh in November 1985.



WUXI (TYPE 053H)

1/2008*, A Sheldon-Duplaix / 1335687



HUAYIN (TYPE 053H)

10/2008, Chris Sattler / 1335689



SHANTOU (TYPE 053H1G)

9/2000 / 0103667



ZIGONG (TYPE 053H1G)

4/2008 / 1335688

3 JIANGHU III (TYPE 053 H2) CLASS (FFG)

HUANGSHI 535 WUHU 536 CANGZHOU 537

Displacement, tons: 1,924 full load
Dimensions, feet (metres): 338.5 × 35.4 × 10.2
 (103.2 × 10.8 × 3.1)
Main machinery: 2 Type 18E 390V diesels; 14,400 hp(m)
 (10.6 MW) sustained; 2 shafts
Speed, knots: 26. **Range, n miles:** 4,000 at 15 kt; 2,700 at 18 kt
Complement: 200 (30 officers)

Missiles: SSM: 8 YJ-1 (Eagle Strike) (C-801) (CSS-N-4 Sardine) ●; active radar homing to 40 km (22 n miles) at 0.9 Mach; warhead 165 kg. *Cangzhou* is fitted with C-802 (YJ-83) (CSS-N-8 Saccade) with an extended range to 150 km (81 n miles).

Guns: 4 China 3.9 in (100 mm)/56 (2 twin) ●; 25 rds/min to 22 km (12 n miles); weight of shell 15.6 kg
 8 China 37 mm/63 (4 twin) ●; 180 rds/min to 8.5 km (4.6 n miles) anti-aircraft; weight of shell 1.42 kg.

A/S mortars: 2 RBU 1200 5-tubed fixed launchers ●; range 1,200 m; warhead 34 kg

Depth charges: 2 BMB-2 projectors; 2 racks

Mines: Can carry up to 60

Countermeasures: Decoys: 2 China 26-barrelled chaff launchers.

ESM: Elettronica Newton; radar warning.

ECM: Elettronica 929 (Type 981), jammer.

Combat data systems: ZKJ-3.



CANGZHOU

(Scale 1 : 900), Ian Sturton / 0130726

Radars: Air search: Type 517 Knife Rest ●; A-band.
 Air/surface search: Type 354 Eye Shield (MX 902) ●; G-band.

Surface search/fire control: Type 352 Square Tie ●; I-band.

Navigation: Fin Curve; I-band.

Fire control: Type 347G Rica Bowl ●; I/J-band.

Type 343G (Wok Won) (Wasp Head) ●; I-band.

IFF: High Pole A. Square Head.

Sonars: Echo Type 5; hull-mounted; active search and attack; medium frequency.

Programmes: These ships are Jianghu hulls 27, 28 and 30 and are referred to as New Missile Frigates.

Built at Hudong, Shanghai. *Huangshi* commissioned 14 December 1986, *Wuhu* in 1987, and *Cangzhou* completed in 1989. They were the first Chinese warships to be equipped with a computerised combat system.

Structure: The main deck is higher in the midships section and the lower part of the mast is solid. The arrangement of the launchers is side by side, as opposed to the staggered pairings in the first two ships. These were the first all-enclosed, air conditioned ships built in China.

Operational: Based in East Sea Fleet at Dinghai.

Sales: Four modified Type III to Thailand in 1991-92.



CANGZHOU

10/1992, *Ships of the World* / 0056765

HUANGSHI

2/2001, *Ships of the World* / 0126362

1 JIANGHU IV (TYPE 053HTH) CLASS (FFGH)

Name	No	Builders	Laid down	Launched	Commissioned
SIPING	544	Hudong Shipyard, Shanghai	1984	Sep 1985	Nov 1986

Displacement, tons: 1,550 standard; 1,866 full load
Dimensions, feet (metres): 338.5 x 35.4 x 10.2 (103.2 x 10.8 x 3.1)
Main machinery: 2 Type 12E 390V diesels; 14,400 hp(m) (10.6 MW) sustained; 2 shafts
Speed, knots: 26
Range, n miles: 4,000 at 15 kt; 2,700 at 18 kt
Complement: 185 (30 officers)

Missiles: SSM: 2 HY-2 (C-201) (CSSC-3 Seersucker) (twin) launchers ●; active radar or IR homing to 80 km (43.2 n miles) at 0.9 Mach; warhead 513 kg.
Guns: 1 Creusot-Loire 3.9 in (100 mm)/55 ●; 60–80 rds/min to 17 km (9.3 n miles); weight of shell 13.5 kg.
 8 China 37 mm/63 (4 twin) ●; 180 rds/min to 8.5 km (4.6 n miles) anti-aircraft; weight of shell 1.42 kg.
Torpedoes: 6–324 mm ILAS (2 triple) tubes ●; Yu-2 (Mk 46 Mod 1) active/passive homing to 11 km (5.9 n miles) at 40 kt; warhead 44 kg
A/S mortars: 2 RBU 1200 5-tubed fixed launchers ●; range 1,200 m; warhead 34 kg.
Countermeasures: Decoys: 2 SRBOC Mk 33 6-barrelled chaff launchers or 2 China 26-barrelled launchers.
ESM: Jug Pair or Watchdog; radar warning.
Weapons control: CSEE Naja optronic director for 100 mm gun.
Radars: Air/surface search: Type 354 Eye Shield (MX 902) ●; G band
 Surface search/fire control: Type 352 Square Tie ●; I-band
Navigation: Don 2 or Fin Curve; I-band.
IFF: High Pole A, Yard Rake or Square Head.
Sonars: Echo Type 5; hull-mounted; active search and attack; medium frequency.

Helicopters: Harbin Z-9C (Dauphin) ●



SIPING (Scale 1 : 900), Ian Sturton / 057239/



SIPING 6/2003 / 0569166

Programmes: Built as a standard Jianghu I and then converted, probably as a helicopter trials ship for the Luhu and Jiangwei classes, before being commissioned.
Structure: The after part of the ship has been rebuilt to take a hangar and flight deck for a single helicopter. Alcatel

'Safecooper' landing aid. This ship also has a French 100 mm gun and optronic director, and Italian triple torpedo tubes mounted on the quarterdeck.
Operational: Based in North Sea Fleet at Guzhou Bay. Acts as a training ship for Dalian Naval Academy

SHIPBORNE AIRCRAFT

Notes: It has been reported that negotiations are in progress to procure up to 50 Sukhoi Su-33 Flanker D naval fighters from Russia. A derivative of the Sukhoi Su-27, Su-33s can operate from aircraft carriers, using a ski-jump for launch, and are capable of in-flight refuelling. In November 2008, it was reported that acquisition of an initial batch of 14 aircraft, to be used in a training role, was nearing completion. A further 36 modernised aircraft are likely to follow

Numbers/Type: 15 Changhe Z-8 Super Frelon.
Operational speed: 134 kt (248 km/h).
Service ceiling: 10,000 ft (3,100 m).
Range: 440 n miles (815 km).
Role/Weapon systems: ASW helicopter; Eight SA 321G delivered from France in 1977 but supplemented by 12 locally built Zhi-8, of which the first operational aircraft was delivered in late 1991 Thomson Sintra HS-12 in four SA 321Gs for SSBN escort role
Sensors: HS-12 dipping sonar and processor, some have French-built search radar.
Weapons: ASW; Whitehead A244 or Yu-2 (Mk 46 Mod 1) torpedo. ASV; C-802K ASM



Z-8 9/2002, Paul Jackson / 0525833

Numbers/Type: 11 Hai Z-9C Hartun (Panther).
Operational speed: 140 kt (260 km/h).
Service ceiling: 15,000 ft (4,575 m).
Range: 410 n miles (758 km).
Role/Weapon systems: Eurocopter AS 365 Panther 2 aircraft built under licence. All delivered by about 2000. An anti-ship missile variant, Z-9D, was rolled out in mid-2008. The missile is believed to be the 4-15 km range TL-10, similar to the Iranian Kosar
Sensors: Thomson-CSF Agrion; HS-12 dipping sonar; Crouzet MAD. **Weapons:** ASV; Whitehead A244 torpedoes or Yu-2 (Mk 46 Mod 1).



Z-9C 12/2007, Hachiro Nakai / 1166/13

Numbers/Type: 6/4 Kamov Ka 28PL/28PS Helix A.
Operational speed: 135 kt (250 km/h).
Service ceiling: 19,685 ft (6,000 m).
Range: 432 n miles (800 km).
Role/Weapon systems: First pair are (Ka 28PL) ASW helicopters acquired in 1997 for evaluation. Four more ASW versions and four (Ka 28PS) for SAR delivered in late 1999. **Sensors:** Splash Drop radar; VGS-3 dipping sonar; MAD; ESM. **Weapons:** three torpedoes or depth bombs or mines



Ka-28 6/2004 / 1042165

LAND-BASED MARITIME AIRCRAFT (FRONT LINE)

Notes: In addition to those listed there are about 170 training and transport aircraft.

Numbers/Type: 2 KJ-2000 AWACS
Operational speed: 425 kt (785 km/h).
Service ceiling: 34,440 ft (10,500 m).
Range: 2,753 n miles (5,100 km).
Role/Weapon systems: Airborne Warning And Control System (AWACS) aircraft based on the Russian-made A-50 (Mainstay) airframe which itself is based on the Ilyushin Il-76 transport aircraft. The non-rotating radome houses three Chinese-made (ESA) phased array antennas in a triangular configuration. A SATCOM antenna may be installed inside a fairing on top of forward cabin. At least three further prototypes have been built since 2002 and are undergoing tests at China Flight Test Establishment (CFTE) in Yanliang, Shaanxi Province and Nanjing, Jiangsu Province where the main contractor for the radar system, Nanjing Research Institute of Electronic Technology (also known as 14 Institute), is based



KJ-2000 8/2005, Jane's / 1046316

Numbers/Type: 24 Sukhoi Su-30 MK 2 Flanker.
Operational speed: 1,345 kt (2,500 km/h).
Service ceiling: 59,000 ft (18,000 m).
Range: 2,160 n miles (4,000 km).
Role/Weapon systems: 24 delivered in 2004. The air force operates at least 150 of the similar Su-27 which also might be used for fleet air-defence. Sensors: Doppler radar
Weapons: One 30 mm cannon; 10 AAMs. Kh-35 anti-ship missiles may be fitted to some aircraft in due course



Su-27 5/2003 / D114638

Numbers/Type: 54 XAC JH-7.
Operational speed: 853 kt (1,210 km/h).
Service ceiling: 51,180 ft (15,600 m).
Range: 891 n miles (1,650 km).
Role/Weapon systems: All-weather dual seat 'Flounder' type attack fighter first delivered in 1998. A second batch of 18 JH-7A was delivered in 2004. Sensors: Letri JL-10A Shenyang pulse Doppler fire-control radar capable of tracking four targets to 29 n miles (54 km) in look-down mode simultaneously. **Weapons:** AAM; PL-5b, PL-7 and 23 mm gun. ASM, Two C-801 or C-802 anti-ship missiles, C-701 anti-ship missile and 500 kg LGBs. AS-17 (Kh-31) may be fitted in due course



JH-7 5/2003 / D114841

Numbers/Type: 4 Harbin SH-5.
Operational speed: 243 kt (450 km/h).
Service ceiling: 23,000 ft (7,000 m).
Range: 2,563 n miles (4,750 km).
Role/Weapon systems: Multipurpose amphibian introduced into service in 1986. Final total of about 20 planned with ASW and avionics upgrade. Sensors: Doppler radar; MAD; sonobuoys. **Weapons:** ASV; four C 101, two gun turret, bombs. ASW; Yu-2 (Mk 46 Mod 1) torpedoes, mines, depth bombs.



SH-5 9/2007 / 1335686

Numbers/Type: 4 SACY-8X (Cub).
Operational speed: 351 kt (650 km/h).
Service ceiling: 34,120 ft (10,400 m).
Range: 3,020 n miles (5,600 km).
Role/Weapon systems: Maritime patrol version of An-12 Cub transport; first flown 1985. There are reported to be two Y-8J variants equipped with Searchwater radar in a dropped nose radome. In addition there are two Y-8DZ Elint variants in service. Sensors: Litton APSQ-504(V)3 search radar in undernose radome. Two Litton LTN 72R INS and Omega/Loran. **Weapons:** No weapons carried.



Y-8X 7/1997 / D012195

Numbers/Type: 30 Harbin H-5 (Il-28 Boeagle).
Operational speed: 487 kt (902 km/h).
Service ceiling: 40,350 ft (12,300 m).
Range: 1,175 n miles (2,180 km).
Role/Weapon systems: Overwater strike aircraft with ASW/ASVW roles. Numbers are doubtful as some have been phased out and others moved into second line roles such as target towing and ECM training. **Weapons:** ASW; two torpedoes or four depth bombs. ASVW; one torpedo + mines. Standard; four 23 mm cannon.



H-5 (Romanian colours) 2002, Lindsay Peacock / 0524583

Numbers/Type: 70/20/20 SAC J-8-I Finback A/SAC J-8-II Finback B/SAC J-8-IV Finback D.
Operational speed: 701 kt (1,300 km/h).
Service ceiling: 65,620 ft (20,000 m).
Range: 1,187 n miles (2,200 km).
Role/Weapon systems: Dual role, all-weather fighter introduced into service in 1990 and production continues. There are at least 170 more in service with the Air Force. **Weapons:** 23 mm twin-barrel cannon; PL-27 AAM; ASM. PL-2 has some ASM capability.

Numbers/Type: 35 Nanchang Q-5 (Fantan-A).
Operational speed: 643 kt (1,190 km/h).
Service ceiling: 52,500 ft (16,000 m).
Range: 650 n miles (1,188 km).
Role/Weapon systems: Strike aircraft developed from Shenyang J-6; operated in the beachhead and coastal shipping attack role. A-5M version adapted to carry two torpedoes or C-801 ASM. **Weapons:** Two 23 mm cannon, two cluster bombs, one or two air-to-air missiles. Capable of carrying 1 ton warload.



FANTAN-A 6/2002, Ships of the World / 0554726

Numbers/Type: 30/11 XAC H-6D/XAC H-6X (Tu-16 Badger).
Operational speed: 535 kt (992 km/h).
Service ceiling: 40,350 ft (12,300 m).
Range: 2,605 n miles (4,800 km).
Role/Weapon systems: Three regiments of H-6D bomber and maritime reconnaissance aircraft. Some converted as tankers. H-6s now believed to be out of service and deliveries of new version H-6X, armed with ASM, have begun. Sensors: Search/attack radar; ECM. **Weapons:** ASV; two underwing anti-shiping missiles of local manufacture, including C-801. Up to five 23 mm cannon; bombs.



H-6X 6/2004 / 1042161

Numbers/Type: 69 CAC J-7.
Operational speed: 1,175 kt (2,175 km/h).
Service ceiling: 61,680 ft (18,800 m).
Range: 804 n miles (1,490 km).
Role/Weapon systems: Land-based Fleet air defence fighter with limited strike role against enemy shipping or beachhead. There are some 40 J-7B and 28 J-7E. Sensors: Search attack radar, some ECM. **Weapons:** ASV; 500 kg bombs or 36 rockets. Standard; two 30 mm cannon. AD; two 'Atoll' AAMs.



J-7E 6/2002, Ships of the World / 0554726

PATROL FORCES

Notes: (1) Many patrol craft carry the HN-5 shoulder-launched Chinese version of the SA-N-5 SAM
 (2) More Patrol Craft are listed under Paramilitary vessels at the end of the Chinese section.

**60 + 5 HOUBEI (TYPE 022) CLASS
 (FAST ATTACK CRAFT—MISSILE) (PGGF)**

2208-2211 +56

Displacement, tons: 220 full load
Dimensions, feet (metres): 139.7 x 40.0 x 4.9 (42.6 x 12.2 x 1.5)
Main machinery: 2 diesels; 6,865 hp (5.1 MW); 4 waterjet propulsors
Speed, knots: 36
Complement: 12

Missiles: 8 C-802 (YJ-83/CSS-N-8) Saccade; mid-course guidance and active radar homing to 150 km (81 n miles) at 0.9 Mach; warhead 165 kg; sea-skimmer.
Guns: 1—30 mm/65 AK 630; 6 barrels; 3,000 rds/min combined to 2 km; 12 missiles.
Weapons control: Optronic director
Radars: Surface search, Type 348 (LR 66); I-band.
Navigation: I-band

Comment: A new fast attack craft, the first of which was launched at Qiuxin Shipyard, Shanghai in April 2004. The design is believed to be based on a 42 m hull developed by AMD Marine Consulting, Sydney. This was further progressed by its joint venture company in Guangzhou, Sea Bus International (SBI), into a patrol boat configuration which was selected by the Chinese Navy after a five-year investigation into various platform contenders. The craft has a wave-piercing catamaran hull form and a centre bow. Likely to be of aluminium alloy construction, the design clearly incorporates RCS reduction measures. Following extensive first of class trials, full production was reported to have taken place in at least six shipyards. Although production slowed in 2008, up to 100 craft are required to replace the ageing patrol boat inventory. Dimensions are based on the original AMD design. The installation of C-802 missiles suggests that there may be a datalink to facilitate over-the-horizon targeting. The craft are based in all three fleets and are likely to use a sector-defence concept.



HOUBEI 1/2008* / 1335685



HOUBEI 12/2007, Chris Sattler / 1335684



HOUBEI CLASS 6/2007 / 1165856

**16 HOUXIN (TYPE 037/1G) CLASS
 (FAST ATTACK CRAFT—MISSILE) (PTG)**

751-760 764-769

Displacement, tons: 478 full load
Dimensions, feet (metres): 203.4 x 23.6 x 7.5 (62.8 x 7.2 x 2.4)
Main machinery: 4 China PR 230ZC diesels; 4,000 hp(m) (2.94 MW); 4 shafts
Speed, knots: 28
Range, n miles: 750 at 18 kt
Complement: 71

Missiles, SSM: 4YJ-1 (Eagle Strike) (C-801) (CSS-N-4 Sardine) (2 twin); active radar homing to 40 km (22 n miles) at 0.9 Mach; warhead 165 kg; sea-skimmer. C-802 in due course.
Guns: 4—37 mm/63 (Type 76A) (2 twin); 180 rds/min to 8.5 km (4.6 n miles) anti-aircraft; weight of shell 1.42 kg
 4—14.5 mm (Type 69) (2 twin); 600 rds/min to 7 km (3.8 n miles)
Countermeasures: ESM/ECM; Intercept and jammer.
Radars: Surface search, Type 352 (Square Tiel); I-band.
Fire control: Type 341 (Rice Lamp); I-band.
Navigation: Anritsu Type 723; I-band

Programmes: First seen in 1991 and built at the rate of up to three per year at Qiuxin and Huangpu Shipyards to replace the Houku class and for export. Building may have stopped in mid-1999.
Structure: This is a missile armed version of the Hainan class. There are some variations in the bridge superstructure in later ships of the class.
Operational: Split between the East and South Sea Fleets.
Sales: Two to Burma in December 1995, two in July 1996 and two in late 1997



HOUXIN 758 3/2003, Bob Flides / 0569154



HOUXIN 765 5/2004 / 1042140

3 HAIJIU (TYPE 037/1) CLASS (LARGE PATROL CRAFT) (PC)

688 689 697

Displacement, tons: 490 full load
Dimensions, feet (metres): 210 x 23.6 x 7.2 (64 x 7.2 x 2.2)
Main machinery: 4 diesels, 8,800 hp(m) (6.47 MW); 4 shafts
Speed, knots: 28
Range, n miles: 750 at 18 kt
Complement: 72

Guns: 4 China 57 mm/70 (2 twin); 120 rds/min to 12 km (6.5 n miles); weight of shell 6.31 kg
 2 USSR 30 mm/65 (1 twin); 500 rds/min to 5 km (2.7 n miles) anti-aircraft; weight of shell 0.54 kg
A/S mortars: 4 RBU 1200 5-tubed fixed launchers; range 1,200 m; warhead 34 kg
Depth charges: 2 rails.
Radars: Surface search; Pot Head, I-band.
Fire control: Round Ball; I-band.
Sonars: Stag Ear or Thomson Sintra SS 12 (688, 693)

Comment: A lengthened version of the Hainan class probably used as a prototype for the Houxin class. Based in East Sea Fleet. One other has been scrapped.



HAIJIU 688 6/2008* / 1335706

6 HOUJIAN (OR HUANG) (TYPE 037/2) CLASS (FAST ATTACK CRAFT—MISSILE) (PTG)

Name	No	Builders	Launched	Commissioned
YANGJIANG	770	Huangpu Shipyard	Jan 1991	May 1991
SHUNDE	771	Huangpu Shipyard	July 1994	Feb 1995
NANHAI	772	Huangpu Shipyard	Feb 1995	Apr 1995
PANYU	773	Huangpu Shipyard	May 1995	July 1995
LIANJIANG	774	Huangpu Shipyard	Sep 1998	Feb 1999
XINHUI	775	Huangpu Shipyard	Apr 1999	Nov 1999

Displacement, tons: 520 standard
Dimensions, feet (metres): 214.6 × 27.6 × 7.9 (65.4 × 8.4 × 2.4)
Main machinery: 3 SEMT-Pielstick 12 PA6 280 diesels, 15,840 hp(m) (11.7 MW) sustained, 3 shafts
Speed, knots: 32
Range, n miles: 1,800 at 18 kt
Complement: 75

Missiles: SSM. 6 YJ-1 (Eagle Strike) (C-801) (CSS-N-4 Sardine) (2 triple); inertial cruise; active radar homing to 40 km (22 n miles) at 0.9 Mach; warhead 185 kg or C-802 (CSS-N-8 Saccade); range 120 km (66 n miles).
Guns: 2—37 mm/63 (twin) Type 76A; 180 rds/min to 8.5 km (4.6 n miles) anti-aircraft; weight of shell 1.42 kg
 4—30 mm/65 (2 twin) Type 69, 500 rds/min to 5 km (2.7 n miles); weight of shell 0.54 kg
Countermeasures: Decoys: 2 Type 945G 26-barrelled launcher
ESM Type 928 intercept
Weapons control: Type JM-83 optronic director.
Radars: Surface search Type 348 (MR 36); I-band.
Fire control: Type 347G Rice Bowl; I-band.
Navigation: Type 765; I-band.

Programmes: First of class laid down in 1989 and built in a very short time. Sometimes called the Huang class.

Modernisation: Some may be fitted with Type 363 search radar and Type 344 (MR 34) fire-control radar rather than Type 347G.

Operational: Based in South Sea Fleet at Hong Kong from mid-1997. One possibly sunk in late 1997. *Lianjiang* severely damaged in a collision with a freighter on 26 June 2006 but was later repaired at Guangdong Shipyard in 2008.



SHUNDE

6/2007 / 1168848

93 HAINAN (TYPE 037) CLASS (FAST ATTACK CRAFT—PATROL) (PC)

275–285, 290, 302, 305, 609–610, 618–622, 626–629, 638–643, 646–650, 657–681, 683–687, 689–692, 695–699, 701, 707, 723–733, 740–742

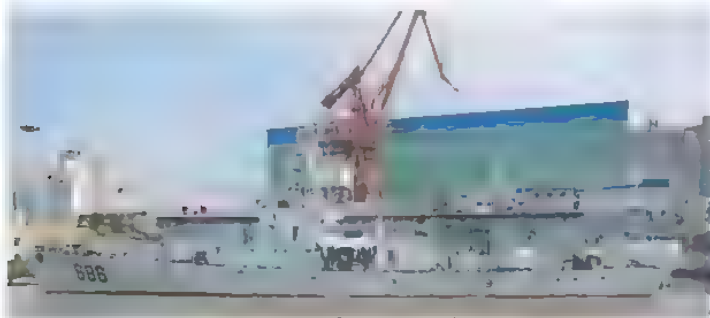
Displacement, tons: 375 standard, 392 full load
Dimensions, feet (metres): 192.8 × 23.8 × 7.2 (58.8 × 7.2 × 2.2)
Main machinery: 4 PCR/Kolomna Type 9-D-8 diesels; 4,000 hp(m) (2.94 MW) sustained; 4 shafts
Speed, knots: 30.5
Range, n miles: 1,300 at 15 kt
Complement: 78

Missiles: Can be fitted with 4 YJ-1 launchers in lieu of the after 57 mm gun.
Guns: 4 China 57 mm/70 (2 twin); 120 rds/min to 12 km (6.5 n miles); weight of shell 6.31 kg.
 4 USSR 25 mm/60 (2 twin); 270 rds/min to 3 km (1.6 n miles) anti-aircraft; weight of shell 0.34 kg.
A/S mortars: 4 RBU 1200 5-tubed fixed launchers; range 1,200 m; warhead 34 kg.
Depth charges: 2 BMB-2 projectors; 2 racks 18 DCs.
Mines: Raas fitted for 12.
Radars: Surface search: Pot Head or Skin Head; E/F-band
IFF: High Pole.
Sonars: Stag Ear; hull-mounted, active search and attack; high frequency Thomson Sintra SS 12 (in some); VDS.

Programmes: A larger Chinese-built version of the former Soviet SO 1. Low freeboard. Programme started 1983–84 and continued with new hulls replacing the first ships of the class. There are at least six variants with minor differences.

Structure: Later ships have a tripod or solid foremast in place of a pole and a short stub mainmast. Two trials SS 12 sonars fitted in 1987.

Operational: Divided between the three Fleets
Sales: Two to Bangladesh, one in 1982 and one in 1985, eight to Egypt in 1983–84; six to North Korea 1975–78; four to Pakistan, two in 1976 and two in 1980; six to Burma in 1991 and four in 1993



HAINAN 686

10/2008*, Chris Settler / 1335982



HAINAN 686

10/2006, E & M Laursen / 1164869

11 HUANGFEN (TYPE 021) (OSA I TYPE) (FAST ATTACK CRAFT—MISSILE) (PTGF)

3113–3114 3130–3131 6106–6107 6119–6120 6122–6123 7119

Displacement, tons: 171 standard, 205 full load
Dimensions, feet (metres): 126.6 × 24.9 × 8.9 (38.6 × 7.6 × 2.7)
Main machinery: 3 Type 42-160 diesels; 12,000 hp(m) (8.8 MW) sustained; 3 shafts
Speed, knots: 35
Range, n miles: 800 at 30 kt
Complement: 28

Missiles: SSM: 4 HY-2 (CSS-N-3 Seersucker) (2 twin) launchers; active radar or IR homing to 80 km (43.2 n miles) at 0.9 Mach; warhead 513 kg.
Guns: 4 USSR 25 mm/60 (2 twin); 270 rds/min to 3 km (1.6 n miles) anti-aircraft.
 Replaced in some by 4 USSR 30 mm/65 (2 twin) AK 230.
Radars: Surface search: Square Tie; I-band.
Fire control: Round Ball or Rice Lamp, H/I-band.
IFF: 2 Square Head; High Pole A.

Programmes: First reported in 1985
Operational: China credits this class with a speed of 39 kt. Split between the Fleets. Numbers continue to be reduced.

Sales: Four to North Korea, 1980; four to Pakistan, 1984, four to Bangladesh, 1988, and one more in 1992. Three of a variant were transferred to Yemen in June 1995, delivery having been delayed by the Yemen civil war. A variant called the Houdong class has been built for Iran. Five delivered to Iran in September 1994, five more in March 1996.



HUANGFEN 6120

3/2002, Ships of the World / 0529118

25 HAIQING (TYPE 037/1S) CLASS (FAST ATTACK CRAFT—PATROL) (PC)

710–717 743–744 761–763 786–797

Displacement, tons: 478 full load
Dimensions, feet (metres): 206 × 23.8 × 7.9 (62.8 × 7.2 × 2.4)
Main machinery: 4 Chinese PR 230ZC diesels; 4,000 hp(m) (2.94 MW) sustained; 4 shafts
Speed, knots: 28
Range, n miles: 1,300 at 15 kt
Complement: 71
Guns: 4 China 37 mm/63 (2 twin) Type 76, 4 China 14.5 mm (2 twin) Type 69.
A/S mortars: 2 Type 87 6-tubed launchers.
Radars: Surface search Anritsu RA 723; I-band.
Sonars: Hull mounted; active search and attack; medium frequency Thomson Sintra SS 12; VDS

Programmes: Starting building at Qiuxin Shipyard in 1992 and replaced the Hainan class programme. First one completed in November 1993. Production continued at Qingdao, Chongqing and Huangpu as well as Qiuxin.

Structure: Based on the Hainan class, but the large A/S mortars suggest a predominantly ASW role, and this may explain the rapid building rate.

Operational: In service in all three Fleets. Some pennant numbers may have changed
Sales: One to Sri Lanka in December 1995.



HAIQING 743

6/2008* / 1335705

**25 HAIZHUI/SHANGHAI III (TYPE 062/1) CLASS
(COASTAL PATROL CRAFT) (PC)**

1201-1208 1236 1239-1240 2326-2329 4339-4348

Displacement, tons: 170 full load
Dimensions, feet (metres): 134.5 x 17.4 x 5.9 (41 x 5.3 x 1.8)
Main machinery: 4 Chinese L12-180A diesels; 4,400 hp(m) (3.22 MW) sustained; 4 shafts
Speed, knots: 26. **Range, n miles:** 750 at 17 kt
Complement: 43

Guns: 4 China 37 mm/63 (2 twin); 180 rds/min to 8.5 km (4.6 n miles); weight of shell 1.42 kg.
 4 China 14.5 mm (2 twin) Type 69 or 4 China 25 mm (2 twin).
Radars: Surface search Pot Head or Anritsu 726; I-band.
Sonars: Stag Ear; hull-mounted; active search; high frequency (in some)

Programmes: First seen in 1992 and built for Chinese use and for export. Sometimes referred to as Shanghai III class when not fitted with ASW equipment.
Structure: Lengthened Shanghai II hull. Inclined pole mast and a pronounced step at the back of the bridge superstructure are recognition features. Much reduced top speed. Some may be equipped with RBU 1200 launchers in place of other armament.
Operational: Based in the North and East Sea Fleets.
Sales: Three of a variant to Tunisia in 1994, three to Sri Lanka in August 1995, three more in May 1996 and three more in August 1998. One to Bangladesh in mid-1996. One to Sierra Leone in 1997



HAIZHUI 1208 10/2005, Flor Van Otterdyk / 1164395



HAIZHUI 1202 3/2007 / 1166862

**35 SHANGHAI II (TYPE 062) CLASS
(FAST ATTACK CRAFT—GUN) (PC)**

Displacement, tons: 113 standard; 134 full load
Dimensions, feet (metres): 127.3 x 17.7 x 5.6 (38.8 x 5.4 x 1.7)
Main machinery: 2 Type L-12V-180 diesels; 2,400 hp(m) (1.76 MW) (forward); 2 Type 12-D-5 diesels; 1,820 hp(m) (1.34 MW) (aft); 4 shafts
Speed, knots: 30. **Range, n miles:** 700 at 16.5 kt on 1 engine
Complement: 38

Guns: 4 China 37 mm/63 (2 twin); 180 rds/min to 8.5 km (4.6 n miles); weight of shell 1.42 kg.
 4 USSR 25 mm/60 (2 twin); 270 rds/min to 3 km (1.6 n miles) anti-aircraft; weight of shell 0.34 kg
 Some are fitted with a twin 57 mm/70, some have a twin 75 mm Type 56 recoilless rifle mounted forward and some have a twin 14.5 mm MG
Depth charges: 2 projectors; 8 weapons.
Mines. Mine rails can be fitted for 10 mines.
Radars: Surface search: Skin Head; E/F-band or Pot Head; I-band.
IFF: High Pole.
Sonars: Hull-mounted active sonar or VDS in some.

Programmes: Construction began in 1961 and continued at Shanghai and other yards at rate of about 10 a year for 30 years before being replaced by the Type 062/1G Haizhui class.
Structure: The five versions of this class vary slightly in the outline of their bridges. A few of the class have been reported as fitted with RBU 1200 anti-submarine mortars.
Operational: Evenly divided between the three Fleets. Reported but not confirmed that up to 20 have been converted to sweep mines. Numbers continue to decline
Sales: Eight to North Vietnam in May 1966, plus Romanian craft of indigenous construction. Seven to Tanzania in 1970-71, six to Guinea, 12 to North Korea, 12 to Pakistan, five to Sri Lanka in 1972, two to Tunisia in 1977, six to Albania, eight to Bangladesh in 1980-82, three to Congo, four to Egypt in 1984, three to Sri Lanka in 1991, two to Tanzania in 1992. Many of the earlier craft have since been deleted.



SHANGHAI II (Sri Lankan colours) 1992 / 0312772

4 HARBOUR PATROL CRAFT (PBI)

7358-7361

Displacement, tons: 80 full load
Dimensions, feet (metres): 82 x 13.3 x 4.5 (25 x 4.1 x 1.4)
Main machinery: 2 diesels; 2 shafts
Speed, knots: 28
Guns: 2 - 14.5 mm (twin).
Radars: Surface search: I-band

Comment: Four new patrol craft arrived at Hong Kong on 1 July 1997. There may be more of the class, which are similar to some of the paramilitary patrol craft, but much faster



HARBOUR PATROL CRAFT 7360 6/1999, Ships of the World / 0056172

AMPHIBIOUS FORCES

Notes: (1) In addition to the ships listed below there are up to 500 minor LCM/LCVP types used to transport stores and personnel.

(2) Eight Yuchai class (USSRT 4 design) and ten T4 LCMs are still in reserve in the South Sea Fleet.

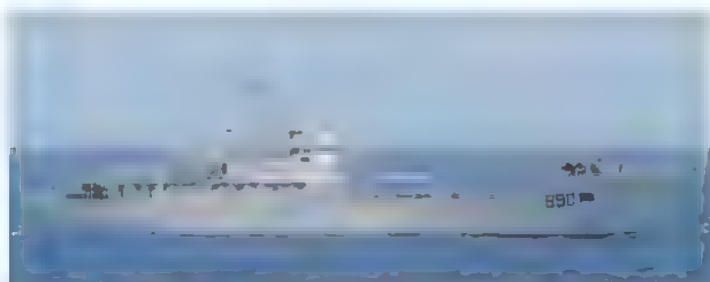
(3) A 20 m WIG (wing-in-ground effect) craft assembled at Shanghai and completed in late 1997. Resembles Russian Volga II passenger ferry and may enter naval service if it proves to be reliable.

1 YUDENG (TYPE 073) CLASS (LSM)

Name	No	Builders	Launched	Commissioned
WUDANGSHAN	990	Zhonghua Shipyard	Mar 1991	Aug 1994

Displacement, tons: 1,850 full load
Dimensions, feet (metres): 285.4 x 42.7 x 12.5 (87 x 13 x 3.8)
Main machinery: 2 diesels; 2 shafts
Speed, knots: 14
Complement: 35
Military lift: 500 troops; 9 tanks
Guns: 2 China 57 mm/50 (twin). 4 - 25 mm (2 twin).
Radars: Navigation: China Type 753; I-band

Comment: The only one of the class. Based in the South Sea Fleet. Production may have been for export or the design was overtaken by the smaller Wuhu-A class.



WUDANGSHAN 4/2008 / 1335681

1 YUZHAO (TYPE 071) CLASS (ASSAULT SHIP) (LHD)

Name	No	Builders	Laid down	Launched	Commissioned
KUNLUNSHAN	998	Hudong Zhonghua Shipyard, Shanghai	June 2006	21 Dec 2006	2008

Displacement, tons: 17,600 approx
Dimensions, feet (metres): 689.0 x 91.9 x 23.0 (210.0 x 28.0 x 7.0)
Main machinery: CODAD; 4 SEMT Pielstick 16 PC2.6 V 400 diesels, 47,000 hp (35.2 MW); 2 shafts
Speed, knots: 20
Complement: 120
Military lift: Four air-cushion vehicles plus vehicles and troops
Guns: 1—76 mm ●
 4—30 mm/65 AK 630 ●
Countermeasures: Decoys: 2 launchers ●
Radars: Air search, Type 363 (Sea Tiger) ●; E/F-band.
Air/surface search: Type 364 Seagull C ●; G-band

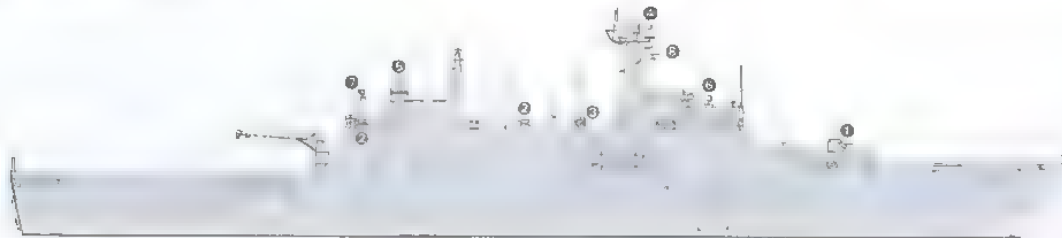
Fire control: Type 347G(2) (LR 66) ●; J-band for 76 mm.
 Type 347G(1) (Rice Bowl) ●; J-band for AK 630
Navigation: Type NR 2000 ●; I-band.

Helicopters: 2 Z-8 Super Frelon.

Programmes: After several years' speculation, the existence of the programme was confirmed when construction of a ship was initiated in mid-2006. The programme constitutes a key component of the PLA(N)'s plan to improve its sealift and power projection capabilities. Further ships are expected once ovaluation trials have been completed.

Structure: The principal features of the ship include a large well deck area to accommodate four Air Cushion Vehicles (ACV) in the aft two-thirds of the ship. The ACVs are likely to access the ship through a stern gate. The ship may have to ballast down for operation. There is a large stern helicopter flight deck and a hangar. An internal garage deck for vehicles may be accessed via side ramps (port and starboard). There is space for the HQ7 launcher which may be fitted at a later date. Two LCVPs are carried

Opinion: This ship represents a major enhancement of amphibious capability. Based at Zhanjiang (South Sea Fleet)



KUNLUNSHAN

(Scale 1 : 1,500), Ian Sturton / 1166825



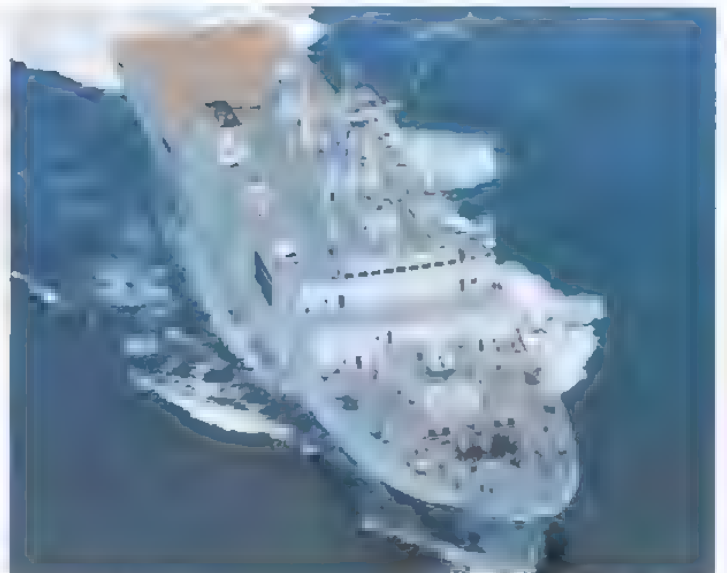
KUNLUNSHAN

9/2007 / 1166865



KUNLUNSHAN

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9/2007 / 1166863

10 YUTING I (TYPE 072 II) CLASS (LSTH)

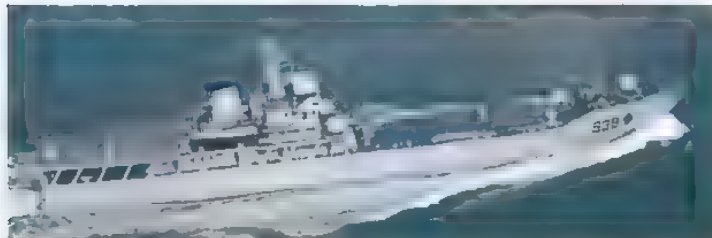
Name	No	Builders	Launched	Commissioned
EMEISHAN	931	Zhonghua Shipyard, Shanghai	Sep 1991	Sep 1992
DANXIASHAN	934	Zhonghua Shipyard, Shanghai	Apr 1995	Sep 1995
XUEFENGSHAN	935	Zhonghua Shipyard, Shanghai	July 1995	Dec 1995
HAIYANGSHAN	936	Zhonghua Shipyard, Shanghai	Dec 1995	May 1996
QINGCHENGSHAN	937	Zhonghua Shipyard, Shanghai	Apr 1996	Aug 1996
YANDANSHAN	908	Zhonghua Shipyard, Shanghai	Aug 1996	Jan 1997
JIUHUASHAN	909 (ex-938)	Zhonghua Shipyard, Shanghai	Nov 1999	Apr 2000
HUANGGANGSHAN	910 (ex-939)	Zhonghua Shipyard, Shanghai	May 2000	Dec 2001
PUTUOSHAN	939	Zhonghua Shipyard, Shanghai	Apr 2001	Aug 2001
TIANTAISHAN	940	Zhonghua Shipyard, Shanghai	Dec 2001	Apr 2002

Displacement, tons: 3,770 standard; 4,800 full load
 Dimensions, feet (metres): 393.7 x 52.5 x 10.5 (120 x 16 x 3.2)
 Main machinery: 2 diesels; 2 shafts
 Speed, knots: 17. Range, n miles: 3,000 at 14 kt
 Complement: 120
 Military lift: 250 troops; 10 tanks; 4 LCVP
 Guns: 6 China 37 mm/63 (3 twin); 180 rds/min to 8.5 km (4.6 n miles); weight of shell 1.42 kg.
 Radars: Navigation: 2 China Type 753; I-band.
 Helicopters: Platform for 2 medium.

Comment: To augment amphibious lift capabilities and provide helicopter lift. Bow and bridge structures are very similar to the Yukun class but there is a large helicopter deck. 934-937 and 939 based in South Sea Fleet. 908-910 and 939-940 based in East Sea Fleet.



HUANGGANGSHAN 1/2008*, A Sheldon-Duplatz / 1335683



PUTUOSHAN 6/2007 / 1166861

10 YUTING II (TYPE 072 III) CLASS (LSTH)

Name	No	Builders	Launched	Commissioned
BAXIANSHAN	913	Zhonghua Shipyard, Shanghai	23 Apr 2003	Oct 2003
TIANZHUSHAN	911	Dalian Shipyard	1 July 2003	2004
HUADINGSHAN	992	Wuhan Shipyard	June 2003	2004
—	918	Wuhan Shipyard	Apr 2004	2004
LUOXIAOSHAN	993	Zhonghua Shipyard, Shanghai	18 July 2003	Jan 2004
DAQINGSHAN	912	Dalian Shipyard	Sep 2003	2004
DAIYUNSHAN	994	Wuhan Shipyard	16 Dec 2003	2004
WANYANGSHAN	995	Zhonghua Shipyard, Shanghai	26 Nov 2003	2004
LAOTIESHAN	996	Dalian Shipyard	1 Jan 2004	2004
YUNWASHAN	997	Wuhan Shipyard	2004	2005

Displacement, tons: 3,770 standard; 4,800 full load
 Dimensions, feet (metres): 393.7 x 53.8 x 10.5 (120 x 16.4 x 3.2)
 Main machinery: 2 diesels; 2 shafts
 Speed, knots: 17. Range, n miles: 3,000 at 14 kt
 Complement: 120
 Military lift: 250 troops; 10 tanks; 4 LCVP
 Guns: 2 57 mm.
 Radars: Navigation: 2 China Type 753; I-band
 Helicopters: Platform for 2 medium.

Comment: Details are speculative but reported to be an improved version of the Yuting I class with similar dimensions. Design differences include modifications to the stern, including the ramp and a taller funnel. A tunnel in the centre of the superstructure connects the main and after decks. With construction undertaken at three shipyards, a pause in the programme after 10 ships may be temporary. 992-996 based in the South Sea Fleet; 911 and 912 in the North and 913 and 918 in the East.



BAXIANSHAN 10/2008*, Chris Sattler / 1335690



DAQINGSHAN 6/2007 / 1166854

7 YUKAN (TYPE 072) CLASS (LST)

YUNTAISHAN 927	LINGYANSHAN 930	HELANSHAN 932
WUFENGSHAN 928	DONGTINGSHAN 931	LIUPANSHAN 933
ZJINSHAN 929		

Displacement, tons: 3,110 standard; 4,170 full load
 Dimensions, feet (metres): 393.6 x 50 x 9.5 (120 x 15.3 x 2.9)
 Main machinery: 2 Type 12E 390 diesels; 14,400 hp(m) (10.6 MW) sustained; 2 shafts
 Speed, knots: 18
 Range, n miles: 3,000 at 14 kt
 Complement: 109
 Military lift: 200 troops; 10 tanks; 2 LCVP; total of 500 tons
 Guns: 2 China 57 mm/50 (1 twin); 120 rds/min to 12 km (6.5 n miles); weight of shell 6.31 kg.
 4, 6 or 8—37 mm (2, 3 or 4 twin); 180 rds/min to 8.5 km (4.6 n miles); weight of shell 1.42 kg.
 4—25 mm/60 (2 twin) (some also have 4—25 mm (2 twin) mountings amidships above the tank deck); 270 rds/min to 3 km (1.6 n miles).
 Radars: Navigation: 2 China Type 753; I-band.

Comment: First completed in 1980 at Wuhan Shipyard. Building appeared to terminate in November 1995. Bow and stern ramps fitted. Carry two LCVPs. Bow ramp maximum load 50 tons, stern ramp 20 tons. Five based in the East and two in South Sea Fleets.



HELANSHAN 12/2007, Chris Sattler / 1170057



LINGYANSHAN 3/2001, Ships of the World / 0126363

32 YULIANG (TYPE 079) CLASS (LSM)

Displacement, tons: 1,100 full load
 Dimensions, feet (metres): 206.7 x 32.8 x 7.9 (68 x 10 x 2.4)
 Main machinery: 2 diesels; 2 shafts
 Speed, knots: 14
 Complement: 60
 Military lift: 3 tanks
 Guns: 4—25 mm/60 (2 twin); 270 rds/min to 3 km (1.6 n miles).
 2 BM 21 MRL rocket launchers; range about 9 km (5 n miles).
 Radars: Navigation: Fin Curve; I-band

Comment: Production started in 1980 in three or four smaller shipyards. Numbers have been overestimated in the past and production stopped in favour of Yuhai class. Four in the North Sea Fleet, remainder based in the South Sea Fleet.



YULIANG 986 6/2008* / 1335702

10 YUNSHU CLASS (LSM)

Name	No	Builders	Launched	Commissioned
SONGSHAN	946	Hudong Zhonghua Shipyard, Shanghai	June 2003	2004
-	947	Qingdao Naval Dockyard	1 Aug 2003	2004
XUESHAN	948	Lushun Shipyard	Sep 2003	2004
YUSHAN	944	Lushun Shipyard	20 Mar 2004	2004
HUASHAN	945	Wuhu Shipyard	1 July 2003	2004
SHENGSHAN	941	Hudong Zhonghua Shipyard, Shanghai	Dec 2003	2004
HENGSHAN	949	Lushun Shipyard	Feb 2004	2004
LUSHAN	942	Wuhu Shipyard	2004	2004
-	943	Qingdao Naval Dockyard	2004	2004
TAISHAN	950	Hudong Zhonghua Shipyard, Shanghai	Mar 2004	2004

Displacement, tons: 1,460 standard; 1,850 full load
Dimensions, feet (metres): 285.4 x 41.3 x 7.4 (87.0 x 12.6 x 2.25)
Main machinery: 2 diesels, 2 shafts
Speed, knots: 17
Range, n miles: 1,500 at 14 kt
Complement: 70
Military lift: 6 tanks or 12 trucks or 250 tons dry stores
Guns: 2-57 mm.
Radars: Navigation: I-band.

Comment: A new class of LSM, based on the Yudeng class, built at Zhonghua, Wuhu, Qingdao and Lushun. Series production at four shipyards suggests that further ships may be built. 941-944 based in the East Sea Fleet and 945-950 in the South Sea Fleet.



YUSHAN 6/2008* / 1335704

10 YUBEI (TYPE 074A) CLASS (LCU)

No	Builders	Launched	Commissioned
3128	Qingdao Naval Dockyard	Sep 2003	2004
3315	Zhanjiang Shipyard North	2003	2004
3232	Shanghai Shipyard International	Sep 2003	2004
3129	Qingdao Naval Dockyard	Dec 2003	2004
3316	Dinghai Naval Dockyard	Sep 2003	2004
3317	Dinghai Naval Dockyard	Nov 2003	2004
3318	Dinghai Naval Dockyard	Jan 2004	2004
3233	Qingdao Naval Dockyard	2004	2004
3234	-	2004	2005
3235	-	2004	2005

Displacement, tons: 900 standard; 1,200 full load
Dimensions, feet (metres): 213.2 x 36.1 x 8.6 (65.0 x 11.0 x 2.7)
Main machinery: 2 diesels; 2 shafts
Speed, knots: To be announced
Complement: To be announced
Military lift: 10 tanks; 150 troops
Guns: 4-14.5 mm (2 twin).
Radars: To be announced

Comment: Built at Qingdao, Zhanjiang, Shanghai and Dinghai. Catamaran hull with superstructure on the starboard side. Basing: 3128 and 3129 in the North Sea Fleet; 3232-35 in the South Sea Fleet; 3315-3318 in the East Sea Fleet.



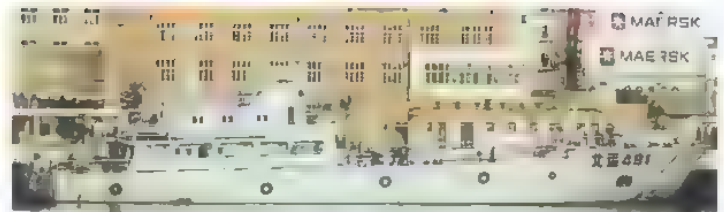
YUBEI 3315 8/2003 / 1047164

10 YUHA1 (TYPE 074) (WUHU-A) CLASS (LSM)

3111	3113	3115-3117	3229	3244	7593-7595
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Displacement, tons: 799 full load
Dimensions, feet (metres): 191.6 x 34.1 x 8.9 (58.4 x 10.4 x 2.7)
Main machinery: 2 MAN-8L 20/27 diesels, 4,900 hp(m) (3.6 MW); 2 shafts
Speed, knots: 14
Complement: 56
Military lift: 2 tanks; 250 troops
Guns: 2-25 mm/80 (1 twin), 4-14.5 mm (2 twin).
Radars: Navigation: I-band

Comment: First one completed in Wuhu Shipyard in 1995. One sold to Sri Lanka in December 1995. Basing: 3111, 3113, 3115-3117 in the North Sea Fleet; 3229 and 3244 in the East Sea Fleet and 7593-7597 in the South Sea Fleet



YUHA1 CLASS 2/1999 / 0056780

120 YUNNAN CLASS (TYPE 067) (LCU)

Displacement, tons: 85 standard; 135 full load
Dimensions, feet (metres): 93.8 x 17.7 x 4.9 (28.6 x 5.4 x 1.5)
Main machinery: 2 diesels; 600 hp(m) (441 kW); 2 shafts
Speed, knots: 12
Range, n miles: 500 at 10 kt
Complement: 12
Military lift: 45 tons
Guns: 4-14.5 mm (2 twin) MGs.
Radars: Navigation: Fujii; I-band.

Comment: Built in China 1968-72 although a continuing programme was reported in 1982. Pennant numbers in 3000 series (3313, 3321, 3344 seen) 5000 series (5526 seen) and 7000 series (7566 and 7568 seen). The majority of the operational hulls are based in the South Sea Fleet. One to Sri Lanka in 1991 and a second in 1995. Estimation of numbers is difficult but most are believed to be in reserve or in non-naval service. Some may have 12.7 mm MGs. Twelve in the East Sea Fleet, remainder in the South.



YUNNAN 3221 6/2008* / 1335701

1 YUDAO CLASS (TYPE 073) (LSM)

965
Displacement, tons: 1,650 full load
Dimensions, feet (metres): 253.9 x 34.1 x 9.8 (77.4 x 10.4 x 3)
Speed, knots: 18
Range, n miles: 1,000 at 16 kt
Complement: 60
Guns: 4-25 mm/60 (2 twin), 270 rds/min to 3 km (1.6 n miles)
Radars: Navigation: Fin Curve, I-band.

Comment: First entered service in early 1980s. 965 is the only one left and is in the East Fleet.



YUDAO 965 6/1995 0056781

20 YUCH'IN (TYPE 068/069) CLASS (LCM)

Displacement, tons: 58 standard, 85 full load
Dimensions, feet (metres): 81.2 x 17.1 x 4.3 (24.8 x 5.2 x 1.3)
Main machinery: 2 Type 12V 150C diesels; 600 hp(m) (441 kW); 2 shafts
Speed, knots: 11.5. **Range, n miles:** 450 at 11.5 kt
Complement: 12
Military lift: Up to 150 troops
Guns: 4-14.5 mm (2 twin) MGs

Comment: Built in Shanghai 1962-72. Smaller version of Yunnan class with a shorter tank deck and longer poop deck. Primarily intended for personnel transport. Based in South Sea Fleet. Six sold to Bangladesh and two to Tanzania in 1995



YUCH'IN 3201 10/2008*, Chris Sattler / 1335670

10 JINGSAH II CLASS (HOVERCRAFT) (UCAC)

452 +9

Displacement, tons: 70 standard; 78 full load
Dimensions, feet (metres): 72.2 × 26.2 (22 × 8)
Main machinery: 2 propulsion motors; 2 lift motors
Speed, knots: 55
Military lift: 15 tons
Guns: 4–14.5 mm (2 twin) MGs.

Comment: The prototype was built at Dagu in 1979. This may now have been scrapped and been superseded by this improved version which has a bow door for disembarkation. Numbers are uncertain and may be conditional on progress with WIG craft.

JINGSAH II 1993, *Ships of the World* / 0058783**25 TYPE 271 (LANDING CRAFT) (LCU)**

Displacement, tons: 610 standard; 800 full load
Dimensions, feet (metres): 185.4 × 34.1 × 7.5 (56.5 × 10.4 × 2.3)
Main machinery: 2 diesels; 2,250 hp (1.7 MW); 2 shafts
Speed, knots: 13
Complement: 25
Military lift: 150 tons
Guns: 4–14.5 mm (2 twin)
Radars: Navigation: I-band

Comment: Utility landing craft widely used for the transport of troops, vehicles and stores. The first variant (Type 271-I) entered service in about 1970 and this was followed in the late 1970s by Type 270-II and in the late 1980s by Type 271-III. Building continued in the 1990s to replace decommissioned craft but current numbers are approximate. Details are based on the latest generation of craft.

TYPE 271 10/2008*, *Chris Sattler* / 1335678**1 + 3 YUYI CLASS (LANDING CRAFT—AIR CUSHION) (LCAC)**

Displacement, tons: To be announced
Dimensions, feet (metres): To be announced
Main machinery: 4 gas turbines for propulsion and lift
Speed, knots: To be announced **Range, n miles:** To be announced
Complement: To be announced
Military lift: Armoured Fighting Vehicle plus troops or 60–70 tons approx
Radars: To be announced

Comment: The first of a new class of air cushion landing craft design, probably intended for operation from the Yuzhao (Type 071) class LHD. The craft appears to be similar to but smaller than the US Navy LCAC. The vehicle is expected to be capable of transporting an armoured fighting vehicle and troops. In contrast to the US Navy LCAC, the driving/command module is located on the port side instead of the starboard side. The main cargo deck is about 6 m wide and there are bow and stern ramps. Propulsion is provided by two 4 m shrouded reversible-pitch propellers, probably powered by four gas turbines. Built at Qixun Shipyard, the first vessel was launched in January 2008.



LCAC 8/2008*, 1335703

MINE WARFARE FORCES

Notes: There are also some 50 auxiliary minesweepers of various types including trawlers and motor-driven junks. Up to 20 Shanghai II class, known as the Fushun class, may be used.

1 WOLEI CLASS (MINELAYER) (ML/MST)

LIAOYANG 814

Displacement, tons: 2,300 standard; 3,100 full load
Dimensions, feet (metres): 311.3 × 47.2 × 13.1 (94.9 × 14.4 × 4)
Main machinery: 2 diesels; 4,300 hp (3.2 MW); 2 shafts
Speed, knots: 18. **Range, n miles:** 7,000 at 14 kt
Complement: 180
Guns: 2 China 57 mm/50 (twin)
 6 China 37 mm/63 (3 twin); 180 rds/min to 8.5 km (4.6 n miles); weight of shell 1.42 kg
Mines: 300
Radars: Surface search. Fire control. Navigation.

Comment: Built at Dalian Shipyard and completed successful sea trials in 1988. Resembles the deleted Japanese Souya class and may be used as a support ship as well as a minelayer. Based in the North Sea Fleet.



WOLEI 814 6/2002 / 0529145

4 WOSAO (TYPE 082) CLASS (MINESWEEPERS—COASTAL) (MSC)

800–803

Displacement, tons: 290 standard; 320 full load
Dimensions, feet (metres): 147 × 22.3 × 7.5 (44.8 × 6.8 × 2.3)
Main machinery: 2 diesels; 2,000 hp (1.5 MW); 2 shafts
Speed, knots: 15. **Range, n miles:** 500 at 8 kt
Complement: 28
Guns: 4 China 25 mm/60 (2 twin); 270 rds/min to 3 km (1.6 n miles)
Mines: 6
Countermeasures: Acoustic, magnetic and mechanical sweeps.
Radars: Navigation: China Type 753; I-band.
Sonars: Hull-mounted; active minihunting.

Comment: Building started in 1986. First of class commissioned in 1988 but second, with modified bridge structure, not seen until 1997. There are further craft but numbers have not been confirmed. Steel hull with low magnetic properties. Equipped with mechanical (Type 316), magnetic (Type 317), acoustic (Type 318) and infrasonic (Type 319) sweeps. Based in the East Sea Fleet.

WOSAO 10/2008*, *Chris Sattler* / 1335675**6 WOCHI CLASS (MCMV)**

328–329 438 805 810 840

Displacement, tons: To be announced
Dimensions, feet (metres): 219.8 × 32.8 × ? (67.0 × 10.0 × ?)
Main machinery: To be announced
Speed, knots: To be announced
Complement: To be announced
Guns: 1–57 mm.
Countermeasures: To be announced
Combat data systems: To be announced.
Radars: To be announced.
Sonars: To be announced.

Comment: A new class of mine-countermeasures vessel which, although outwardly similar to the T43 class is approximately 5 m longer. Construction has taken place at Qixun Shipyard, Shanghai, and at Wuhan. Little is known about the details or capabilities of the vessel.



WOCHI 810 11/2007 / 1165860

1 WOZANG CLASS (MCMV)

Name	No	Builders	Launched	Commissioned
HUOQIU	804	Gauxin Shipyard, Shanghai	Apr 2004	July 2005

Displacement, tons: 575 full load
Dimensions, feet (metres): 180.4 x 30.5 x 8.5 (55.0 x 9.3 x 2.6)
Main machinery: 2 diesels; 2 shafts
Speed, knots: To be announced
Complement: To be announced
Guns: 2–25 mm (twin).
Countermeasures: To be announced.
Combat data systems: To be announced
Radars: To be announced
Sonars: To be announced.

Comment: A new class of mine-countermeasures vessel which was thought to be a successor to the T43 class before the appearance of the Wochi class. Little is known about the capabilities of the vessel. Based in the East Sea Fleet.



WOZANG 804 1/2008*, A Sheldon-Dupleix / 1335677

16 T 43 CLASS (TYPE 6610) (MINESWEEPERS—OCEAN) (MSO)

807–809 811–813 830–838 850

Displacement, tons: 520 standard; 590 full load
Dimensions, feet (metres): 196.8 x 27.6 x 6.9 (60 x 8.8 x 2.3)
Main machinery: 2 PCR/Kolomna Type 9-D-8 diesels, 2,000 hp(m) (1.47 MW); 2 shafts
Speed, knots: 14. **Range, n miles:** 3,000 at 10 kt
Complement: 70 (10 officers)

Guns: 2 or 4 China 37 mm/63 (1 or 2 twin) (3 of the class have a 65 mm/52 forward instead of one twin 37 mm/63), dual purpose; 180 rds/min to 8.5 km (4.6 n miles); weight of shell 1.42 kg.
 4 USSR 25 mm/60 (2 twin); 270 rds/min to 3 km (1.6 n miles)
 4 China 14.5 mm/93 (2 twin), 600 rds/min to 7 km (3.8 n miles).
 Some also carry 1–85 mm/52 Mk 90K, 18 rds/min to 15 km (8 n miles); weight of shell 9.6 kg

Depth charges: 2 BMB-2 projectors; 20 depth charges.
Mines: Can carry 12-16
Countermeasures: MCMV; MPT-1 paravanes, MPT-3 mechanical sweep; acoustic and magnetic gear.
Radars: Surface search. Fin Curve or Type 756, F-band.
IFF: High Pole or Yard Rake.
Sonars: Tamir II; hull-mounted; active search and attack; high frequency.

Programmes: Started building in 1956 and continued intermittently until about 1987 at Wuhan and at Guangzhou.
Structure: Based on the USSRT 43s, some of which transferred in the mid-1950s but have all now been deleted
Operational: Some are used as patrol ships with sweep gear removed. Three units reported as having a 65 mm/52 gun forward. Basing, 811-813 in the North Sea Fleet; 807, 808, 830-834 in the East Sea Fleet; 809, 835-838 and 850 in the South Sea Fleet
 There are approximately 22 of the class in reserve
Sales: One to Bangladesh in 1995.



T 43 832 10/2008*, Chris Sattler / 1335676



T 43 833 12/2005, Massimo Annati / 1153106

4 (+ 42 RESERVE) FUT1 CLASS (TYPE 312) (DRONE MINESWEEPERS) (MSD)

Displacement, tons: 47 standard
Dimensions, feet (metres): 68.6 x 12.8 x 6.9 (20.9 x 3.9 x 2.1)
Main machinery: Diesel-electric; 1 Type 12V 150C diesel generator; 300 hp(m) (220 kW); 1 motor; cp prop
Speed, knots: 12. **Range, n miles:** 144 at 12 kt
Complement: 3

Comment: A large number of these craft, similar to the German Troikas, has been built since the early 1970s. Fitted to carry out magnetic and acoustic sweeping under remote control up to 5 km (2.7 n miles) from shore control station. Most are kept in reserve.



DRONE Type 312 1988, CSSC / 0056775

SURVEY AND RESEARCH SHIPS

Notes: (1) In addition to the naval ships shown in this section there are large numbers of civilian marine survey ships. The majority belong to the **National Marine Bureau** and have funnel markings of a red star with light blue wave patterns on either side. There are about 37 ships with names *Zhong Guo Hai Jian* or *Xiang Yang Hong* followed by a pennant number. The **National Land Resources Department** has two Geological Survey Squadrons and these ships have a red star and light blue ring on a white or yellow background. The **State Education Department** Science section owns ships with funnel markings of yellow and blue lines either side of a circular blue design. Also there are a few nationalised companies such as the **China Marine Oil Company** which have a band of light blue round the top of the funnel.

(2) There is a large number of ocean surveillance fishing trawlers. These sometimes engage in fishing activities and are not easily distinguishable from civilian fishing vessels.

(3) There is a 130 m survey ship with pennant number 871



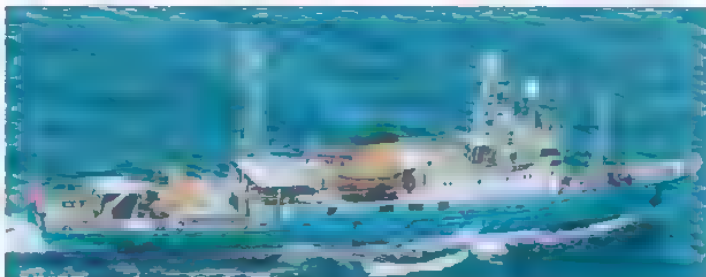
AGI 201 (converted trawler) 6/1997, A Sharma / 0017746



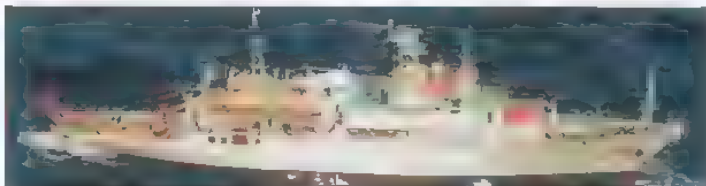
XIANG YANG HONG 14 (National Marine Bureau) 4/2004, Ships of the World 1042141



ZHONG GUO HAI JIAN 71 4/2008*, 1335674



FENDOU SHIHAO (National Land Resources) 6/1999, Ships of the World / 0056795



DONG FANG HONG 2 (State Education Department) 4/2004, Ships of the World / 1042130



HAIYING 12 HAO (China Marine Oil Company) 6/1997, A Sharma / 0006690

2 DAHUA CLASS (AGOR/AGE)**BI SHENG 891** (ex-970, ex-909) **HUA LUOGENG 892**

Displacement, tons: 6,000 full load
Dimensions, feet (metres): 426.5 × 57.4 × 23 (130.0 × 17.5 × 7)
Main machinery: 2 diesels; 2 shafts
Speed, knots: 20
Complement: 80
Helicopters: Platform for one medium.

Comment: First ship launched on 9 March 1997 with pennant number 909 at Zhonghua, and completed in August 1997 with new pennant number which has also been superseded. There is a helicopter deck aft. This is a key unit which has been involved in a number of trials including those for the HQ-9 phased array radar. It is currently fitted with Top Plate air search radar and Front Dome missile fire-control radars. A second unit, also constructed by Hudong-Zhonghua Shipyard, was launched on 30 March 2006.

DAHUA 891 6/2007, *Ships of the World* / 1166771DAHUA 892 10/2006, *E & M Laursen* / 1164861**2 SPACE EVENT SHIPS (AGMH/AGI)****YUAN WANG 1** **YUAN WANG 2**

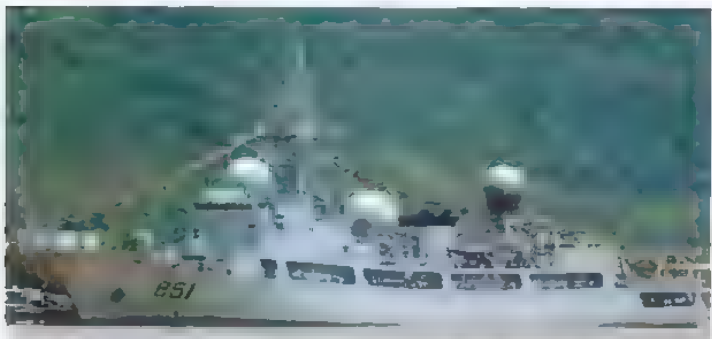
Displacement, tons: 17,100 standard; 21,000 full load
Dimensions, feet (metres): 810.2 × 74.1 × 24.6 (186 × 22.6 × 7.5)
Main machinery: 1 Sulzer diesel, 17,400 hp(m) (12.78 MW); 1 shaft
Speed, knots: 20
Range, n miles: 18,000 at 20 kt
Complement: 470

Comment: Built by Shanghai Jiangnan Yard and entered service in December 1979. Both equipped with helicopter decks but no hangar. Extensive communications, SATNAV and meteorological equipment were installed in 1986-87. In the late 1990s, both ships refitted to support manned spacecraft missions.

YUAN WANG 1 6/1995, 0056799**1 SPACE EVENT SHIP (AGM/AGI)****DONGDIAO 851** (ex-232)

Displacement, tons: 6,000 full load
Dimensions, feet (metres): 426.5 × 53.8 × 21.3 (130 × 16.4 × 6.5)
Main machinery: 2 diesels; 2 shafts
Speed, knots: 20
Complement: 250
Guns: 1—37 mm, 2—14.5 mm.
Helicopters: Platform for one medium.

Comment: First seen fitting out in 1989. A larger version of Dadie class. Two radar (possibly missile tracking) arrays have been replaced by three radomes. In service in March 2000.

DONGDIAO 5/2008*, 1335689**1 DADIE CLASS (AGI)****BEIDIAO 900** (ex-841)

Displacement, tons: 2,550 full load
Dimensions, feet (metres): 308.4 × 37.1 × 13.1 (94 × 11.3 × 4)
Main machinery: 2 diesels; 2 shafts
Speed, knots: 17
Complement: 170 (18 officers)
Guns: 4 × 14.5 mm (2 twin)
Radars: Navigation: 2 Type 753; I-band.

Comment: Built at Wuhan shipyard, Wuchang and commissioned in 1986. North Sea Fleet and seen regularly in Sea of Japan and East China Sea.

BEIDIAO 900 4/2008*, 1335671**2 KAN CLASS (AGOR)****101** **102**

Displacement, tons: 1,100 full load
Dimensions, feet (metres): 226 × 22.5 × 9 (68.6 × 6.9 × 2.7)
Main machinery: 2 diesels; 2 shafts
Speed, knots: 18
Complement: 150
Radars: Navigation: Fin Curve; I-band.

Comment: Details given are for 102 which is believed built in 1985-87, possibly at Shanghai. Large open stern area. Aft main deck area covered and may have cable reel system. 101 is similar but slightly larger and may have been built in 1965 as an ASR. Operate in East China Sea and Sea of Japan.

KAN 101 5/2000, *van Ginderen Collection* / 0103684**1 SHUGUANG CLASS (ex-T 43) (AGOR/AGS)****203**

Displacement, tons: 500 standard; 570 full load
Dimensions, feet (metres): 190.3 × 28.9 × 11.5 (58 × 8.8 × 3.5)
Main machinery: 2 PRC/Kolomna Type 9-D-8 diesels; 2,000 hp(m) (1.47 MW) sustained; 2 shafts
Speed, knots: 15
Range, n miles: 5,300 at 8 kt
Complement: 55-60

Comment: Converted from ex-Soviet T 43 minesweeper in late 1960s. Painted white. This last survivor is based in the North Sea Fleet.

SHUGUANG 203 10/1997, *van Ginderen Collection* / 0012980

1 BIN HAI CLASS (AGOR)

HAI 521

Displacement, tons: 550 full load
Dimensions, feet (metres): 164 x 32.8 x 11.5 (50 x 10 x 3.5)
Main machinery: 2 Niigata Type 6M26KHHS diesels; 1,800 hp(m) (1.18 MW); 2 shafts; bow thruster
Speed, knots: 14. **Range, n miles:** 5,000 at 11 kt
Complement: 15 (7 officers) plus 25 scientists
Radars, Navigation: Japanese AR-M31; I-band.

Comment: A purpose-built research ship built by Niigata Engineering Co, Niigata (Japan) in 1974. Launched 10 March 1975. Commissioned July 1975. First operated by the China National Machinery Export-Import Corporation on oceanographic duties. Operates on East and South China research projects but based in North Sea Fleet. For small vessel, has cruiser stern with raked bow and small funnel well aft. Capability to operate single DSRV and the Chinese Navy has a number of Japanese-built KSWB-300 submarines. Painted white. This ship may belong to the China Marine Oil Company and further vessels may be in service.

1 GANZHU CLASS (AGS)

420

Displacement, tons: 1,000 full load
Dimensions, feet (metres): 213.2 x 29.5 x 9.7 (65 x 9 x 3)
Main machinery: 4 diesels; 4,400 hp(m) (3.23 MW); 2 shafts
Speed, knots: 20
Complement: 125
Guns: 4—37 mm/63 (2 twin); 8—14.5 mm (4 twin)

Comment: Built at Zhujiang in 1973–75. Long refit in 1996 for up to two years.



GANZHU 420

8/1998 / DT56807

5 YENLAI CLASS (AGS)

226–227 420 427 943

Displacement, tons: 1,040 full load
Dimensions, feet (metres): 241.8 x 32.1 x 9.7 (73.7 x 9.8 x 3)
Main machinery: 2 PRC/Kolomna Type 9-D-8 diesels; 2,000 hp(m) (1.47 MW) sustained; 2 shafts
Speed, knots: 16
Range, n miles: 4,000 at 14 kt
Complement: 25
Guns: 4 China 37 mm/63 (2 twin). 4—25 mm/80 (2 twin).
Radars, Navigation: Fin Curve; I-band

Comment: Built at Zhonghua Shipyard, Shanghai in early 1970s. Carries four survey motor boats.



YENLAI 226

6/2005, Hachiro Nakai / 1153052

1 SPACE EVENT SHIP (AGMH)

YUAN WANG 3

Displacement, tons: 16,790 full load
Dimensions, feet (metres): 590.5 x 72.8 x 26.2 (180 x 22.2 x 8.0)
Main machinery: 1 diesel; 1 shaft
Speed, knots: 20. **Range, n miles:** 18,000 at 12 kt
Complement: 470
Helicopters: Platform for 1 medium.

Comment: A second-generation space tracking ship launched in 1994 and commissioned in April 1995. Equipped with E/F-band tracking radar. The ship is normally positioned in the South Atlantic off the West African coast for ShenZhou flight missions.



YUAN WANG 3

6/2008* / 1335671

1 SPACE EVENT SHIP (AGMH)

YUAN WANG 4

Displacement, tons: 13,000 full load
Dimensions, feet (metres): 512.5 x 67.6 x 25.4 (156.2 x 20.6 x 7.75)
Main machinery: 2 diesels; 2 shafts
Speed, knots: 20
Range, n miles: 18,000 at 12 kt
Complement: 200
Helicopters: 1 medium.

Comment: Ex-survey ship (*Xiangyanghong 10*) originally constructed in the late 1970s. Converted into a space tracking ship and renamed *Yuan Wang 4* in 1998 to support manned space flight missions, mainly for spacecraft tracking and communications relay roles. Normally positioned in the South Pacific for spacecraft missions.



YUAN WANG 4

6/2006* / 1335672

2 SPACE EVENT SHIPS (AGMH)

YUAN WANG 5

YUAN WANG 6

Measurement, tons: 24,966 dwt
Dimensions, feet (metres): 729.0 x 82.7 x 26.9 (222.2 x 25.2 x 8.2)
Main machinery: To be announced
Speed, knots: 20
Range, n miles: 20,000 at 12 kt
Complement: To be announced
Helicopters: 1 medium.

Comment: Two new third-generation space tracking ships built at Jiangnan Shipyard in Shanghai. *Yuan Wang 5* was launched on 15 September 2006 and started undergoing sea trials in early 2007. The ship entered service in early 2008. The second ship was originally named *Yuan Wang 6* but may be allocated another number to reflect replacement of earlier ships. *Yuan Wang 6* reportedly differs from *Yuan Wang 5* in that it includes a large mission control hall occupying two decks. This ship entered service in late 2008.



YUAN WANG 5

2/2008*, Ships of the World / 1335651

1 RESEARCH SHIP (AGE)

HAIYANG 20

Displacement, tons: To be announced
Dimensions, feet (metres): 426.5 x ? x ? (130.0 x ? x ?)
Main machinery: To be announced
Speed, knots: To be announced
Complement: To be announced
Radars: To be announced.
Helicopters: 1 medium.

Comment: Naval manned research ship first reported in 2005. The details and capabilities of the ship are not yet known.



HAIYANG 20

12/2005, Massimo Anelli / 1153098

1 SURVEY SHIP (AGS)

852

Displacement, tons: To be announced
Dimensions, feet (metres): 367.4 x 7 x 7 (112.0 x 7 x 7)
Main machinery: To be announced
Speed, knots: To be announced
Complement: To be announced
Radars: To be announced

Comment: Naval manned hydrographic ship first reported in 2005. The details and capabilities of the ship are not yet known.



SURVEY SHIP 852

8/2007 / 1166859

DEEP SUBMERGENCE VEHICLES

0 + 1 RESCUE SUBMERSIBLE

LR 7

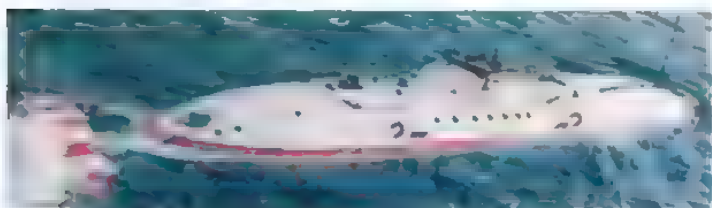
Displacement, tons: 28.5
Dimensions, feet (metres): 31.5 x 10.5 x 11.1 (9.6 x 3.2 x 3.4)
Main machinery: 2 electric motors; 26.8 hp (20 kW); 4 titable side thrusters; 16 hp (12 kW)
Speed, knots: 3
Complement: 2 pilots and 1 rescue chamber operator

Comment: Powered by two external lead-acid battery pods, the Ferry Slingsby LR 7 is a development of the LR 5 rescue submersible, originally built for North Sea commercial operations and subsequently purchased by the Royal Navy for submarine rescue operations. Capable of operating down to 500 m depth, it can be deployed anywhere in the world and operated from the deck of any suitable mother ship. Its role is to rescue up to 18 survivors at a time from a disabled submarine on the seabed and bring them back to the surface. This can be done at normal atmospheric pressure and at increased pressure up to 5 bar. Mating with the disabled submarine can be achieved at up to 60° bow up. LR 7 is complemented by an ROV, Scorpio 45, which is attached to a 1,000 m umbilical. This is used to locate the disabled submarine, clear obstructions from the escape hatches and replenish life support stores. Following tests in Scotland, LR 7 is due to enter service in the Chinese Navy in 2009.

2 DSRV (SALVAGE SUBMARINES) (DSRV)

Displacement, tons: 35 full load
Dimensions, feet (metres): 48.9 x 8.5 x 8.5 (14.9 x 2.6 x 2.6)
Main machinery: 2 silver-zinc batteries; 1 mortar; 1 shaft
Speed, knots: 4. Range, n miles: 40 at 2 kt
Complement: 3

Comment: First tested in 1986 and can be carried on large salvage ships. Capable of 'wet' rescue at 200 m and of diving to 600 m. Capacity for six survivors. Underwater TV, high-frequency active sonar and a manipulator arm are all fitted. Life support duration is 1,728 man-hours. An upgrade of submarine rescue capabilities may be planned following attendance at international conferences in 2001 and talks with industry. Up to three modern DSRV may be required.



DSRV

1991, CSSC / 0056785

TRAINING SHIPS

1 DAXIN CLASS (AXH)

Name	No	Builders	Launched	Commissioned
ZHENGHE	81	Qixun, Shanghai	12 July 1986	27 Apr 1987

Displacement, tons: 5,470 full load
Dimensions, feet (metres): 426.5 x 52.5 x 15.7 (130.0 x 16.0 x 4.8)
Main machinery: 2 SEMT Pielstick 6PC-2-6L diesels, 7,800 hp(m) (5.73 MW); 2 shafts
Speed, knots: 15
Range, n miles: 5,000 at 15 kt
Complement: 170 plus 30 instructors plus 200 Midshipmen
Guns: 4 China 57 mm/70 (2 twin), 4—30 mm AK 230 (2 twin), 4—12.7 mm MGs.
A/S mortars: 2 FOF 2500 fixed 12-tubed launchers; range 1,200 m; warhead 34 kg.
Radars: Air/surface search: Eye Shield, E-band
Surface search: China Type 756; I-band.
Navigation: Racal Decca 1290; I-band
Fire control: Round Ball; I-band
Sonars: Echo Type 5; hull-mounted; active; high frequency.
Helicopters: Platform only

Comment: Resembles a small cruise liner. Subordinate to the Naval Academy and replaced *Huian*. Based in the North Sea Fleet. A similar ship sold to Algeria in 2005.



ZHENGHE

9/2000, B Lemachko / 0126258

1 SHICHANG CLASS (HSS/AHH)

Name	No	Builders	Launched	Commissioned
SHICHANG	82	Qixun, Shanghai	Apr 1996	27 Jan 1997

Displacement, tons: 10,000 full load
Dimensions, feet (metres): 393.7 x 59.1 x 23 (120 x 18 x 7)
Main machinery: 2 diesels; 2 shafts
Speed, knots: 17.5
Range, n miles: 8,000 at 17 kt
Complement: 170 plus 200 trainees
Military lift: 300 containers
Helicopters: 2 Zhi-9A Haitun.

Comment: China's first air training ship described officially as a defence mobilisation vessel which can be used for civilian freight, for helicopter or navigation training, or as a hospital ship. The vessel looks like a scaled down version of the UK *Argus* with the bridge superstructure forward and an after funnel on the starboard side of the flightdeck. There are two landing spots. Based in the South Sea Fleet.



SHICHANG

5/1998, Sattler/Steele / 0017738



SHICHANG

5/1998, RAN / 0017739

AUXILIARIES

Notes: (1) There is a water-tanker with similar characteristics to the Fuzhou class with pennant number 1101.
 (2) There are two water tankers of unknown dimensions with pennant numbers 1102 and 1104.
 (3) There are two 70 m Kansha class salvage ships which carry French-supplied 7 m salvage submersibles capable of operating to depths of 300 m.
 (4) There are two tankers 637 and 960. Both of unknown type.

160 China/Auxiliaries

2 FUQING CLASS (REPLENISHMENT SHIPS) (AORH)

HONGZHU (ex-Taicang) 881 (ex-575) **FENGANG** (ex-Dongyun) 882 (ex-615)

Displacement, tons: 7,500 standard; 21,750 full load
Dimensions, feet (metres): 552 × 71.5 × 30.8 (168.2 × 21.8 × 9.4)
Main machinery: 1 Sulzer 8RL B66 diesel; 15,000 hp(m) (11 MW) sustained; 1 shaft
Speed, knots: 18
Range, n miles: 18,000 at 14 kt
Complement: 130 (24 officers)
Cargo capacity: 10,550 tons fuel; 1,000 tons diesel; 200 tons feed water; 200 tons drinking water; 4 small cranes
Guns: 8–37 mm (4 twin) (fitted for but not with).
Radars: Navigation: Fin Curve or Rascal Decca 1290; I-band.
Helicopters: Platform for 1 medium.

Comment: Operational in late 1979. This is the first class of ships built for underway replenishment in the Chinese Navy. Helicopter platform but no hangar. Both built at Dalian. Two liquid replenishment positions each side with one solid replenishment position each side by the funnel. A third of the class *Honggang* (X 950) was converted to merchant use in 1989 and renamed *Hai Lang*, registered at Dalian. A fourth (X 350) was sold to Pakistan in 1987. 882 based in the North and 881 in the East. *Fengang* appears to have a command role.



HONGZHU 10/2007, Chris Sattler / 1156841



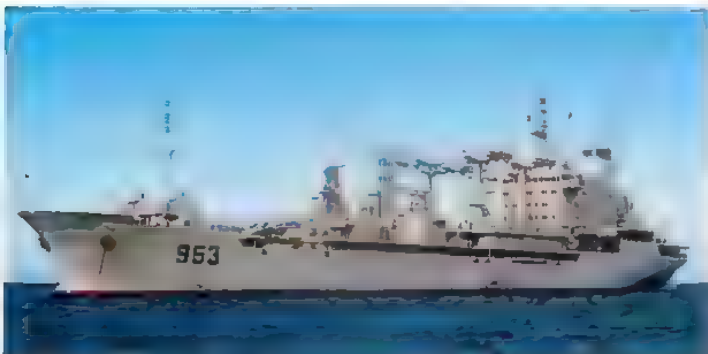
FENGANG 3/2004, L-G Nilsson / 1042154

1 NANYUN CLASS (REPLENISHMENT SHIP) (AORH)

Name **No** **Builders** **Launched** **Commissioned**
QINGHAI HU (ex-Nancang, ex-Vladimir Peregodov) 885 (ex-953) Kherson/Dalian Apr 1992 2 June 1996

Displacement, tons: 37,000 full load
Measurement, tons: 28,750 dwt
Dimensions, feet (metres): 586.9 × 83 × 36.1 (178.9 × 25.3 × 11)
Main machinery: 1 B&W diesel; 11,600 hp(m) (8.53 MW); 1 shaft
Speed, knots: 16
Complement: 125
Cargo capacity: 9,630 tons fuel
Helicopters: 1 Super Frelon.

Comment: Sometimes referred to as Fusu class. One of a class of 11 built at Kherson Shipyard, Crimea. Laid down in January 1989. Sailed from Ukraine to Dalian Shipyard in 1993. Completed fitting out in China and joined the South Sea Fleet. RAS rigs on both sides and stern refuelling. Similar to Indian *Jyoti* but with better helicopter facilities.



QINGHAI HU (old number) 8/2000, Robert Pabst / 0109677



QINGHAI HU 6/2005, A Sheldon-Duplax / 1153101

2 FUCHI CLASS (REPLENISHMENT SHIPS) (AORH)

Name **No** **Builders** **Laid down** **Launched** **Commissioned**
QIANDAO HU (ex-Fuchi) 886 Hudong Shipyard, Shanghai 2002 29 Mar 2003 30 Apr 2004
WEISHAN HU (ex-Fuchi) 887 Guangzhou Shipyard — June 2003 2004

Displacement, tons: 23,000 full load
Dimensions, feet (metres): 585.6 × 81.4 × 28.5 (178.5 × 24.8 × 8.7)
Main machinery: 2 SEMT-Pielstick diesels; 24,000 hp (17.9 MW); 2 shafts
Speed, knots: 19
Range, n miles: 10,000 at 14 kt
Complement: 130
Cargo capacity: 10,500 tons fuel, 250 tons of water, 680 tons of ammunition and stores
Guns: 8–37 mm (4 twin)
Radars: To be announced
Helicopters: Platform for 1 medium.

Comment: Ships which bear a marked resemblance to Type R22T Similan class tanker built for Thailand in 1996. Fitted with two RAS stations (one liquids, one solids) on each side. Basing 886 in the East Sea Fleet and 887 in the South Sea Fleet.



QIANDAO HU 2/2006, Lemachko Collection / 1166766



WEISHAN HU 8/2007, R G Sharpe / 1166779

6 QIONGSHA CLASS (4 AP + 2 AH)

Y 830–Y 835

Displacement, tons: 2,150 full load
Dimensions, feet (metres): 282.1 × 44.3 × 13.1 (86 × 13.5 × 4)
Main machinery: 3 SKL 8 NVD 48 A-2U diesels; 3,960 hp(m) (2.91 MW) sustained, 3 shafts
Speed, knots: 16
Complement: 59
Military lift: 400 troops; 350 tons cargo
Guns: 8 China 14.5 mm/93 (4 twin); 600 rds/min to 7 km (3.8 n miles).
Radars: Navigation: Fin Curve; I-band.

Comment: Personnel attack transports begun about 1980. Previous numbers of this class were overestimated. All South Sea Fleet. Has four sets of davits, light cargo booms serving forward and aft. No helicopter pad. Twin funnels. Carries a number of LCAs. Y 832 and Y 833 converted to Hospital Ships (AH) and painted white.



QIONGSHA 832 6/2008, 1335698

2 DADONG (TYPE 946) CLASS (SALVAGE SHIPS) (ARS)

304

Displacement, tons: 1,500 full load
Dimensions, feet (metres): 269 × 38.1 × 8.9 (82 × 11 × 2.7)
Main machinery: 2 diesels; 7,400 hp(m) (5.44 MW); 2 shafts
Speed, knots: 18
Complement: 150
Guns: 4–25 mm/80 (2 twin).
Radars: Navigation: Type 756; F-band

Comment: Built at Hudong Shipyard, Shanghai. Has a large and conspicuous crane aft. Principal role is wreck location and salvage. Based in the East Sea Fleet.

3 DAJIANG (TYPE 925) CLASS (SUBMARINE SUPPORT SHIPS) (ASRH)

CHANGXINGDAO 861 (ex-J 121) YONGXINGDAO 863 (ex-J 506)
CHONGMINGDAO 862 (ex-J 302)

Displacement, tons: 11,975 full load
Dimensions, feet (metres): 512.5 × 67.6 × 22.3 (156.2 × 20.6 × 6.8)
Main machinery: 2 MAN K9Z60/105E diesels, 9,000 hp(m) (6.6 MW); 2 shafts
Speed, knots: 20
Complement: 308
Guns: Light MGs. Can carry 6–37 mm (3 twin).
Radars: Surface search: Eye Shield, E-band.
Navigation: 2 Fin Curve; I-band.
Helicopters: 2 Aerospatiale SA 321G Super Prolon.

Comment: Submarine support and salvage ships built at Shanghai. First launched in mid-1973, operational in 1976. *Yongxingdao* has a smoke deflector on funnel. Provision for DSRV on forward well-deck aft of launching crane. Foremast on *Yongxingdao* suggests long-range communications capability, possibly for submarine command. Basing: 861 in the North Sea Fleet, 862 in the East Sea Fleet, 863 in the South Sea Fleet



CHANGXINGDAO

6/2007 / 1166868

5 DALANG (TYPE 922 II/III) CLASS (SUBMARINE SUPPORT SHIPS) (ASL)

305 (ex-503) 122 332 138

Displacement, tons: 3,700 standard; 4,200 full load
Dimensions, feet (metres): 367 × 47.9 × 14.1 (111.9 × 14.6 × 4.3)
Main machinery: 2 diesels, 4,000 hp(m) (2.94 MW); 2 shafts
Speed, knots: 16
Range, n miles: 8,000 at 14 kt
Complement: 180
Guns: 2–25 mm/80 (1 twin) or 2–14.5 mm/93 (1 twin).
Radars: Navigation: Fin Curve; I-band.

Comment: Construction of the first Type 922-II class 305 (ex-503) began at Guangzhou Shipyard in September 1971. It was commissioned in November 1975. As a result of experience gained, development of an improved Type 922-III version began in 1978. Construction of the first of these ships (122) began in December 1982 at Wuchang Shipyard, Wuhan, and the ship later commissioned in 1986. Subsequently, three further modified ships were built: 332 (1989), 138 (1992) and 510 (1995). These modifications include changes to upper deck design and the possible incorporation of a decompression chamber.



DALANG 332

5/2000, M Declerck / 0103679

2 DAZHOU (TYPE 946) CLASS (SUBMARINE TENDERS) (ASL)

502 137 (ex-504)

Displacement, tons: 1,100 full load
Dimensions, feet (metres): 259.2 × 31.2 × 8.5 (79 × 9.5 × 2.6)
Main machinery: 2 diesels; 2 shafts
Speed, knots: 18
Complement: 130
Guns: 2 China 37 mm/63 (twin) 4–14.5 mm (2 twin).
Radars: Navigation: Fin Curve; I-band

Comment: The first, 502, commissioned in 1977; the second in 1978. Both built at Guangzhou Shipyard. 502 based in the South Sea Fleet and 137 in the North Sea Fleet. Both have been used as AGIs.



DAZHOU 502

6/2008* / 1335097

3 YANTAI CLASS (SUPPLY SHIPS) (AK)

800 901 938

Displacement, tons: 3,330 full load
Dimensions, feet (metres): 255.9 × 37.7 × 9.8 (78.0 × 11.5 × 3.0)
Main machinery: 2 diesels; 9,600 hp(m) (7.06 MW); 2 shafts
Speed, knots: 17
Range, n miles: 3,000 at 16 kt
Complement: 100
Guns: 2 China 37 mm/63 (twin).
Radars: Navigation: Type 756; I-band.

Comment: First seen in 1992. Appears to be based on a landing ship design but without a bow door. Fitted with cargo-handling cranes fore and aft. A ship with pennant number 938 has also been reported unloading missile containers. It is not known whether this is an additional ship or a change of pennant number. Based in South Sea Fleet.



YANTAI 938

6/2007 / 116685b

2 DAYUN (TYPE 904) CLASS SUPPLY SHIPS (AKH)

883 (ex-951) 884 (ex-952)

Displacement, tons: 8,500 standard; 10,975 full load
Dimensions, feet (metres): 407.5 × 42 × 12.5 (124.2 × 12.8 × 3.8)
Main machinery: 2 diesels, 9,000 hp(m) (6.6 MW); 2 shafts
Speed, knots: 22
Complement: 240
Guns: 4–37 mm/63 (2 twin), 4–25 mm/80 (2 twin)
Radars: Navigation: 2 Type 756; I-band.
Helicopters: 2 SA 321 Super Prolon

Comment: First of class completed at Hudong Shipyard in March 1992, second in August 1992. Four landing craft are embarked. Both based in South Sea Fleet. A reported third of class was in fact the first of the larger Nanyun class. Pennant numbers may have changed.



DAYUN CLASS

6/2005, A Sheldon-Duplaix / 1153100

13 DANLIN CLASS SUPPLY SHIPS (AK/AOT)

531 592 794 834 972 -3
591 594 827 835 975

Displacement, tons: 1,290 full load
Dimensions, feet (metres): 198.5 × 29.5 × 13.1 (60.5 × 9 × 4)
Main machinery: 1 USSR/PRCType 6DRN 30/50 diesel, 750 hp(m) (551 kW); 1 shaft
Speed, knots: 15
Complement: 35
Cargo capacity: 750–800 tons
Guns: 4–25 mm/80 (2 twin) 4–14.5 mm (2 twin).
Radars: Navigation: Fin Curve or Skin Head; I-band

Comment: Built in China in early 1960–62. The six AKs have refrigerated stores capability and serve in the South Sea Fleet. The seven AOTs are split between the Fleets. Not all are armed.



DANLIN 794

5/1992, Henry Dodds / 0056790

162 China/Auxiliaries

13 DANDAO CLASS (AK/AOT)

201 485 599 767 758 802 841
484 529 629 758 791 803

Displacement, tons: 1,600 full load
Dimensions, feet (metres): 215.6 × 41 × 13 (65.7 × 12.5 × 4)
Main machinery: 1 diesel; 1 shaft
Speed, knots: 12
Complement: 40
Guns: 4 China 37 mm/63 (2 twin), 4 China 14.5 mm/93 (2 twin).
Radars, Navigation: Fin Curve; I-band.

Comment: Built in the late 1970s. Similar to the Danlin class. Two in the North and one in the East Sea Fleet.



DANDAO 529

9/2007, 1135667

6 HONGQI CLASS (AK)

443 528 755 766 771 836

Displacement, tons: 1,950 full load
Dimensions, feet (metres): 203.4 × 39.4 × 14.4 (62 × 12 × 4.4)
Main machinery: 1 diesel; 1 shaft
Speed, knots: 14. **Range, n miles:** 2,500 at 11 kt
Complement: 35
Guns: 4 China 25/80 (2 twin).

Comment: Used to support offshore military garrisons. A further ship, L 202, appears to be similar but carries no armament. Others of this type in civilian use. Three in the North, two in the East Sea Fleet.



HONGQI 755

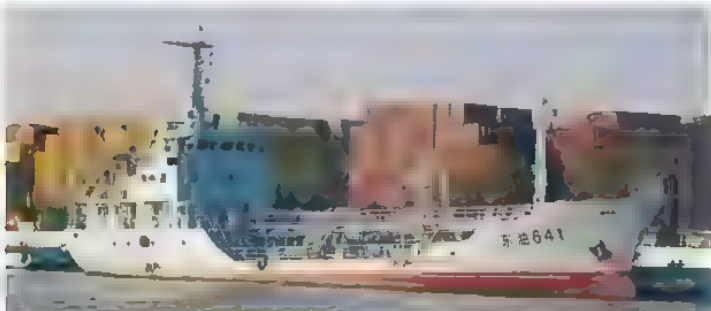
3/2003, Bob Fildes / 0569175

4 SUPPLY TANKERS (AOL)

565 631 633 641

Displacement, tons: To be announced
Dimensions, feet (metres): To be announced
Main machinery: To be announced
Speed, knots: To be announced
Complement: To be announced
Radars: To be announced.

Comment: Two supply tankers of an unknown type.



AOL 641

10/2008, Chris Settler / 1335868

2 SHENGLI CLASS (AOT)

620 621

Displacement, tons: 3,300 standard, 4,950 full load
Dimensions, feet (metres): 331.4 × 45.3 × 18 (101 × 13.8 × 5.5)
Main machinery: 1 6 ESDZ 43/82B diesel; 2,600 hp(m) (1.91 MW); 1 shaft
Speed, knots: 14. **Range, n miles:** 2,400 at 11 kt
Complement: 48
Cargo capacity: 3,400 tons dieso
Guns: 2—37 mm/63 (twin), 4—25 mm/80 (2 twin).
Radars, Navigation: Fin Curve, I-band.

Comment: Built at Hudong SY, Shanghai in late 1970s. Others of the class in commercial service.

9 LEIZHOU CLASS (AWT/AOT)

412 555 558 736 755 792 793 823 828

Displacement, tons: 900 full load
Dimensions, feet (metres): 173.9 × 32.2 × 10.5 (53 × 9.8 × 3.2)
Main machinery: 1 diesel; 500 hp(m) (367 kW); 1 shaft
Speed, knots: 12
Range, n miles: 1,200 at 10 kt
Complement: 25–30
Cargo capacity: 450 tons
Guns: 4—14.5 mm/93 (2 twin).
Radars: 2 navigation; I-band.

Comment: Built in late 1960s at Qingdao and Wudong. Split between the Fleets. Some have been converted to carry water, others carry oil. Many deleted or in civilian use.



LEIZHOU 755

10/2006, E & M Laurson / 1154863

23 FULIN CLASS (REPLENISHMENT SHIPS) (AOT)

560 583 607 626 630 634 639 924
563 589 609 628 632 635 922 941
582 606 623 629 633 638 923

Displacement, tons: 2,300 standard
Dimensions, feet (metres): 215.5 × 42.6 × 13.1 (66 × 13 × 4)
Main machinery: 1 diesel; 600 hp(m) (441 kW); 1 shaft
Speed, knots: 10
Range, n miles: 1,500 at 8 kt
Complement: 30
Guns: 4—14.5 mm/93 (2 twin).
Radars, Navigation: Fin Curve; I-band.

Comment: A total of 20 of these ships built at Hudong, Shanghai, beginning in 1972. 630, 632, 633 and 635 are to a slightly modified design. Naval ships painted grey. Many others of the class are civilian but may carry pennant numbers.



FULIN 639

6/2007 / 1166853

1 + (1) ANWEI (TYPE 920) CLASS (HOSPITAL SHIP) (AHH)

Name	No	Builders	Laid down	Launched	Commissioned
—	866	Guangzhou Shipyard International	2006	29 Aug 2007	2008

Displacement, tons: 23,000 full load
Dimensions, feet (metres): 590.5 × 80.7 × 29.5 (180 × 24.6 × 9)
Main machinery: 2 diesels; 2 shafts
Speed, knots: 19
Range, n miles: 10,000 at 14 kt
Complement: 130
Radars: To be announced
Helicopters: 1 medium.

Comment: The first purpose-built hospital ship for the Chinese Navy was launched in August 2007 and commissioned in 2008. The design seems to be based on the Fuchi class replenishment ships. Details of the ship's medical facilities have not yet been made available but the ship is fitted with a flight deck and hangar capable of operating a medium size helicopter. Based in the South Sea Fleet. A second ship is expected.



ANWEI CLASS

8/2007 / 1166856

3 JINYOU CLASS (AOT)

622 625 675

Displacement, tons: 4,800 full load
Dimensions, feet (metres): 324.8 x 104.3 x 187.0 (99.0 x 31.8 x 5.7)
Main machinery: 1 SEMT-Pielstick 8PC2.2L diesel; 3,000 hp (2.24 MW); 1 shaft
Speed, knots: 15. **Range, n miles:** 4,000 at 10 kt
Complement: 40
Radars: Navigation: I-band.

Comment: Built by Kanashashi Shipyard, Japan and entered service 1989-90.

27 FUZHOU CLASS (AOT/AWT)

570 608 903 909 920 933 939
 573 629 904 910 926 936 940
 580 637 906 912 927 937 945
 581 644 907 913 930 938

Displacement, tons: 2,100 full load
Dimensions, feet (metres): 208.3 x 41.3 x 12.5 (63.5 x 12.6 x 3.8)
Main machinery: 1 diesel, 600 hp(m) (441 kW); 1 shaft
Speed, knots: 11
Complement: 35
Cargo capacity: 600 tons
Guns: 4—25 mm/80 (2 twin) 4—14.5 mm/93 (2 twin).
Radars: Navigation: Fin Curve; I-band.

Comment: Built 1964-70. Transport ships for liquids, 18 for oil and nine for water



FUZHOU 629 6/2007, 1166852

23 GUANGZHOU CLASS (AOTL/AWTL)

555 558 590 593 924 645 646 647 +15

Displacement, tons: 530 full load
Dimensions, feet (metres): 160.8 x 24.6 x 9.8 (49 x 7.5 x 3)
Main machinery: 1 diesel; 1 shaft
Speed, knots: 10
Complement: 19
Guns: 4 14.5 mm/93 (2 twin)

Comment: Coastal tankers built in the 1970s and 1980s. At least 18 of the class are civilian but may carry pennant numbers.



GUANGZHOU 645 10/2008, Chris Sattler / 1335669

9 YANNAN CLASS (BUOY TENDERS) (ABU)

124 263 463 982 983 B-21 B-22 B-24 B-25

Displacement, tons: 1,750 standard
Dimensions, feet (metres): 237.2 x 38.7 x 13.1 (72.3 x 11.8 x 4)
Main machinery: 2 diesels; 2,640 hp(m) (1.94 MW); 2 shafts
Speed, knots: 12
Complement: 95
Radars: Navigation: Fin Curve; I-band.

Comment: Built 1978-79; commissioned 1980. Ships with 'B' pennant numbers are probably in Coast Guard service.



YANNAN B-25 3/2004, L-G Nilsson / 1042153

9 YEN PAI CLASS (ADG)

202 203 735 736 745 746 960 883 864

Displacement, tons: 746 standard
Dimensions, feet (metres): 213.3 x 29.5 x 8.5 (65 x 9 x 2.6)
Main machinery: Diesel-electric; 2 12VE 230ZC diesels; 2,200 hp(m) (1.62 MW); 2 ZDH-99/57 motors; 2 shafts
Speed, knots: 16
Range, n miles: 800 at 15 kt
Complement: 55
Guns: 4—37 mm/63 (2 twin), 4—25 mm/80 (2 twin).
Radars: Navigation: Type 756; I-band.

Comment: Enlarged version of T 43 MSF with larger bridge and funnel amidships. Reels on quarterdeck for degaussing function. Not all the guns are embarked



YEN PAI 864 10/2008, Chris Sattler / 1335668

1 DANYAO CLASS (SUPPORT SHIP) (AF)

FUXIAN HU 888

Displacement, tons: 15,000 full load
Dimensions, feet (metres): 498.7 x 62.3 x 7 (152 x 19 x 7)
Main machinery: 2 SEMT Pielstick 16PC V 400 diesels; 24,000 hp (17.9 MW); 2 shafts
Speed, knots: To be announced
Complement: To be announced
Guns: 2—37 mm (twin).
Helicopters: Platform for one medium.

Comment: Support ship under construction at Guangzhou, and launched on 28 December 2006. The ship is equipped with two pairs of davits, capable of handling small landing craft, and a flight deck for medium helicopters. Potential roles for the ship include resupply of the Spratly and Paracel Islands in the South China Sea. Following sea trials in 2007, the ship is reported to have been commissioned in late 2007. Based in the South Sea Fleet.



FUXIAN HU 6/2008, Ships of the World / 1335664

1 TYPE 648 SUBMARINE TENDER (ASL)

911

Displacement, tons: 3,500 standard; 4,000 full load
Dimensions, feet (metres): 282.1 x 45.9 x 13.1 (86.0 x 14.0 x 4.0)
Main machinery: 2 diesels; 2 shafts
Speed, knots: 16
Guns: 8—25 mm (4 twin)
Radars: Navigation I-band
Helicopters: Platform for one medium.

Comment: The first and only hull of its class was commissioned in 1985. The role of the ship is to provide conventional submarines with repair and maintenance facilities in addition to fuel and water. Based in the East Sea Fleet.



TYPE 648 911 10/2008, Chris Sattler / 1335670

For details of the latest updates to *Jane's Fighting Ships* online and to discover the additional information available exclusively to online subscribers please visit jfs.janes.com

1 DACHOU CLASS (YPT)

Name	No	Builders	Commissioned
—	846	Wuzhou Shipyard	Nov 2006

Displacement, tons: To be announced
Dimensions, feet (metres): 219.8 x 32.8 x 7 (67.0 x 10.0 x 2)
Main machinery: To be announced
Speed, knots: To be announced
Complement: To be announced
Guns: To be announced
Countermeasures: To be announced
Combat data systems: To be announced
Radars: To be announced
Sonars: To be announced

Comment: A new class of torpedo recovery vessel which appears very similar in design to that of the Wochi class mine countermeasures vessels on which outline details are based. Based at Zhanjiang, South Sea Fleet.



DACHOU 846 6/2008, Ships of the World / 1335653

ICEBREAKERS

1 YANBING (MOD YANHA) CLASS (AGB/AGI)

723

Displacement, tons: 4,420 full load
Dimensions, feet (metres): 334.6 x 56 x 19.5 (102 x 17.1 x 5.9)
Main machinery: Diesel-electric; 2 diesel generators; 2 motors; 2 shafts
Speed, knots: 17
Complement: 95
Guns: 8—37 mm/63 Type 61/74 (4 twin).
Radars: Navigation: 2 Fin Curve, I-band

Comment: Enlarged version of Yanha class icebreaker, built in 1982, with greater displacement, longer and wider hull, added deck level and curved upper funnel. In October 1990, painted white while operating in Sea of Japan. Used as an AGI in the North Sea Fleet.



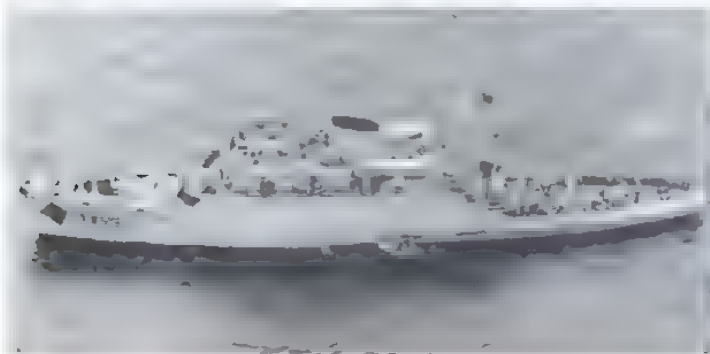
YANBING 723 12/2001, Ships of the World / 0529115

3 YANHA CLASS (AGB/AGI)

519 721 722

Displacement, tons: 3,200 full load
Dimensions, feet (metres): 290 x 53 x 17 (88.4 x 16.2 x 5.2)
Main machinery: Diesel-electric; 2 diesel generators; 1 motor; 1 shaft
Speed, knots: 17.5
Complement: 90
Guns: 8—37 mm/63 Type 61/74 (4 twin). 4—25 mm/80 Type 61.
Radars: Navigation: Fin Curve; I-band.

Comment: 721 and 722 built in 1969–70 519 commissioned in 1969. Used as AGIs in the North Sea Fleet.



519 10/1991, G Jacobs / 0506974

TUGS

Notes: (1) The vessels below represent a cross-section of the craft available. (2) There is a salvage ship of unknown type. The pennant number is 181.



SALVAGE VESSEL 12/2007, Chris Sattler / 1170056

4 TUZHONG CLASS (ATF)

184 710 830 890

Displacement, tons: 3,600 full load
Dimensions, feet (metres): 278.5 x 46 x 18 (84.9 x 14 x 5.5)
Main machinery: 2 10 ESDZ 43/82B diesels; 8,600 hp(m) (6.32 MW); 2 shafts
Speed, knots: 18.5
Complement: 120
Radars: Navigation: Fin Curve, I-band.

Comment: Built in late 1970s. Can be fitted with twin 37 mm AA armament and at least one of the class (710) has been fitted with a Square Tie radar. 36 ton towing winch. One in each Fleet and one in reserve.



TUZHONG 11/1996, A Sharma / 0012228

1 DAOZHA CLASS (ATF)

Displacement, tons: 4,000 full load
Dimensions, feet (metres): 275.6 x 41.3 x 17.7 (84 x 12.6 x 5.4)
Main machinery: 2 diesels; 8,600 hp(m) (6.32 MW); 2 shafts
Speed, knots: 18
Complement: 125

Comment: Built in 1993–94 probably as a follow-on to the Tuzhong class. Based in South Sea Fleet.



DAOZHA 09/1993, Hachiro Nakai / 0506142

10 HUJIU CLASS (ATF)

147 622 717 842 875
 155 711 837 843 877

Displacement, tons: 1,470 full load
Dimensions, feet (metres): 197.5 x 38.1 x 14.4 (60.2 x 11.6 x 4.4)
Main machinery: 2 LVP 24 diesels; 1,800 hp(m) (1.32 MW); 2 shafts
Speed, knots: 15
Range, n miles: 7,200 at 14 kt
Complement: 56
Radars: Navigation: Fin Curve or Type 756; I-band.

Comment: Built at Wuhu in 1980s. One sold to Bangladesh in 1984 and a second in 1995. Three based in the North and East, three in the South Sea Fleet



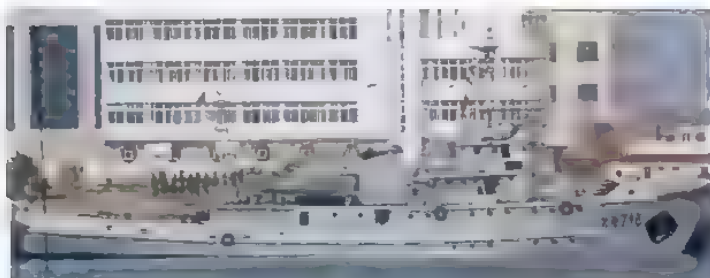
HUJIU 877 10/2006, E & M Laursen / 1164866

17 GROMOVOY CLASS (ATF)

149	167	684	809	814	824
156	680	716	811	817	827
166	683	802	813	822	

Displacement, tons: 795 standard, 890 full load
Dimensions, feet (metres): 149.9 x 31.2 x 15.1 (45.7 x 9.5 x 4.6)
Main machinery: 2 diesels, 1,300 hp(m) (956 kW); 2 shafts
Speed, knots: 11. **Range, n miles:** 7,000 at 7 kt
Complement: 25-30 (varies)
Guns: 4—14.5 mm (2 twin) or 12.7 mm (2 twin) MGs.
Radars: Navigation: Fin Curve or OKI X NE-12 (Japanese); I-band.

Comment: Built at Luda Shipyard and Shanghai International, 1958–62. Four in North Sea Fleet, nine in East Sea Fleet and four in South Sea Fleet.



GROMOVOY 716 9/2007 / 1335664

20 ROSLAVL CLASS (ATA/ARS)

153	168	613	704	853	863
159	518	618	707	854	867
161–164	604	646	852	862	

Displacement, tons: 670 full load
Dimensions, feet (metres): 149.9 x 31 x 15.1 (45.7 x 9.5 x 4.6)
Main machinery: Diesel-electric; 2 diesel generators; 1,200 hp(m) (882 kW); 1 motor; 1 shaft
Speed, knots: 12
Range, n miles: 6,000 at 11 kt
Complement: 28
Guns: 4—14.5 mm (2 twin) MGs.

Comment: Built in China in mid-1960s to the USSR design. One carries diving bell and submarine rescue gear on stern and is classified as ARS. Split evenly between the fleets.



ROSLAVL 852 10/2008*, Chris Sattler / 1335665

MARITIME MILITIA (MBDF)

Notes: (1) China has four regular paramilitary maritime Security Forces: the Customs Service (*Hai Guan*); the maritime section of the Public Security Bureau (*Hai Gong*); the maritime command (*Gong Bian*) of the Border Security Force (which is itself a part of the PLA-subordinated People's Armed Police); and the Border Defence Coast Guard (*Bian Jian*)

These four organisations patrol extensively with a variety of vessels. In recent years the better disciplined and centrally controlled *Hai Guan* has received a significant number of new vessels, many of them with offshore capabilities. A number of Haitun helicopters are also in service.

(2) Types of vessels vary from Huxins, Shanghai IIs and Huludaos to a number of other designs spread across all forces. For example Huxin and Huludao classes can show the markings of all four services.

(3) From December 1999 pennant numbers have been standardised to show the vessels' legitimate operating area. This is an attempt to crack down on illegal activities by making it easier for merchant ships to report violations to the Maritime Police (*Hai Gong*), who have taken overall responsibility

- a. 海关 HAI GUAN (HOI KWAN) – CUSTOMS
- b. 海公 HAI GONG (HOI KUNG) – MARITIME POLICE
- c. 公边 GONG BIAN (KUNG BIN) – BORDER SECURITY
- d. 边检 BIAN JIAN (PIN KAM) – BORDER DEFENCE

CUSTOMS (HAI GUAN)

Notes: A new class of 20-24 Qui-M class offshore patrol craft is reported to have entered service. Armed with twin 30 mm guns, a distinguishing feature is a stern ramp to facilitate the handling of high-speed interceptor craft. At 100 m length, they are substantially larger than previous Customs vessels and, despite appearances, there has been some speculation as to whether these craft are manned by naval personnel.

**HULUDAO CLASS (TYPE 206)
(FAST ATTACK CRAFT—PATROL) (PC)**

Displacement, tons: 180 full load
Dimensions, feet (metres): 147.6 x 21 x 5.6 (45 x 6.4 x 1.7)
Main machinery: 3 MWMTBD604BV12 diesels; 5,204 hp(m) (3.82 MW) sustained; 3 shafts
Speed, knots: 29. **Range, n miles:** 1,000 at 15 kt
Complement: 24 (6 officers)
Guns: 6 China 14.5 mm Type 82 (3 twin); 600 rds/min to 7 km (3.8 n miles); weight of shell 1.42 kg.

Comment: EEZ patrol craft first seen at Wuxi Shipyard in 1988. The craft is sometimes referred to as the Wuting class.



HAI GONG HULUDAO 6/1995, 0056810

7 TYPE P 58E (COMMAND SHIPS) (AGF)

901–907

Displacement, tons: 435 full load
Dimensions, feet (metres): 190.3 x 24.9 x 7.5 (58 x 7.6 x 2.3)
Main machinery: 4 MTU diesels; 8,720 hp(m) (6.4 MW) sustained; 4 shafts
Speed, knots: 27. **Range, n miles:** 1,500 at 12 kt
Complement: 50
Guns: 2 China 14.5 mm/93 (twin) MGs.
Radars: Surface search. I-band.

Comment: First one built at Guangzhou in 1990, last one in 1998. Less well armed but similar to those in service with Pakistan's MSA. Used as command ships.



HAI GUAN 901 1993, T Hollingsbee / 0056811

42 COASTAL PATROL CRAFT (NEW) (PB)

801–842

Displacement, tons: 98 full load
Dimensions, feet (metres): 101.7 x 15.4 x 4.6 (31 x 4.7 x 1.4)
Main machinery: 2 diesels, 2 shafts
Speed, knots: 32
Complement: 15
Guns: 2 China 14.5 mm/93 (twin).
Radars: Surface search: Racal Decca ARPA; I-band

Comment: Building in Shanghai at about six a year since 1992. More may follow.



HAI GUAN 812 1993, T Hollingsbee / 0506273

166 China/Customs (Hai Guan) — Coast guard (Gong Bian)

COASTAL PATROL CRAFT (OLD) (PB)

Comment: Shanghai type hull but with a different superstructure. Two twin 14.5 mm MGs. Being phased out and replaced by the 800 series of patrol craft.



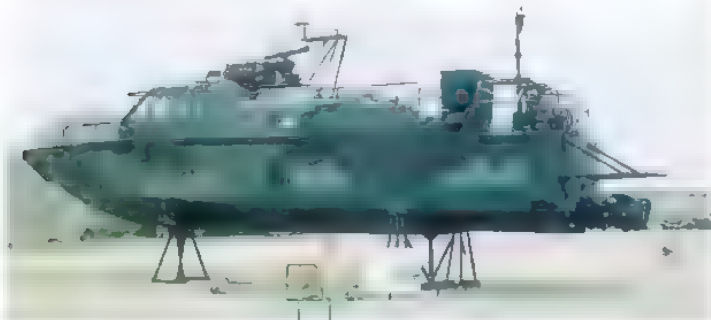
HAI GUAN 82

6/1995 / 0056817

2 COMBATBOAT 90E (PBF)

Displacement, tons: 9 full load
Dimensions, feet (metres): 39 × 9.5 × 2.3 (11.9 × 2.9 × 0.7)
Main machinery: 1 Scania AB DSI 14 diesel; 398 hp(m) (293 kW); waterjet
Speed, knots: 40
Complement: 2

Comment: Two delivered to Hai Guan in April 1997. This is the transport version of the Swedish raiding craft and can lift two tons of stores or 8-10 troops.



COMBATBOAT 90E (Swedish colours)

5/1998, Per Körnefeldt / 0056813

COAST GUARD (GONG BIAN)

Notes: The 2006 Defence White Paper gave prominence to improvement to border and maritime security affairs and, in that context, the emergence of a Coast Guard as a distinct force is a logical result of that process. It is unclear whether the force is controlled by a national command structure or whether forces are commanded at the local (provincial) level. It is likely that the new organisation will have subsumed some, if not all, of the functions and seagoing units of the Gong Bian (Border Security Force) but this has not been confirmed. Neither is it clear to what extent other constituents of the Maritime Militia (Customs, Maritime Police and Border Defence) have been affected. While details of major units are given, there is reported also to be a large number of smaller inshore craft.



CG 33031

6/2007 / 1166846



CG 31021 and 31011

7/2007 / 1170053

1 OFFSHORE PATROL SHIP (PSO)

HAIJING 1001

Displacement, tons: 1,000 approx
Dimensions, feet (metres): To be announced
Main machinery: To be announced
Speed, knots: To be announced
Complement: To be announced
Guns: 1—37 mm
Radars: Surface search E/F-band
Navigation: I-band

Comment: Coastal patrol ship, possibly called *Pudong*, built for the China Coast Guard.



HAIJING 1001

6/2007 / 1166851

2 JIANGHU CLASS (PSOH)

HAIJING 1002 (ex-609)

HAIJING 1003 (ex-510)

Displacement, tons: 1,425 standard; 1,702 full load
Dimensions, feet (metres): 338.5 × 35.4 × 10.2 (103.2 × 10.8 × 3.1)
Main machinery: 2 Type 12E 390V diesels; 14,400 hp(m) (10.6 MW) sustained; 2 shafts
Speed, knots: 26
Range, n miles: 4,000 at 15 kt
Complement: To be announced
Guns: 1—37 mm, 4—14.5 (2 twin) MGs.
Radars: Surface search E/F-band
Navigation: I-band
Helicopters: 1 medium.

Comment: Two former Jianghu-class frigates transferred from the PLAN to the Coast Guard in March 2007 and recommissioned in July 2007. The ships were originally built in the 1970s. Modifications to the ships include removal of all the previous missile and gun armament and changes to the superstructure to include an upper deck at 01-deck level and two sets of davits aft for high-speed interception craft. The new armament includes a single-barrel 37 mm gun forward and two twin 14.5 mm machine guns aft of the funnel. There are also two water cannons forward.



HAIJING 1002

7/2007 / 1166850

HUXIN CLASS (PB)

Displacement, tons: 185 full load
Dimensions, feet (metres): 91.9 × 13.8 × 5.2 (28 × 4.2 × 1.6)
Main machinery: 2 diesels; 1,000 hp(m) (735 kW); 2 shafts
Speed, knots: 17
Range, n miles: 400 at 10 kt
Complement: 26
Guns: 2 China 14.5 mm/93 (twin).
Radars: Surface search Skin Head; I band.

Comment: This is a class of modified Huangpu design with a greater freeboard and a slightly larger displacement. First seen in 1989 and now in series production. Huxin 178 is a modified command vessel with a forward superstructure extension.



HUXIN 44091

6/2005 / 1164340

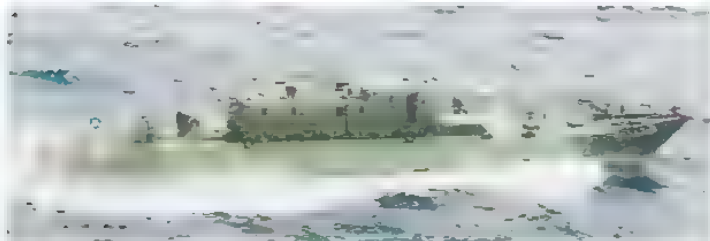
COASTAL PATROL CRAFT (NEW) (PB)

Displacement, tons: 58 full load
Dimensions, feet (metres): 73.8 × 15.7 × 5.2 (22.5 × 4.8 × 1.6)
Main machinery: 2 diesels; 1,600 hp(m) (1.18 MW); 2 shafts
Speed, knots: 22. **Range, n miles:** 850 at 11 kt
Complement: 13
Guns: 2 — 14.5 mm (twin).
Radars, Surface search: I-band.

Comment: Large numbers of this type in all Fleet areas. Armaments vary



GONG BIAN 4401 6/1999 0056807



GONG BIAN 4407 6/1997, 0017754

COASTAL PATROL CRAFT (OLD) (PB)

Displacement, tons: 82 full load
Dimensions, feet (metres): 82 × 13.5 × 4.6 (25 × 4.7 × 1.4)
Main machinery: 2 diesels; 900 hp(m) (662 kW); 2 shafts
Speed, knots: 14
Range, n miles: 900 at 11 kt
Complement: 12
Guns: 4 — 14.5 mm/93 2 (twin).
Radars, Surface search: Fin Curve; I-band.

Comment: Large numbers of this type still extensively used although numbers are declining in favour of Huxin and the newer CPC design.



GONG BIAN 1301 3/1995, van Ginderen Collection / 0056808

STEALTH CRAFT (PBF)

Comment: Since 1996 large numbers of low profile stealth craft have been active in the South Sea areas, and have been reported as far away as the Philippines. Sizes vary from 30 to 60 m in length and many are capable of speeds in excess of 30 kt. Most are paramilitary vessels but some may be privately owned.



STEALTH 8/1996 / 0012232

INSHORE PATROL CRAFT (PBI)

Displacement, tons: 32 full load
Dimensions, feet (metres): 82 × 13.1 × 3.6 (18.9 × 4 × 1.1)
Main machinery: 2 diesels; 900 hp(m) (662 kW); 2 shafts
Speed, knots: 15
Complement: 5
Guns: 1 — 12.7 mm MG.

Comment: Details given are for the standard small patrol craft. In addition there are a number of speedboats confiscated from smugglers and used for interception duties.



GONG BIAN 3110 4/1998, 0017765



GONG BIAN SPEEDBOAT 2/1995, T Hollingsbee / 0056809

MARITIME SAFETY ADMINISTRATION

Notes: The China Coast Guard (Maritime Safety Administration), part of the Ministry of Communications, was established in 1998 and is responsible for safety at sea, security and pollution control in Chinese offshore waters, ports and inland rivers. The agency reportedly operates some 150 vessels which are painted white with a large diagonal red stripe and four thin blue stripes.



MSA 1015 12/2007, Chris Sattler / 1335663



MSA 1005 10/2008*, Chris Sattler / 1335662

1 HAIXUN 21 CLASS (PBOH)**HAIXUN 21**

Displacement, tons: 1,500 full load
Dimensions, feet (metres): 305.8 × 40.0 × 17.7 (93.2 × 12.2 × 5.4)
Main machinery: 2 diesels; 2 shafts
Speed, knots: 22
Radars, Navigation:
Helicopters: Platform for one medium.

Comment: Commissioned in 2003. Conducted joint exercises with the Japanese Coast Guard in May 2004.



HAIXUN 21 5/2004, Hachiro Nakai / 0589002

1 + 1 HAIXUN 31 CLASS (PBOH)**HAIXUN 31**

Displacement, tons: 3,000 full load
Dimensions, feet (metres): 367.4 × 45.9 × 16.4 (112.0 × 14.0 × 5.0)
Main machinery: 2 diesels; 2 shafts
Speed, knots: 18
Radars, Navigation:
Helicopters: 1 medium.

Comment: Commissioned on 22 February 2005. The ship is equipped with a hangar and flight deck. A second ship is reported to be under construction



Colombia

ARMADA DE LA REPUBLICA

Country Overview

The Republic of Colombia is the only South American country that fronts both the Caribbean Sea and the Pacific Ocean with coastlines of 950 n miles and 782 n miles respectively. With an area of 440,831 square miles, it is bordered to the north by Panama, to the east by Venezuela and Brazil and to the south by Peru and Ecuador. The capital and largest city is Bogotá. Buenaventura and Tumaco are the main Pacific ports while Cartagena, Santa Marta and Barranquilla, which is near the mouth of the principal river and transport artery, the Magdalena, are on the Caribbean side. Territorial seas (12 n miles) are claimed but while it has claimed a 200 n mile EEZ, its limits have not been fully defined.

Headquarters Appointments

Commander of the Navy:
Admiral Guillermo Enrique Barrera Hurtado
Deputy Commander and Chief of Staff of the Navy:
Vice Admiral Carlos Humberto Pineda Gallo
Inspector General:
Vice Admiral Jaime Parra Cifuentes
Chief of Naval Operations:
Vice Admiral Guillermo Edgar Augusto Cely Nuñez
Chief of Naval Intelligence:
Rear Admiral Cesar Augusto Narvaez Arciniegas
Commander Caribbean Force:
Rear Admiral Roberto Garcia Marquez
Chief of Logistics:
Rear Admiral Hugo de Jesus Garcia Nursery
Commander Marine Corps:
Brigadier General Fernando Ortiz Poland
Commander Pacific Force:
Rear Admiral Flaminio Orlando Malaver Calderon
Commander South Force:
Colonel Luis Jesús Suarez Castillo

Personnel

(a) 2009: 12,000 (Navy); 9,000 (Marines); 200 (Coast Guard); 100 (Aircrew)
(b) 2 years' national service (few conscripts in the Navy)

Organisation

Caribbean Force Command: HQ at Cartagena
Pacific Force Command: HQ at Bahía Málaga.
Naval Force South: HQ at Puerto Leguizamo.
Riverine Brigade: HQ at Bogotá, DC.
Coast Guard: HQ at Bogotá.

Bases

ARC Bolívar, Cartagena, Main naval base (floating dock, 1 slipway), schools
ARC Bahía Málaga, Major Pacific base.
ARC Barranquilla: Naval training base.
ARC Puerto Leguizamo: Putumayo River base.
Turbo: Minor River base
Puerto López: Minor River base.
Puerto Carreño: Minor River base.
Inírida: Minor River base
San Andrés y Providencia: Specific Command

Marine Corps

Organisation: First Brigade (Corozal),
BAFIM 1 (San Andrés)
BAFIM 2 (Cartagena)
BAFIM 3 (Malagena)
BAFIM 4 (Corozal)
CFENIM Training Battalion (Coveñas)
Second Riverine Brigade (Bogotá)
BASFLIM 3 (Bahía Solano)
BASFLIM 4 (Bahía Málaga)
No. 70 Battalion (Tumaco)
No. 80 Battalion (Buenaventura)
No. 10 Battalion (Guapi)

Strength of the Fleet

Type	Active	Building (planned)
Patrol Submarines	2	—
Midget Submarines	2	—
Frigates	4	—
Patrol Ships and Fast Attack Craft (Gun)	9	2
Coast Patrol Craft	36	—
Amphibious Forces	8	—
River Patrol Craft	51	50
River Patrol Craft Support	6	—
River Assault Boats	169	—
Survey Vessels	7	—
Auxiliaries	26	—
Training Ships	6	—

Prefix to Ships' Names

ARC (Armada Republica de Colombia)

Dimar

Maritime authority in charge of hydrography and navigational aids.

Coast Guard and Customs (DIAN)

The Coast Guard was established in 1979 but then gave way to the Customs Service before being re-established in January 1992 under the control of the Navy. Headquarters at Bogotá. Main bases are Cartagena, Buenaventura y Turbo and Valle. Ships have a red and yellow diagonal stripe on the hull and patrol craft have a PM number. Customs craft were absorbed into the Coast Guard but by 1995 were again independent as part of the DIAN (Direccion de Impuestos y Aduanas Nacionales). Customs craft have Aduana written on the ship's side, a thick and two thin diagonal stripes and have AN numbers.

PENNANT LIST

Submarines

SO 28 Pijao
SO 29 Tayrona
ST 20 Intrépido
ST 21 Indomable

PF 129 Capitán Jaime Rook
PF 130 Manuela Saenz
PF 135 Rohacha
PF 136 Leticia
PF 137 Arauca
PRF 189 Mitu

NF 609 Ariari
NF 610 Mario Villegas
NF 611 Tony Pastrana Contreras
NF 612 CTCIM Jorge Moreno Salazar
NF 613 Juan Ricardo Oyola Vera

Frigates

FL 51 Almirante Padilla
FL 52 Caldas
FL 53 Antioquia
FL 54 Independiente

Amphibious Forces

LD 240 Bahía Zapurro
LD 246 Morrosquillo
LD 248 Bahía Honda
LD 249 Bahía Portete
LD 251 Bahía Solano
LD 252 Bahía Cupica
LD 253 Bahía Utría
LD 254 Bahía Malaga

Survey Vessels

BO 155 Providencia
BO 156 Maipelo
BH 153 Quindío
BB 31 Gorgona
BB 33 Abadía Médez
BB 34 Ciénaga de Mayorquin
BB 35 Isla Palma

Patrol Forces

PC 141 Cabo Corrientes
PC 142 Cabo Manglares
PC 143 Cabo Tiburón
PC 144 Cabo de la Vella
PO 41 Espertana
PO 42 Capitán Pablo José de Porto
PO 43 Capitán Jorge Enrique Marques Duran
PO 44 Valle del Cauca
PO 45 San Andrés
PM 102 Rafael del Castillo y Rada
PM 103 TN José María Palas
PM 104 CN Medardo Monzon Coronado
PM 105 S2 Jaime Gómez Castro
PM 106 S2 Juan Nepomuceno Peña
PM 112 Quitasueño
PM 113 José María García y Toledo
PM 114 Juan Nepomuceno Esteva
PM 115 TECIM Jaime E. Cardenas Gomez
PB 446 Capella
PF 121 Diligente
PF 122 Juan Lucio
PF 123 Alfonso Vargas
PF 124 Fritz Hagale
PF 125 Vengadora
PF 126 Humberto Cortez
PF 128 Carlos Galindo

Auxiliaries

BL 161 Cartagena de Indias
BL 162 Buenaventura
TM 501 Bocachica
TM 502 Arturus
TM 503 Pedro David Satas
TM 504 Sirius
TM 507 Calima
TM 508 Bahía Santa Catalina
TM 509 Movil I
TM 510 Movil II
TG 542 Playa Blanca
TG 543 Tierra Boubá
TG 544 Bell Salter
TG 546 Orion
TG 547 Pegasso
DF 170 Mayor Jaime Arias Arango
NF 601 Firigonio Hichamón
NF 602 SSIM Manuel Antonio Moyer
NF 603 Igaraparana
NF 604 SSIM Julio Correa Hernández
NF 605 Manacacias
NF 606 Cotuhe
NF 607 SSCIM Senen Alberto Araujo
NF 608 CPCIM Guillermo Londoño Vargas

Training Ships

BE 160 Glona
YT 230 Comodoro
YT 231 Tridente
YT 232 Cristina
YT 233 Albatros
YT 234 Poseidon

Tugs

RB 77 Don Vico
RB 78 Portete
RB 79 Maldonado
RB 80 Ciénaga de San Juan
RF 81 Capitán Castro
RF 83 Joves Fialto
RF 85 Miguel Silva
RF 86 Capitán Rigoberto Giraldo
RF 87 Vladimir Valek
RF 88 Teniente Luis Bernal
RF 91 TN Alejandro Baldomero Salgado
RF 93 Sejeri
RF 96 Inírida
RM 75 Andagoya
RM 78 Josue Alvarez

SUBMARINES

Notes: (1) Three Swimmer Delivery Vehicles were acquired in 1970: *Defensora* (LS 15), *Poderosa* (LS 16) and *Protectora* (LS 17)
 (2) Replacement of the Cosmos midget submarines is under consideration. Procurement of ex-German 206A class is a possibility.

2 PIJAO (TYPE 209/1200) CLASS (SS)

Name	No	Builders	Laid down	Launched	Commissioned
PIJAO	SO 28	Howaldtswerke, Kiel	1 Apr 1972	10 Apr 1974	18 Apr 1975
TAYRONA	SO 29	Howaldtswerke, Kiel	1 May 1972	16 July 1974	16 July 1975

Displacement, tons: 1,180 surfaced; 1,285 dived
Dimensions, feet (metres): 183.4 × 20.5 × 17.8 (55.9 × 6.3 × 5.4)
Main machinery: Diesel-electric; 4 MTU 12V 493 AZ80 diesels; 2,400 hp(m) (1.76 MW) sustained; 4 AEG alternators; 1.7 MW; 1 Siemens motor; 4,600 hp(m) (3.38 MW) sustained; 1 shaft
Speed, knots: 22 dived; 11 surfaced
Range, n miles: 8,000 at 8 kt surfaced; 4,000 at 4 kt dived
Complement: 34 (7 officers)

Torpedoes: 8–21 in (533 mm); bow tubes. 14 AEG SUT; dual purpose; wire-guided; active/passive homing to 12 km (6.5 n miles) at 35 kt; 28 km (15 n miles) at 23 kt; warhead 250 kg. Swim-out discharge.
Countermeasures: ESM Thomson-CSF DR 2000; intercept.
Weapons control: Signaal M8/24TFC5.
Radars: Surface search Thomson-CSF Calypso II; I-band.
Sonars: Krupp Atlas PSU 83-55; hull-mounted; active/passive search and attack; medium frequency Atlas Elektronik PRS 3-4; passive ranging; integral with CSU 3.

Programmes: Ordered in 1971.
Modernisation: Both boats were refitted by HDW at Kiel 1990–91; main batteries were replaced. Further refits were carried out at Cotecmar; *Pijao* 1999–2002 and *Tayrona* 2003–06. Further modernisation at Cotecmar is planned, possibly with ADW assistance.
Structure: Single-hulled. Diving depth, 820 ft (250 m).
Operational: Both boats employed on counter-drug operations.



PIJAO

4/2008*, Marco Ghigino / 1335712

2 MIDGET SUBMARINES (SSW)

Name	No	Builders	Launched	Commissioned
INTRÉPIDO	ST 20	Cosmos, Livorno	1 Jan 1972	17 Apr 1973
INDOMABLE	ST 21	Cosmos, Livorno	1 Jan 1972	17 Apr 1973

Displacement, tons: 58 surfaced, 70 dived
Dimensions, feet (metres): 75.5 × 13.1 (23 × 4)
Main machinery: Diesel-electric; 1 diesel; 1 motor; 300 hp(m) (221 kW); 1 shaft
Speed, knots: 11 surfaced; 6 dived

Range, n miles: 1,200 surfaced, 60 dived
Complement: 8
Mines: 6 Mk 21 with 300 kg warhead. 8 Mk 11 with 50 kg warhead.

Comment: They can carry eight swimmers with 2 tons of explosive as well as two swimmer delivery vehicles (SDVs). Built by Cosmos, Livorno and commissioned at 40 tons, but subsequently enlarged in the early 1980s. Listed by the Navy as 'Tactical Submarines'.



INTRÉPIDO

2000, Colombian Navy / 0103690

FRIGATES

Notes: Replacement of the Almirante Padilla class from about 2026 is under consideration.

4 ALMIRANTE PADILLA CLASS (TYPE FS 1500) (FLGHM)

Name	No	Builders	Laid down	Launched	Commissioned
ALMIRANTE PADILLA	FL 51	Howaldtswerke, Kiel	17 Mar 1981	6 Jan 1982	31 Oct 1983
CALDAS	FL 52	Howaldtswerke, Kiel	14 June 1981	23 Apr 1982	14 Feb 1984
ANTIOQUIA	FL 53	Howaldtswerke, Kiel	22 June 1981	28 Aug 1982	30 Apr 1984
INDEPENDIENTE	FL 54	Howaldtswerke, Kiel	22 June 1981	21 Jan 1983	24 July 1984

Displacement, tons: 1,500 standard; 2,100 full load
Dimensions, feet (metres): 325.1 x 37.1 x 12.1
 (99.1 x 11.3 x 3.7)
Main machinery: 4 MTU 20V 1163 TB92 diesels, 23,400 hp(m) (17.2 MW) sustained; 2 shafts; cp props
Speed, knots: 27; 18 on 2 diesels
Range, n miles: 7,000 at 14 kt; 5,000 at 18 kt
Complement: 94

Missiles: SSM: 4 Aerospatiale MM 40 Exocet ●; inertial cruise; active radar homing to 70 km (40 n miles) at 0.9 Mach; warhead 165 kg; sea-skimmer.
SAM: 2 Matra Simbad twin launchers ●; Mistral; IR homing to 4 km (2.2 n miles); warhead 3 kg; anti-sea-skimmer.
Guns: 1 OTO Melara 3 in (76 mm)/62 compact ●; 85 rds/min to 16 km (8.7 n miles); weight of shell 6 kg.
 2 Breda 40 mm/70 (twin) ●; 300 rds/min to 12.5 km (6.8 n miles) anti-surface; weight of shell 0.96 kg.
 2—12.7 mm MGs.
Torpedoes: 6—324 mm ILAS 3 (2 triple) tubes ●; Whitehead A244S; anti-submarine; active/passive homing to 7 km (3.8 n miles); warhead 38 kg (shaped charge)
Countermeasures: Decoys: 1 CSEE Degaie double mounting; IR flares and chaff decoys (H- to J-band).
ESM: Argo AC672; radar warning.
ECM: Rascal Scimitar; jammer.



ALMIRANTE PADILLA

(Scale 1 : 900), Ian Sturton / 0056815

Combat data systems: Thomson-CSF TAVITAC action data automation. Possibly Link Y fitted.
Weapons control: 2 Canopus optronic directors. Thomson-CSF Vega II GFCS.
Radars: Air/surface search: Thomson-CSF Sea Tiger ●; E/F-band; range 110 km (60 n miles) for 2 m² target.
 Navigation: Furuno; I-band.
Fire control: Castor II B ●; I/J-band, range 15 km (8 n miles) for 1 m² target
 IFF: Mk 10
Sonars: Atlas Elektronik ASO 4-2; hull-mounted; active attack; medium frequency.

Helicopters: 1 MBB BO 105 CB ● or 1 Bell 412.
Programmes: Order for four Type FS 1500 placed late 1980. Reclassified as light frigates in 1999. Similar to Malaysian Kasturi class frigates.
Modernisation: Mistral SAM system fitted. Helicopter deck lengthened by 2 m to take Bell 412 aircraft. There have also been minor modifications to ship systems and superstructure. A major modernisation period began at Cotecmar in 2008. Antioquia is to receive new engines and new radars are also reported to be part of the package



ALMIRANTE PADILLA

8/2008*, Ships of the World / 1335707



INDEPENDIENTE

3/2008*, Marco Ghiglino / 1335711

SHIPBORNE AIRCRAFT

Numbers/Type: 2 MBB BO 105CB
Operational speed: 113 kt (210 km/h)
Service ceiling: 9,854 ft (3,000 m)
Range: 407 n miles (754 km)
Role/Weapon systems: Surface search and limited ASW helicopter. **Sensors:** Search/weather radar **Weapons:** ASW; provision to carry depth bombs. ASV; light attack role with machine gun pods.



BO 105 2000, Colombian Navy / 0103692

Numbers/Type: 2 Eurocopter AS 555 Fennec.
Operational speed: 121 kt (225 km/h)
Service ceiling: 13,125 ft (4,000 m)
Range: 389 n miles (722 km)
Role/Weapon systems: OTH capability for surface-to-surface role. Also used for logistic support. More are being acquired. **Sensors:** Bendix RDR 1500B radar. **Weapons:** Torpedoes may be fitted in due course.



AS 555 6/2000, Colombian Navy / 0103693

Numbers/Type: 4 Bell 412.
Operational speed: 122 kt (226 km/h)
Service ceiling: 10,000 ft (3,300 m)
Range: 500 n miles (744 km)
Role/Weapon systems: Multipurpose used mostly for surveillance, troop transport and logistic support. **Sensors:** Weather radar. **Weapons:** ASV 7.62 mm MG can be carried.



BELL 412 6/1999, Colombian Navy / 0056820

Numbers/Type: 1 Bell UH-1N Twin Huey.
Operational speed: 110 kt (204 km/h)
Service ceiling: 10,000 ft (3,048 m)
Range: 230 n miles (426 km)
Role/Weapon systems: Light Utility platform for all-weather assault, transport, airborne command and control, armed reconnaissance and SAR. Can carry eight manne. To enter service in 2009. **Sensors:** BRITE Star FLIR. **Weapons:** Can be armed with 12.7 mm or 7.62 mm machine guns and 2.75 in rockets.



UH-1N (US Navy colours) 5/1999, A Sharma / 0084120

LAND-BASED MARITIME AIRCRAFT

Notes: The Navy operates the following fixed-wing aircraft for maritime surveillance and transport: four RC690, six Navajo PA-31, six Cessna 206, one Cessna 150, two Cessna 208B, one Beech B-350, two Gavillian 358, one Gulfstream I and two PA-28 Cherokee. There are also two Bell 212 and one Eurocopter BK-117.

Numbers/Type: 4 Casa CN-235 200
Operational speed: 210 kt (384 km/h)
Service ceiling: 24,000 ft (7,315 m)
Range: 2,000 n miles (3,218 km)
Role/Weapon systems: EEZ surveillance. First two delivered in 2003. Two further aircraft ordered in 2007 for delivery in 2009. **Sensors:** Search radar Bendix APS 504(V)6; FLIR. **Weapons:** Unarmed.



CN-235 6/2003, CASA / 0587695

PATROL FORCES

Notes: (1) Three Orca class 12 m fast intercept craft, capable of 40 kt, entered service in 2003. (2) Two Bravo 36 patrol craft, capable of 35 kt, are based at Covenas.

1 RELIANCE CLASS

Name	No	Builders	Commissioned
VALLE DEL CAUCA (ex-Durable)	PO 44 (ex-WMEC 628)	Coast Guard Yard, Baltimore	8 Dec 1967

Displacement, tons: 1,129 full load
Dimensions, feet (metres): 210.5 x 34 x 10.5 (64.2 x 10.4 x 3.2)
Main machinery: 2 Alco 16V-251 diesels, 6,480 hp (4.83 MW) sustained; 2 shafts; LIPS cp props
Speed, knots: 18 **Range, n miles:** 6,100 at 14 kt; 2,700 at 18 kt
Complement: 75 (12 officers)
Guns: 1 Boeing 25 mm/87 Mk 38 Bushmaster; 200 rds/min to 6.8 km (3.4 n miles). 2 - 12.7 mm MGs
Radars: Surface search. Hughes/Furuno SPS-73, I-band.
Helicopters: Platform for one medium.

Comment: Transferred to Colombia on 4 September 2003. During 34 years in USCG service, underwent Major Maintenance Availability (MMA) in 1989. The exhausts for main engines, ship service generators and boilers were run in a vertical funnel which reduced flight deck size. Capable of towing ships up to 10,000 tons. Based in the Pacific.



VALLE DEL CAUCA 6/2008* / 1335710

2 LAZAGA CLASS (FAST ATTACK CRAFT—GUN) (PBO)

Name	No	Builders	Commissioned
CAPITÁN PABLO JOSÉ DE PORTO (ex-Recaide)	PO 42 (ex-PM 116, ex-P 06)	Bazán, La Carraca	17 Dec 1977
CAPITÁN JORGE ENRIQUE MARQUEZ DURAN (ex-Cadarso)	PO 43 (ex-PM 117, ex-P 03)	Bazán, La Carraca	10 July 1976

Displacement, tons: 393 full load
Dimensions, feet (metres): 190.6 x 24.9 x 8.5 (58.1 x 7.6 x 2.6)
Main machinery: 2 MTU/Bazán 18V 956 TB 91 diesels; 7,500 hp(m) (5.5 MW) sustained; 2 shafts
Speed, knots: 26 **Range, n miles:** 2,400 at 15 kt
Complement: 40 (4 officers)
Guns: 1 Breda 40 mm/70. 1 Oerlikon 20 mm L85. 1 - 12.7 mm MG.
Weapons control: CSEE optical director
Radars: Surface search: Furuno; E/F-band.
Navigation: Furuno; I-band.

Comment: Paid off from the Spanish Navy in 1993 and put into reserve. Acquired by Colombia in March 1997 for extensive refurbishment at Bazán, San Fernando. Recommissioned 25 April 1998 and 25 June 1998 respectively. Radars have been changed and the 76 mm gun replaced by a 20 mm cannon. These ships may be used to carry troops. Four more of the class are available and more may be acquired in due course.



CAPITÁN JORGE ENRIQUE MARQUEZ DURAN 6/2001, Maritime Photographic / 0114510

1 CORMORAN CLASS (FAST ATTACK CRAFT—GUN) (PBO)

Name	No	Builders	Commissioned
ESPARTANA (ex-Cormoran)	PO 41	Bazan, San Fernando	27 Oct 1989

Displacement, tons: 358 full load
 Dimensions, feet (metres): 185.7 x 24.7 x 6.5 (56.6 x 7.5 x 2)
 Main machinery: 3 MTU-Bazan 16V 956TB91 diesels; 11,250 hp(m) (8.27 MW) sustained; 3 shafts
 Speed, knots: 32. Range, n miles: 2,500 at 15 kt
 Complement: 31 (5 officers)
 Guns: 1 Bofors 40/70 SP 48. 1 Oerlikon 20 mm
 Weapons control: Alcor C optronic director.
 Radars: Surface search: Raytheon; I-band

Comment: Built with overseas sales in mind, this ship was launched in October 1985, but from 1989 served in the Spanish Navy until April 1994 when she was laid up at Cartagena. Transferred in September 1995, she was then refitted at Cadiz, before sailing for Colombia in mid-1996. Based at San Andres Island and belongs to the Coast Guard



ESPARTANA 6/2008* / 1335709

1 BALSAM CLASS (PSO)

Name	No	Builders	Commissioned
SAN ANDRES (ex-Gentian)	PO 45 (ex-WIX 290)	Zenith Dredge Corporation, Duluth	3 Nov 1942

Displacement, tons: 1,034 full load
 Dimensions, feet (metres): 180 x 37 x 12 (54.9 x 11.3 x 3.8)
 Main machinery: Diesel electric; 2 diesels; 1,402 hp (1.06 MW); 1 motor; 1,200 hp (895 kW); 1 shaft; bow thruster
 Speed, knots: 13. Range, n miles: 8,000 at 12 kt
 Complement: 53
 Guns: To be announced.
 Radars: Navigation: Raytheon SPS-64(V)1.

Comment: Following overhaul at Boston, transferred from the US Coast Guard on 15 October 2007



BALSAM CLASS (Estonian colours) 6/2003, Hartmut Ehlers / 0561497

4 POINT CLASS (PB)

Name	No	Builders	Commissioned
CABO CORRIENTES (ex-Point Warde)	PC 141 (ex-82368)	J M Martinac, Tacoma	14 Aug 1967
CABO MANGLARES (ex-Point Wells)	PC 142 (ex-82343)	USCG Yard, Curtis Bay	20 Nov 1963
CABO TIBURON (ex-Point Estero)	PC 143 (ex-82344)	USCG Yard, Curtis Bay	11 Dec 1963
CABO DE LA VELLA (ex-Point Sal)	PC 144 (ex-82352)	J M Martinac, Tacoma	5 Dec 1966

Displacement, tons: 66, 69 full load
 Dimensions, feet (metres): 83 x 17.2 x 5.8 (25.3 x 5.2 x 1.8)
 Main machinery: 2 Caterpillar 3412 diesels; 1,600 hp (1.19 MW); 2 shafts
 Speed, knots: 23.5. Range, n miles: 1,500 at 8 kt
 Complement: 10 (1 officer)
 Guns: 2—12.7 mm MGs.
 Radars: Surface search: Hughes/Furuno SPS-73; I-band.

Comment: Steel hulled craft with aluminium superstructure built in United States 1960-70. Cabo Corrientes transferred on 29 June 2000 followed by Cabo Manglares on 13 October 2000. Cabo Tiburon and Cabo de la Vella transferred on 8 February 2001 and 29 May 2001 respectively



CABO DE LA VELLA 6/2008* / 1335714

0 + 1 OFFSHORE PATROL VESSELS (PSO)

Displacement, tons: 1,790 full load
 Dimensions, feet (metres): 272.0 x 42.6 x 13.1 (82.9 x 13.0 x 4.0)
 Main machinery: 2 diesels, 10,940 hp (8.2 MW); 2 shafts
 Speed, knots: 20. Range, n miles: 7,500 at 12 kt
 Complement: 40
 Guns: 1—18 mm. 2—12.7 mm MGs.
 Radars: Surface search: Hughes/Furuno SPS-73; I-band.
 Helicopters: Platform for one medium.

Comment: Damen designed offshore patrol ship to be built at Cotecmar. Construction is to begin in 2009

3 ARAUCA CLASS (RIVER GUNBOATS) (PBR)

Name	No	Builders	Commissioned
RIOHACHA	PF 135 (ex-35)	Union Industrial de Barranquilla	6 Sep 1956
LETICIA	PF 136 (ex-36)	Union Industrial de Barranquilla	6 Sep 1956
ARAUCA	PF 137 (ex-37)	Union Industrial de Barranquilla	6 Sep 1956

Displacement, tons: 275 full load
 Dimensions, feet (metres): 163.5 x 27.2 x 8.9 (49.9 x 8.3 x 2.7)
 Main machinery: 2 Caterpillar diesels; 916 hp (683 kW); 2 shafts
 Speed, knots: 14. Range, n miles: 1,890 at 14 kt
 Complement: 43; 39 plus 6 orderlies
 Guns: 2 USN 3 in (76 mm)/50 Mk 26. 4 Oerlikon 20 mm (Riohacha and Arauca) 1—40 mm; 4—20 mm (Leticia).

Comment: Launched in 1955. Based in Naval Force South



ARAUCA 1991, Colombian Navy 0056821

6 + 1 (3) NORDRIZA CLASS (PATROL SUPPORT VESSELS) (PBR)

SSCIM SENEN ALBERTO ARANGO	TONY PASTRANA CONTRERAS
NF 607 (ex-NF 147)	NF 611 (ex-NF 149)
CPCIM GUILLERMO LONDOÑO	CTCIM JORGE MORENO SALAZAR
VARGAS NF 608 (ex-NF 146)	NF 612
MARIO VILLEGAS NF 610	JUAN RICARDO OYOLA VERA NF 613

Displacement, tons: 280
 Dimensions, feet (metres): 126.0 x 31.2 x 3.1 (38.4 x 9.5 x 0.95)
 Main machinery: Diesels
 Speed, knots: 9
 Complement: 18 plus 82 troops
 Guns: 8—12.7 mm MGs (4 twin). 1 Mk 19 grenade launcher
 Helicopters: Platform (NF 612, 613) for 1 small.

Comment: Powerfully armed river patrol vessels. Built to an innovative design by Cotecmar, Cartagena, in three batches: Batch I (NF 607, 608), Batch II (NF 610, 611) and Batch III (NF 612, 613). Batch III ships have a helicopter deck. A seventh and eighth ship were under construction in 2008 and two further ships are expected.



OYOLA VERA 6/2008* / 1336708

3 + 47 LPR-40 CLASS (RIVER PATROL CRAFT) (PB)

Displacement, tons: 13.7 full load
 Dimensions, feet (metres): 41.7 x 9.2 x 2.3 (12.72 x 2.8 x 0.7)
 Main machinery: 2 Caterpillar C9 diesels; 503 hp (375 kW); 2 waterjets
 Speed, knots: 29. Range, n miles: 513 at 25 kt
 Complement: 4
 Guns: 3—12.7 mm MGs.
 Radars: Surface search: Raytheon R70; I-band.

Comment: New class of inshore patrol craft designed by Cotecmar. Aluminium construction. Transportable on a C-130 aircraft. The construction programme at Cotecmar began in 2007 and the first three are to enter service in 2009. Some 50 of the class are expected



LPR 40 (artist's impression) 10/2008, COTECMAR / 1164347

2 JOSÉ MARIA PALAS (SWIFT 110) CLASS (LARGE PATROL CRAFT) (PB)

Name	No	Builders	Commissioned
JOSÉ MARIA PALAS	PM 103 (ex-GC 103)	Swiftships Inc, Berwick	Sep 1989
MEDARDO MONZON CORONADO	PM 104 (ex-GC 104)	Swiftships Inc, Berwick	July 1990

Displacement, tons: 99 full load
 Dimensions, feet (metres): 109.9 × 24.6 × 6.6 (33.5 × 7.5 × 2)
 Main machinery: 4 Detroit 12V-71T1 diesels; 2,400 hp (1.79 MW); 4 shafts
 Speed, knots: 25. Range, n miles: 2,250 at 15 kt
 Complement: 19 (3 officers)
 Guns: 1 Bofors 40 mm/70. 1—12.7 mm MG. 2—762 mm MGs.
 Radars: Surface search: Furuno FR 8100D; I-band.

Comment: Acquired under US FMS programme. These ships belong to the Coast Guard.



JOSÉ MARIA PALAS 1/1996, van Ginderen Collection / 0056824

1 ASHEVILLE CLASS (FAST ATTACK CRAFT—GUN) (PGF)

Name	No	Builders	Commissioned
QUITASUEÑO (ex-Tacoma)	PM 112	Tacoma Boat Building	14 July 1969

Displacement, tons: 225 standard; 245 full load
 Dimensions, feet (metres): 164.5 × 23.8 × 9.5 (50.1 × 7.3 × 2.9)
 Main machinery: CODOG; 2 Cummins VT12-875M diesels; 1,450 hp (1.08 MW); 1 GE LM 1500 gas turbine; 13,300 hp (9.92 MW); 2 shafts; cp props
 Speed, knots: 40
 Range, n miles: 1,700 at 16 kt on diesels; 325 at 37 kt
 Complement: 24
 Guns: 1 US 3 in (76 mm)/60 Mk 34, 60 rds/min to 12.8 km (7 n miles); weight of shell 6 kg.
 1 Bofors 40 mm/56; 160 rds/min to 11 km (5.9 n miles) anti-aircraft, weight of shell 0.96 kg.
 2—12.7 mm (twin) MGs
 Radars: Surface search: Raytheon 3100; I-band.

Comment: Transferred from US by lease 16 May 1983 and recommissioned 6 September 1983 and by sale August 1989. Fire-control system removed. Unreliable propulsion system prevented further transfers of this class and it is unlikely the gas turbine is operational, which reduces the top speed to 16 kt. Belongs to the Coast Guard.



QUITASUEÑO 2000, Colombian Navy / 0103696

2 TOLEDO CLASS (LARGE PATROL CRAFT) (PB)

Name	No	Builders	Commissioned
JOSÉ MARIA GARCIA Y TOLEDO	PM 113	Bender Marine, Mobile	15 July 1994
JUAN NEPOMUCENO ESLAVA	PM 114	Bender Marine, Mobile	25 May 1994

Displacement, tons: 142 full load
 Dimensions, feet (metres): 116 × 24.9 × 7 (35.4 × 7.6 × 2.1)
 Main machinery: 2 MTU 12V 396TE94 diesels; 8,240 hp (6.1 MW); 2 shafts
 Speed, knots: 25. Range, n miles: 1,200 at 15 kt
 Complement: 25 (5 officers)
 Guns: 1 Bushmaster 25 mm/87 Mk 96. 2—12.7 mm MGs.
 Radars: Surface search: Furuno FR 1510D; I-band.

Comment: Acquired under US FMS programme. These ships belong to the Coast Guard.



JUAN NEPOMUCENO ESLAVA 6/2001, Maritime Photographic / 0114511

2 RAFAEL DEL CASTILLO Y RADA (SWIFT 105) CLASS (LARGE PATROL CRAFT) (PB)

Name	No	Builders	Commissioned
RAFAEL DEL CASTILLO Y RADA	PM 102 (ex-GC 102, ex-AN 202)	Swiftships Inc, Berwick	28 Feb 1983
TECIM JAIME E CÁRDENAS GÓMEZ (ex-Olaya Herrera)	PM 115 (ex-AN 21, ex-AN 201)	Swiftships Inc, Berwick	16 Oct 1981

Displacement, tons: 115 full load
 Dimensions, feet (metres): 105 × 22 × 7 (31.5 × 6.7 × 2.1)
 Main machinery: 4 MTU 12V 331 TC92 diesels; 5,320 hp (3.97 MW) sustained; 4 shafts
 Speed, knots: 25. Range, n miles: 1,200 at 18 kt
 Complement: 19 (3 officers)
 Guns: 1 Bofors 40 mm/60 Mk 3 (PM 102). 2—12.7 mm MGs.
 Weapons control: 1 COAR optronic director.
 Radars: Surface search: Raytheon; I-band.

Comment: Delivered for the Customs service. PM 102 is part of the Coast Guard. PM 115 was paid off, but returned unarmed as part of the resurrected Customs service until being transferred back to the Coast Guard in 1997.



RAFAEL DEL CASTILLO Y RADA 6/1999, Colombian Navy / 0056826

2 JAIME GÓMEZ (MK III PB) CLASS (COASTAL PATROL CRAFT) (PB)

Name	No	Builders	Commissioned
JAIME GÓMEZ CASTRO	PM 105 (ex-GC 105)	Peterson Builders	1975
JUAN NEPOMUCENO PEÑA	PM 106 (ex-GC 106)	Peterson Builders	1977

Displacement, tons: 34 full load
 Dimensions, feet (metres): 64.9 × 18 × 5.1 (19.8 × 5.5 × 1.6)
 Main machinery: 3 Detroit 8V-71 diesels; 690 hp (575 kW) sustained; 3 shafts
 Speed, knots: 28. Range, n miles: 450 at 26 kt
 Complement: 7 (1 officer)
 Guns: 2—12.7 mm MGs. 2—7.62 mm MGs. 1 Mk 19 grenade launcher.
 Radars: Surface search: 2 Furuno FR 1510D; I-band.

Comment: Acquired from the USA. Recommissioned in December 1989 and February 1990 respectively. Original 40 mm and 20 mm guns replaced by lighter armament. Both based at Leticia, Río Amazonas, under coast guard control.



JAIME GÓMEZ CASTRO 2000, Colombian Navy / 0103697

3 SWIFTSIPS CLASS (RIVER PATROL CRAFT) (PBR)

PRF 320–322

Displacement, tons: 17 full load
 Dimensions, feet (metres): 45.5 × 11.8 × 1.8 (13.9 × 3.6 × 0.6)
 Main machinery: 2 Detroit 6V-92TA diesels; 900 hp (671 kW); 2 Hamilton water-jets
 Speed, knots: 22. Range, n miles: 600 at 22 kt
 Complement: 4
 Guns: 2 M2HB 12.7 mm MGs; 2 M60D 7.62 mm MGs
 Radars: Surface search: Raytheon 40; I-band.

Comment: Acquired in 2000. Hard chine modified V hull form. Can carry up to eight troops.



SWIFTSIPS CLASS 6/2001, Ecuador Coast Guard / 0114516

2 ROTORK 412 CRAFT (RIVER PATROL CRAFT) (PBR)

CAPITÁN JAIME ROOK PF 129 (ex-PM 107)
MANUELA SAENZ PF 130 (ex-PM 108)

Displacement, tons: 9 full load
Dimensions, feet (metres): 41.7 x 10.5 x 2.3 (12.7 x 3.2 x 0.7)
Main machinery: 2 Caterpillar diesels; 240 hp (179 kW); 2 shafts
Speed, knots: 25
Complement: 4
Military lift: 4 tons or 8 marines
Guns: 1—12.7 mm MG. 2—7.62 mm MGs.
Radars: Surface search. Raytheon; I-band.

Comment: Acquired in 1989-90. Capable of transporting eight fully equipped marines but used as river patrol craft.



CAPITÁN JAIME ROOK 1990, Colombian Navy / 0056828

9 TENERIFE CLASS (RIVER PATROL CRAFT) (PBR)

PF 305-313

Displacement, tons: 12 full load
Dimensions, feet (metres): 40.7 x 8.5 x 2 (12.4 x 2.9 x 0.6)
Main machinery: 2 Caterpillar 3208TA diesels; 850 hp (634 kW) sustained; 2 shafts
Speed, knots: 29
Range, n miles: 530 at 15 kt
Complement: 5 plus 12 troops
Guns: 3—12.7 mm MGs (1 twin, 1 single). 1 Mk 19 grenade launcher. 1—7.62 mm MGs.
Radars: Surface search: Raytheon 1900; I-band

Comment: Built by Bender Marine, Mobile, Alabama. Acquired in October 1993 for anti-narcotics patrols. Aluminium hulls. Can be transported by aircraft. Names were dropped and new pennants numbers assigned in 2006.



MITÚ 2000, Colombian Navy / 0103688

15 INSHORE PATROL CRAFT

BP 401 BP 430 BP 433 BP 443 BP 445 BP 462-471

Comment: Miscellaneous patrol craft capable of about 10 kt. BP 401 is a former US LCPL acquired in 1993. Names were dropped and new BP pennant numbers assigned in 2006.



BP 401 6/1999, Colombian Navy / 0056830

11 ANDRÓMEDA CLASS (INSHORE PATROL CRAFT) (PBI)

BP 451-461

Comment: Names were dropped and BP pennant numbers assigned in 2006.



ANDROMEDA 2000, Colombian Navy / 0103699

10 RIO CLASS (RIVER PATROL CRAFT) (PBR)

PRF 301-304

PRF 314-319

Displacement, tons: 7 full load
Dimensions, feet (metres): 31 x 11.1 x 2 (9.6 x 3.5 x 0.6)
Main machinery: 2 Detroit 6V-53 diesels; 298 hp (221 kW) sustained; 2 water-jets
Speed, knots: 24. **Range, n miles:** 150 at 22 kt
Complement: 4
Guns: 2—12.7 mm (twin) MGs 1—7.62 mm MG. 1—60 mm mortar
Radars: Surface search: Raytheon 1900; I-band

Comment: Acquired in 1989-90. Ex-US PBR Mk II built by Unflite in 1970. All recommissioned in September 1990 GRP hulls. Names were dropped and new pennant numbers assigned in 2006.



PRF 301 (old number) 2000, Colombian Navy / 0103700

7 RIVER PATROL CRAFT (PBR)

DILIGENTE PF 121 (ex-LR 121)
JUAN LUCIO PF 122
ALFONSO VARGAS PF 123
FRITZ HAGAILE PF 124

VENGADORA PF 125 (ex-LR 125)
HUMBERTO CORTEZ PF 126
CARLOS GALINDO PF 128

Comment: All between 31 and 40 tons. Various designs and ages, but all are armed with two 12.7 mm MGs and most have 7.62 mm MGs as well.



VENGADORA (old number) 2000, Colombian Navy / 0103701

20 DELFIN CLASS (INSHORE PATROL CRAFT) (PBI)

BP 421-429 BP 431 BP 434-442 BP 446

Displacement, tons: 5.4 full load
Dimensions, feet (metres): 25.9 x 8.5 x 3.1 (7.9 x 2.6 x 0.9)
Main machinery: 2 Evinrude outboards, 400 hp (294 kW)
Speed, knots: 40
Complement: 4
Guns: 1—12.7 mm MG 2—7.62 mm MGs.
Radars: Surface search: Raytheon; I-band.

Comment: First two built by Mako Marine, Miami and delivered in December 1992. Remainder acquired locally from 1993-94. Names were dropped and BP pennant numbers assigned in 2006.



DELFIN CLASS 6/2001, Maritime Photographic / 0114512

0 + 4 DAMEN STAN PATROL 4207 (PB)

Name	No	Builders	Commissioned
—	—	Cotecmar, Cartagena	2011
—	—	Cotecmar, Cartagena	2012
—	—	Cotecmar, Cartagena	2013
—	—	Cotecmar, Cartagena	2014

Displacement, tons: 205

Dimensions, feet (metres): 140.4 × 23.3 × 8.3 (42.8 × 7.11 × 2.52)

Main machinery: 2 Caterpillar 3516B DI-TA; 5,600 hp (4.17 MW); 2 cp props

Speed, knots: 26

Complement: 14

Guns: To be announced.

Comment: Contract expected to be signed with Damen Shipyards, Gorinchem for construction of four Damen Stan Patrol 4207 offshore patrol craft. Likely to be built under licence by Cotecmar, Cartagena. Steel hull with aluminium superstructure. Capable of carrying a 7 m RIB. Similar craft in service in Barbados and Jamaica Coast Guards.



STAN PATROL 4207 (Jamaica colours)

11/2006, Martyn Westers / 1164414

4 + 10 MIDNIGHT EXPRESS INTERCEPT CRAFT (PBF)

Displacement, tons: 6 full load

Dimensions, feet (metres): 39.2 × 9.5 × 1.7 (11.9 × 2.9 × 0.5)

Main machinery: 3 outboard motors; 1,050 hp (782 kW)

Speed, knots: 55

Complement: 4

Guns: 1—7.62 mm MG.

Comment: Glass-fibre construction. First four ordered from Midnight Express, Fort Lauderdale, on 20 December 2006. A further 10 likely to be ordered in 2009. The detailed configuration has not been confirmed; propulsion may be inboard diesel engines with surface drives.

AMPHIBIOUS FORCES

Notes: Procurement of a new class of LCUs to replace the current inventory is under consideration.

169 RIVER ASSAULT BOATS (RAB) (PBR)

Comment: There are about 250 river assault craft. These include some 100 Eduardoño 7.8 m E26A and E23B class, an unknown number of 6.8 m Boston Whaler craft and approximately 125 Pirañas 7.5 m craft. Typical armament includes 1—12.7 mm MG and 2—7.62 mm MGs.



ASSAULT BOAT

2000, Colombian Navy / 0103703

1 LCM 8

BAHÍA ZAPZURRO LD 240

Displacement, tons: 125 full load

Dimensions, feet (metres): 71.9 × 20.7 × 9.9 (21.9 × 6.3 × 3)

Main machinery: 1 diesel; 285 hp (213 kW); 1 shaft

Speed, knots: 12

Complement: 5

Military lift: 60 tons or 150 troops

Comment: Transferred in 1993.



BAHÍA ZAPZURRO

6/1999, Colombian Navy / 0056832

7 MORROSQUILLO (LCU 1466A) CLASS (LCU)

MORROSQUILLO LD 246

BAHÍA HONDA LD 248

BAHÍA PORTETE LD 249

BAHÍA SOLANO LD 251

BAHÍA CUPICA LD 252

BAHÍA UTRIA LD 253

BAHÍA MALAGA LD 254

Displacement, tons: 347 full load

Dimensions, feet (metres): 119 × 34 × 6 (36.3 × 10.4 × 1.8)

Main machinery: 3 Detroit 6-71 diesels; 522 hp (389 kW) sustained, 3 shafts

Speed, knots: 7. Range, n miles: 700 at 7 kt

Complement: 14

Cargo capacity: 167 tons or 300 troops

Guns: 2—12.7 mm MGs.

Radars: Navigation: Raytheon, I-band.

Comment: Former US Army craft built in 1954 and transferred in 1991 and 1992 with new engines. Used as inshore transports. Speed quoted is fully laden. Numbers split between each coast.



MORROSQUILLO

1/1993 / 0056833

SURVEY SHIPS

Notes: There are also three small buoy tenders: *Abadía Médez* BB 33, *Ciénaga de Mayorquín* BB 34, and *Isla Palma* BB 35.

2 PROVIDENCIA CLASS (AGOR)

Name	No	Builders	Commissioned
PROVIDENCIA	BO 155	Martin Jansen SY, Leer	24 July 1981
MALPELO	BO 156	Martin Jansen SY, Leer	24 July 1981

Displacement, tons: 1,157 full load

Dimensions, feet (metres): 164.3 × 32.8 × 13.1 (50.3 × 10 × 4)

Main machinery: 2 MAN-Augsburg diesels; 1,570 hp(m) (1.15 MW); 1 Kort nozzle prop; bow thruster

Speed, knots: 13. Range, n miles: 15,000 at 12 kt

Complement: 48 (5 officers) plus 6 scientists

Radars: Navigation: Raytheon; I-band.

Comment: Both launched in January 1981. *Malpelo* employed on fishery research and *Providencia* on geophysical research. Both are operated by DIMAR, the naval authority in charge of hydrographic, pilotage, navigational and ports services. Painted white.



MALPELO

2000, Colombian Navy / 0103704

176 Colombia/Survey ships — Auxiliaries

1 BUOY TENDER

Name	No	Builders	Commissioned
QUINDIO (ex-YFR 443)	BH 153	Niagara SB Corporation	11 Nov 1943

Displacement, tons: 600 full load
 Dimensions, feet (metres): 131 × 29.8 × 9 (40 × 9.1 × 2.7)
 Main machinery: 2 Union diesels, 600 hp (448 kW); 2 shafts
 Speed, knots: 10
 Complement: 17 (2 officers)

Comment: Transport ship transferred by lease from the US in July 1964 and by sale on 31 March 1979. Used as a buoy tender



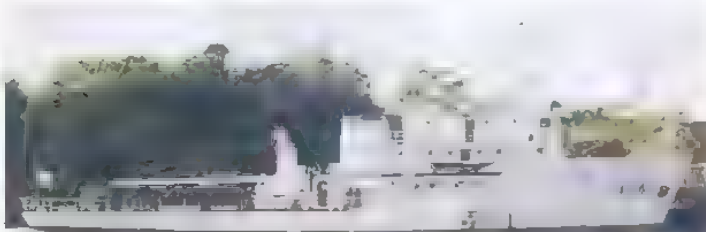
QUINDIO 2000, Colombian Navy / 0103705

1 SURVEY SHIP (AGSC)

Name	No	Builders	Commissioned
GORGONA	BB 31 (ex-BO 154, ex-BO 161, ex-FB 161)	Lidingoverken, Sweden	28 May 1954

Displacement, tons: 574 full load
 Dimensions, feet (metres): 135 × 29.5 × 9.3 (41.2 × 9 × 2.8)
 Main machinery: 2 Wärtsilä Nonah diesels; 910 hp(m) (669 kW); 2 shafts
 Speed, knots: 13
 Complement: 45 (2 officers)

Comment: Paid off in 1982 but after a complete overhaul at Cartagena naval base was back in service in late 1992. A further major refit took place 2005–06. This included work on the hull and possible changes to the superstructure.



GORGONA (old number) 1993, Colombian Navy / 0056835

TRAINING SHIPS

Notes: There are also five sail training yachts *Comodoro YT 230*, *Tridente YT 231* and *Cristina YT 232*, *Albatros YT 233*, *Poseidon YT 234*.

1 SAIL TRAINING SHIP (AXS)

Name	No	Builders	Launched	Commissioned
GLORIA	BE 160	AT Celaya, Bilbao	6 Sep 1966	16 May 1969

Displacement, tons: 1,250 full load
 Dimensions, feet (metres): 249.3 oa; 211.9 wl; × 34.8 × 21.7 (76; 64.6 × 10.6 × 6.6)
 Main machinery: 1 auxiliary diesel; 530 hp(m) (389 kW); 1 shaft
 Speed, knots: 10.5
 Complement: 51 (10 officers) plus 88 trainees

Comment: Sail training ship. Barque rigged. Hull is entirely welded. Sail area, 1,675 sq yds (1,400 sq m). Endurance, 60 days. Similar to Ecuador, Mexico and Venezuelan vessels



GLORIA 9/2006, Camil Busquets | Vilanova / 1164399

AUXILIARIES

Notes: (1) There are nine ex-US 11 m armoured troop carriers TNT 381–389
 (2) Eleven craft are employed on general administrative duties: *Orca* BA 03, *Halcan* BA 04, *Ara* BA 05, *Almirante Ill* BA 06, *Cano del Oro* BA 07, BA 08, *Escafandra* BA 11, BA 12–15.

2 LUNEBURG CLASS (TYPE 701) (SUPPORT SHIPS) (AGP)

Name	No	Builders	Commissioned
CARTAGENA DE INDIAS (ex-Lunenburg)	BL 161 (ex-A 1411)	Flensburger	31 Jan 1966
BUENAVENTURA (ex-Nienburg)	BL 162 (ex-A 1416)	Bremer Vulcan	1 Aug 1968

Displacement, tons: 3,483 full load
 Dimensions, feet (metres): 341.2 × 43.3 × 13.8 (104 × 13.2 × 4.2)
 Main machinery: 2 MTU MD 16V 538 TB90 diesels; 6,000 hp(m) (4.1 MW) sustained; 2 shafts, cp props, bow thruster
 Speed, knots: 16. Range, n miles: 3,200 at 14 kt
 Complement: 70 (9 officers)
 Cargo capacity: 1,100 tons
 Guns: 4 Bofors 40 mm/70 (2 twin).
 Radars: Navigation: I-band.

Comment: BL 161 paid off from the German Navy in 1994. Taken in hand for refit by HDW, Kiel in August 1997. Recommissioned on 2 November 1997. Guns were cocooned in German service. The ship acts as a depot ship for patrol craft. BL 162 paid off and was transferred the same day on 27 March 1998. She is now based at Málaga. Both ships are to be refitted with helicopter decks in order to operate Bell 412 helicopters.



BUENAVENTURA 9/2007, US Navy / 1335713

8 TRANSPORTS

BOCACCHICA TM 501	SIRIUS TM 504 (ex-TM 62)	MÓVIL I TM 509
ARTURUS TM 502	CALIMA TM 507 (ex-TM 49)	MÓVIL II TM 510
PEDRO DAVID SALAS TM 503 (ex-TM 101)	BAHIA SANTA CATALINA TM 508	

Comment: Small supply ships of various characteristics from 30 tons to 3 tons. Some have transferred to an inshore patrol craft role



CALIMA (old number) 6/1999, Colombian Navy / 0056838

8 BAY SUPPORT CRAFT

PLAYA BLANCA TG 542	PEGASSO TG 547
TIERRA BOMBA TG 543	LANCHA AMBULANCIA TG 556
BELL SALTER TG 544	ARMADA I TG 557
ORION TG 546	JUANCHACOTG 558

Comment: Mostly small craft of less than 10 tons. The largest is TG 544 which is 87 tons and has previously been listed as an Admiral's Yacht.



BELL SALTER 8/1998, Colombian Navy / 0056840

7 RIVER SUPPORT CRAFT (YTD/YAG)

FILIGONIO HICHAMÓN NF 601 (ex-NF 141)
 SSIM MANUEL A MOYAR NF 602 (ex-NF 144)
 IGARAPARANA NF 603 (ex-RR 92, LR 92)
 SSIM JULIO CORREA HERNÁNDEZ NF 604 (ex-NF 143)
 MANACACIAS NF 605 (ex-RR 95, LR 95)
 COTUHE NF 606 (ex-RR 98)
 ARIARI NF 609 (ex-PF-127, RR 97)

Comment: Miscellaneous service craft of unknown characteristics.

1 FLOATING DOCK (ASL)

MAYOR JAIME ARIAS ARANGO DF 170 (ex-DF 41, ex-170)

Comment: Capacity of 165 tons, length 140 ft (42.7 m), displacement 700 tons. Used as a non-self-propelled depot ship for the midget submarines.



MAYOR JAIME ARIAS ARANGO

6/2001, Maritime Photographic / 0114513

TUGS

15 TUGS (YTL)

ANDAGOYA RM 75
 JOSUE ALVAREZ RB 76
 DON VIZO RB 77
 PORTETE RB 78
 MALDONADO RB 79
 CIENAGA DE SAN JUAN RB 80
 CAPITÁN CASTRO RF 81
 JOVES HALLO RF 83

MIGUEL SILVA RF 85
 CAPITAN RIGOBERTO GIRALDO RF 88
 VLADIMIR VALEK RF 87
 TENIENTE LUIS BERNAL RF 88
 TENIENTE ALEJANDRO BALDOMERO SALGADO RF 91
 SEJERI RF 93
 INIRIDA RF 96

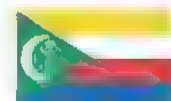
Comment: River craft of various types described as 'Remolcador Bahia (RB), Fluvial (RF) or Mar (RM)'. Used for transport and ferry duties in harbours and rivers. RF 86 modified as a support vessel and armed with 12.7 mm MGs.



JOSUÉ ALVAREZ

6/1999, Colombian Navy / 0058841

Comoros



Country Overview

A former French Overseas Territory, the Union of the Comoros declared independence on 6 July 1975. The islands are situated at the northern entrance to the Mozambique Channel, between the African mainland and the island of Madagascar. There are three islands: Njazidja (formerly known as Grande Comore), Mwali (Mohéli),

and Nzwani (Anjouan). A fourth island in the archipelago, Mayotte (Mahoré), is formally claimed by Comoros but chose to remain a French dependency. The nation has been beset by instability during most of its life and, despite broad acceptance in 2002 of a new constitution, which proposed a degree of autonomy for the three islands and resolution of political differences with Anjouan, re-unification remains fragile. The largest town, capital

and principal port is Moroni on south-western Njazidja. An archipelagic state, territorial seas (12 n miles) are claimed. A 200 n mile EEZ has been claimed but the limits are not fully defined

■ ■ ■ ■ ■
 Moroni.

PATROL FORCES

2 YAMAYURI CLASS (PBI)

Name	No	Builders	Commissioned
KARTHALA	—	Ishihara Dockyard Co Ltd	Oct 1981
NTRINGUI	—	Ishihara Dockyard Co Ltd	Oct 1981

Displacement, tons: 28.5 standard; 41 full load
Dimensions, feet (metres): 59 x 14.1 x 3.6 (18 x 4.3 x 1.1)
Main machinery: 2 Nissan RD10TA06 diesels; 900 hp(m) (661 kW) maximum; 2 shafts
Speed, knots: 20
Complement: 20
Guns: 2—12.7 mm (twin) MGs.
Radars: Surface search: FRA 10; I-band

Comment: These two patrol vessels of the Coast Guard type (steel-hulled), supplied under Japanese government co-operation plan. Used for fishery protection services. Operational status doubtful.



KARTHALA

10/1981, Ishihara DY / 0058842

Democratic Republic of Congo



Country Overview

Formerly known as the Belgian Congo until it became independent in 1960, the Democratic Republic of the Congo was known as Zaire from 1971–97. With an area of 905,568 square miles, it has borders to the north with the Republic of the Congo. A 22 n mile coastline with the Atlantic Ocean separates Angola, to the south, from its Cabinda province. The capital and largest city is Kinshasa (formerly Léopoldville) while the principal ports are Matadi and Boma, on the lower Congo, and Banana, at its mouth. Territorial seas (12 n miles) are claimed. An EEZ has reportedly been claimed but the details have not been published. A cease fire in the civil war was declared in September 1999 although some fighting continued

until January 2001. In July 2003, the Transitional National Government was established as part of the evolving peace process.

Headquarters Appointments

Chief of the Navy:
 Vice Admiral Didier Etumba Longila

Personnel

(a) 2009: 6,700 (1,000 officers)
 (b) Voluntary service

Organisation and Bases

There are five regional commands and 19 naval bases as follows:

- 1 Region (Lakes Tanganyika and Mweru): Kalemie (11 NB) (HQ), Moloro (12 NB), Pweto (13 NB), Uvira (14 NB)
- 2 Region (Middle Congo and tributaries): Kinshasha (21 NB) (HQ), Bolobo (22 NB), Bandundu (23 NB), Ilebo (24 NB)
- 3 Region (Lower Congo): Banana (31 NB) (HQ), Boma (32 NB), Matadi (33 NB)
- 4 Region (Higher Congo and tributaries): Mbandaka (41 NB) (HQ), Zongo (42 NB), Bumba (43 NB), Kisangani (44 NB)
- 5 Region (Lakes Kivu, Edward and Albert): Goma (51 NB) (HQ), Bukavu (52 NB), Vitshumbi (53 NB), Mahagi (54 NB)

PATROL FORCES

Notes: Some barges and small patrol craft have been mounted with guns.

1 SHANGHAI II (TYPE 062) CLASS (FAST ATTACK CRAFT–GUN) (PC)

102

Displacement, tons: 113 standard; 134 full load

Dimensions, feet (metres): 127.3 × 17.7 × 5.6
(38.8 × 5.4 × 1.7)

Main machinery: 2 Type L-12V-180 diesels; 2,400 hp (m)
(1.76 MW) (forward); 2 Type 12-D-6 diesels, 1,820 hp (m)
(1.34 MW) (aft); 4 shafts

Speed, knots: 30. **Range, n miles:** 700 at 16.5 kt on 1 engine

Complement: 38

Guns: 4 China 37 mm/63 (2 twin); 180 rds/min to 8.5 km
(4.8 n miles); weight of shell 1.42 kg.

4 USSR 25 mm/60 (2 twin); 270 rds/min to 3 km (1.6 n miles)
anti-aircraft; weight of shell 0.34 kg.

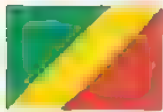
Radars: Surface search: Furuno, I-band

Comment: Four craft were originally delivered from China 1976–78. Two of these were replaced in 1987. All craft were reported derelict after the civil war but, following the refurbishment of 102, more may be restored to operational use.



SHANGHAI II 102

3/2005, M Declerck / 1151082



Country Overview

Formerly known as the Middle Congo, part of a French colony, the Republic of Congo gained independence in 1960. An unstable political period followed, culminating in civil war between 1997 and 2000 when a Transitional Council was created. A new constitution was approved by referendum in 2002. With an area of 132,000 square miles, it is situated in west-central Africa and has borders to the north

with Cameroon and the Central African Republic, to the south-west with Angola (Cabinda enclave) and to the west with Gabon. The River Congo, a major transport artery, provides the southern and much of the eastern border with the Democratic Republic of Congo (formerly Zaire). It has a 91 n mile coastline with the Atlantic Ocean. Brazzaville is the capital and largest city while Pointe Noire is the principal port and centre of the offshore oil industry. Congo has not claimed an EEZ but is one of a few

coastal states which claims a 200 n mile territorial sea. The navy consists mainly of riverine craft but acquisition of offshore patrol vessels to protect offshore resources is a possibility.

Organisation

There are two commands: Brazzaville (riverine) and Pointe Noire (coastal).

Bases

Pointe Noire, Brazzaville, Impfondo.

Headquarters Appointments

Chief of the Navy:
Capitaine de Vaisseau Andre
Bouagnabea Moundanza

Congo-Brazzaville



Country Overview

The Cook Islands are a South Pacific island group which became self-governing in 1965; defence and external affairs remain the responsibility of the New Zealand government. Situated some 2,430 n miles south of Hawaii, they comprise

two groups of widely scattered islands. The Southern Group includes Rarotonga, Aitutaki, Atiu, Mangaia, Mauke, Mitiaro, Manuae and Takoua. The Northern Group is composed of low-lying coral islands and includes Pukapuka, Tongareva (also called Penrhyn), Manihiki, Palmerston, Rakahanga, Suvarrow and Nassau.

The port of Avarua on the island of Rarotonga is the administrative centre. Territorial seas (12 n miles) are claimed. An Exclusive Economic Zone (EEZ) (200 n miles) is claimed but limits have not been fully defined by boundary agreements.

Headquarters Appointments

Maritime Commander:
Superintendent Taivero Isamaela

Bases

Avatiu Wharf, Rarotonga

Cook Islands

PATROL FORCES

1 PACIFIC CLASS (LARGE PATROL CRAFT) (PB)

Name	Builders	Commissioned
TE KUKUPA	Australian Shipbuilding Industries	1 Sep 1989

Displacement, tons: 162 full load

Dimensions, feet (metres): 103.3 × 26.6 × 6.9 (31.6 × 8.1 × 2.1)

Main machinery: 2 Caterpillar 3516TA diesels, 2,820 hp (2.1 MW) sustained; 2 shafts

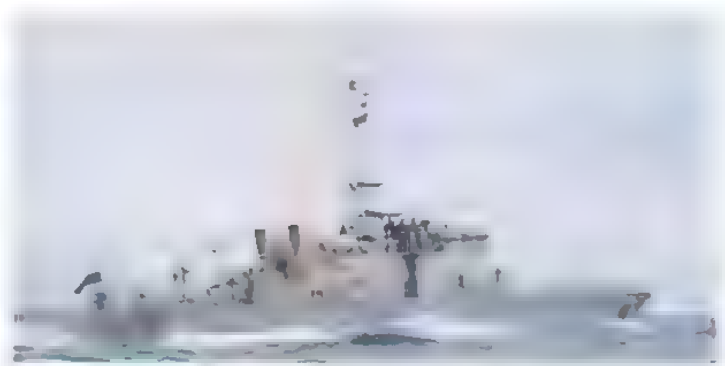
Speed, knots: 20

Range, n miles: 2,500 at 12 kt

Complement: 17 (3 officers)

Radars: Surface search: Furuno 1011; I-band.

Comment: Laid down 16 May 1988 and launched 27 January 1989. Cost, training and support provided by Australia under defence co-operation. Acceptance date was 9 March 1989 but the handover was deferred another six months because of the change in local government. Has Furuno D/F equipment, SATNAV and a Stress seaboot with a 40 hp outboard engine. A half-life refit was conducted in 1997 and, following the announcement by the Australian government to extend the Pacific Patrol Boat programme to a 30 year ship life, *Te Kukupa* undertook a life extension refit at Townsville in 2006.



TE KUKUPA

8/2007, John Mortimer / 1165718

Costa Rica

SERVICIO NACIONAL GUARDACOSTAS

Country Overview

The Republic of Costa Rica is an independent Central American State which lies between Nicaragua to the north and Panama to the south-east. With an area of 19,652 square miles, it has a 584 n mile coastline with the North Pacific Ocean and of 112 n

miles with the Caribbean. The uninhabited Cocos Island, about 290 n miles southwest of Burrica Point, is also under Costa Rican sovereignty. The country's capital is San José while other important cities are the Caribbean port of Limón and the Pacific port of Puntarenas. Territorial seas (12 n miles) are claimed. While a 200 n mile

EEZ has been claimed, the limits have only been partly defined by boundary agreements.

Personnel

(a) 2009: 350 officers and men
(b) Voluntary service

Bases

Pacific: Golfito, Punta Arenas, Cusajiquil, Quepos.
Atlantic: Limón, Moín

PATROL FORCES

Notes: Three Boston Whalers, *Tauro* (20-1), *Villa Mar* (20-2) and *Cocori* (22-1) are operational. The first of six Costa Rican-built Apex RIBs, *Escorpion* (24-1), entered service in 2001.



APEX RIB

5/2001, Julio Montes / 0109935

1 SWIFT 105 ft CLASS (FAST PATROL CRAFT) (PB)

Name	No	Builders	Commissioned
ISLA DEL COCO	105-1 (ex-1055)	Swiftships, Morgan City	Feb 1978

Displacement, tons: 118 full load
 Dimensions, feet (metres): 105 x 23.3 x 7.2 (32 x 7.1 x 2.2)
 Main machinery: 3 MTU 12V 1163 TC92 diesels; 10,520 hp(m) (7.74 MW); 3 shafts
 Speed, knots: 33. Range, n miles: 1,200 at 18 kt; 2,000 at 12 kt
 Complement: 17 (3 officers)
 Guns: 1—12.7 mm MG. 4—7.62 mm (2 twin) MGs. 1—60 mm mortar.
 Radars: Navigation: Furuno; I-band.

Comment: Aluminium construction. Refitted in 1985–86 under FMS funding. The twin MGs are fitted abaft the bridge and the mortar is on the stern. Based at Punta Arenas.



ISLA DEL COCO (old number)

2/1989 / 0056844

3 POINT CLASS (COASTAL PATROL CRAFT) (PB)

Name	No	Builders	Commissioned
SANTAMARIA (ex-Point Camden)	82-2 (ex-82373)	J Martinac, Tacoma	4 May 1970
JUAN RAFAEL MORA (ex-Point Chico)	82-3 (ex-82339)	US Coast Guard Yard, Curtis Bay	29 Oct 1962
PANCHA CARRASCO (ex-Point Bridge)	82-4 (ex-82338)	US Coast Guard Yard, Curtis Bay	10 Oct 1962

Displacement, tons: 67 full load
 Dimensions, feet (metres): 83 x 17.2 x 5.8 (25.3 x 5.2 x 1.8)
 Main machinery: 2 Caterpillar 3412 diesels, 1,600 hp (1.19 MW); 2 shafts
 Speed, knots: 23. Range, n miles: 1,200 at 8 kt
 Complement: 10
 Guns: 2—12.7 mm MGs.
 Radars: Navigation: Raytheon SPS-64/Hughes SPS-73; I-band

Comment: First transferred from USCG on 16 December 1999. A second transferred on 22 June 2001 and third on 28 September 2001



SANTAMARIA

2/2000, Julio Montes / 0109937

2 SWIFT 65 ft CLASS (COASTAL PATROL CRAFT) (PB)

CABO BLANCO 65-3 ISLA BURICA 65-4

Displacement, tons: 35 full load
 Dimensions, feet (metres): 65.5 x 18.4 x 6.6 (20 x 5.6 x 2)
 Main machinery: 2 MTU 8V 331 TC92 diesels; 1,770 hp(m) (1.3 MW); 2 shafts
 Speed, knots: 23
 Range, n miles: 500 at 18 kt
 Complement: 7 (2 officers)
 Guns: 1—12.7 mm MG. 4—7.62 mm (2 twin) MGs. 1—60 mm mortar.
 Radars: Navigation: Furuno; I-band.

Comment: Built by Swiftships, Morgan City in 1979. Refitted 1985–86 under FMS funding. 65-3 is based at Limon



CABO BLANCO

2/2008, Marco Ghiglino / 1335715

1 SWIFT 36 ft CLASS (INSHORE PATROL CRAFT) (PB)

PUERTO QUEPOS (ex-Telamanca) 36-1

Displacement, tons: 11 full load
 Dimensions, feet (metres): 36 x 10 x 2.6 (11 x 3.1 x 0.8)
 Main machinery: 2 Detroit diesels; 500 hp (373 kW); 2 shafts
 Speed, knots: 24
 Range, n miles: 250 at 18 kt
 Complement: 4 (1 officer)
 Guns: 1—12.7 mm MG. 1—60 mm mortar
 Radars: Navigation: Raytheon 1900; I-band.

Comment: Built by Swiftships, Morgan City and completed in March 1986.



PUERTO QUEPOS

2/2000, Julio Montes / 0109936

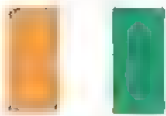
1 SWIFT 42 ft CLASS (INSHORE PATROL CRAFT) (PB)

PRIMERA DAMA (ex-Donna Margarita, ex-Puntarenas 42-1)

Displacement, tons: 11 full load
 Dimensions, feet (metres): 42.0 x 14.1 x 2.95 (12.8 x 4.3 x 0.9)
 Main machinery: 2 Detroit diesels; 700 hp (520 kW); 2 shafts
 Speed, knots: 33
 Range, n miles: 450 at 18 kt
 Complement: 4 (1 officer)

Comment: Completed in 1986. Formerly used as a hospital craft.

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Cote d'Ivoire

MARINE CÔTE D'IVOIRE

Country Overview

Formerly a French colony, The Republic of Côte d'Ivoire gained full independence in 1960. Located in west Africa, the country has an area of 133,425 square miles and a 281 n mile coastline with the Gulf of Guinea. It is bordered to the east by Ghana and to the west by Liberia and Guinea. The capital is Yamoussoukro while the former

capital, Abidjan, is the largest city, principal port and commercial centre. A further port at San Pedro is linked to Mali by rail. Territorial seas (12 n miles) are claimed. A 200 n mile EEZ has been claimed but the limits have not been defined by boundary agreements.

Following the rebellion of September 2002, a Government of National Conciliation has restored a level of stability

although internal tensions continue. While the navy remains unchanged, operational effectiveness is likely to have suffered.

Navies

Use made of ports at Lacodjo (Abidjan), Sassandra, Tabouand San-Pedro

Headquarters Appointments

Chief of Naval Staff
Rear Admiral Vagba Faussignaux

Personnel

2009: 950 (75 officers)

PATROL FORCES

1 PATRA CLASS (LARGE PATROL CRAFT) (PBO)

Name	No	Builders	Launched	Commissioned
L'INTREPIDE	—	Auroux, Arcachon	21 July 1978	6 Oct 1978

Displacement, tons: 1475 full load

Dimensions, feet (metres): 132.5 x 19.4 x 6.2 (40.4 x 5.9 x 1.6)

Main machinery: 2 SACM AGO 195 V12 CZSHR diesels; 4,340 hp(m) (3.19 MW) sustained; 2 shafts, cp props

Speed, knots: 26. Range, n miles: 1,750 at 10 kt, 750 at 20 kt

Complement: 19 (2 officers)

Guns: 1 Breda 40 mm/70. 1 Oerlikon 20 mm. 2—7.62 mm MGs

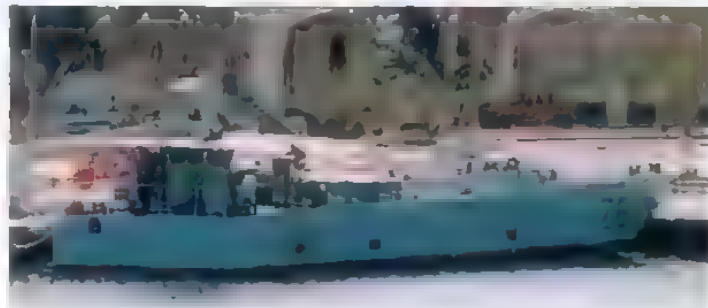
Radars: Surface search: Racal Decca 1226; I-band.

Comment: Of similar design to French Patra class. Laid down 7 July 1977. Patrol endurance of five days. SS-12M missiles are no longer carried. Sister ship *L'Ardent* decommissioned in 2003 to provide spares. Operational status doubtful.



PATRA CLASS

3/1994 / J080123



CTM (French colours)

6/1995 / 0012860

AFFAIRES MARITIMES

2 RODMAN 890 (PBR)

AMOUGNA AF 003 MONSEKELA AF 004

Dimensions, feet (metres): 29.2 x 9.8 x 3.6 (8.9 x 3 x 0.8)

Main machinery: 2 Volvo diesels; 300 hp(m) (220 kW); 2 shafts

Speed, knots: 28. Range, n miles: 150 at 25 kt

Complement: 3

Guns: 1—7.62 mm MG

Radars: Surface search. I-band.

Comment: Two craft delivered by Rodman in 1997. Employed on Fishery Protection duties.



AMOUGNA

6/1997, Rodman / 0583296

AUXILIARIES

Notes: (1) There are also some Rotork 412 craft supplied in 1980. Some are naval, some civilian.

(2) Two French harbour tugs *Merisier* and *Meronnier* were acquired in September 1998.

(3) A Yunnan class LCM *Atchan* may still be in limited service.

2 CTM (LCM)

ABY (ex-CTM 15) TIAGHA (ex-CTM 16)

Displacement, tons: 150 full load

Dimensions, feet (metres): 78 x 21 x 4.2 (23.8 x 6.4 x 1.3)

Main machinery: 2 Poyaud 520 V8 diesels; 225 hp(m) (165 kW); 2 shafts

Speed, knots: 9.5. Range, n miles: 350 at 8 kt

Complement: 6

Military lift: 48 tons

Comment: Transferred from France in March 1999. Built in about 1968. Bow ramps are fitted. Probably not operational.



Croatia

HRVATSKA RATNA MORNARICA

Country Overview

Formerly a constituent republic of the Federal Republic of Yugoslavia, Croatia declared its independence in 1991. With an area of 21,829 square miles, it is situated in south-east Europe in the Balkan Peninsula and bordered to the north by Slovenia and Hungary, to the east and south by Bosnia and Herzegovina and to the east by Montenegro. There are some 1,100 offshore islands and there is an overall coastline of 3,127 n miles with the Adriatic Sea on which Dubrovnik, Split, Ploče and Rijeka are the principal ports. The capital and largest city is Zagreb. Territorial waters (12 n miles) are claimed and an Ecological and Fishery Zone was declared in 2004.

Headquarters Appointments

Commander of the Navy: Commodore Ante Urlic
Commander, Fleet: Captain Merin Stosic

Personnel

2009: 1,850 (620 officers)

General

The Navy was established on 12 September 1991. The law to establish a Coast Guard, as a component of the navy, was passed on 3 October 2007. Its roles are to include fishery protection, counter-drugs and smuggling operations and environmental protection. Some naval units will almost certainly be transferred to the new force.

Bases and Organisation

Headquarters: Lora-Split
Main base: Split
Minor bases: Sibenik, Pula, Ploče, Lastovo, Mljet.

River Patrol Flotillas: Osijek (Drava) and Sisak (Sava)

The future organisation of the Croatian Navy is to include the naval flotilla, a coastguard and a battalion of marine infantry.

Coast Defence

Three mobile R6S 15 batteries on trucks are likely to be decommissioned. Total of 10 coastal artillery batteries. Jadran command system for coastal defence using Italian (Gem) built and US (More) radars installed in 2003. Sites include the islands of Vis, Lastovo, Dugi Otok and Mljet.

Naval Infantry

Headquarters in Split. A move to Dubrovnik is under consideration.

SUBMARINES

2 R-2 MALA CLASS
(TWO-MAN SWIMMER DELIVERY VEHICLES) (LDW)

Displacement, tons: 1.4
Dimensions, feet (metres): 16.1 × 4.6 × 4.3 (4.9 × 1.4 × 1.3)
Main machinery: 1 motor; 4.7 hp(m) (3.5 kW); 1 shaft
Speed, knots: 4.4
Range, n miles: 18 at 4.4 kt, 23 at 3.7 kt
Complement: 2
Mines: 250 kg of limpet mines.

Comment: Free-flood craft with the main motor, battery, navigation pod and electronic equipment housed in separate watertight cylinders. Instrumentation includes aircraft type gyrocompass, magnetic compass, depth gauge (with 0 to 100 m scale), echosounder, sonar and two searchlights. Constructed of light aluminium and plexiglass, it is fitted with fore and after hydroplanes, the tail being a conventional cruciform with a single rudder abaft the screw. Large perspex windows give a good all-round view. Operating depth, 60 m (196.9 ft), maximum. Two reported sold to Syria and one to Sweden.

Notes: There is also an R-1 craft which is 3.7 m long and capable of 2.8 kt down to 50 m. It has a range of 4 n miles. There may also be some locally built SDVs.



R-2 2/2002, RH-Alan / 0528428



R-1 2/2002, RH-Alan / 0528427

LAND-BASED MARITIME AIRCRAFT

Notes: Six Pilatus aircraft, four Mi-8 helicopters and one unmanned aircraft are used for fishery protection and counter-pollution tasks.

PATROL FORCES

Notes: (1) Procurement of four new offshore patrol vessels remains under consideration. The broad requirement is for a 78 m, 1,000 ton vessel capable of 25 kt.
 (2) Two RHIBs were acquired in 2008 for special forces. Their names are *Bijosek* and *Oluja*.

1 RIVER PATROL CRAFT (PBR)

OB 93

Displacement, tons: 48 full load
Dimensions, feet (metres): 63.6 × 14.4 × 3.3 (19.4 × 4.4 × 1.0)
Main machinery: 2 Torpeda B 536RM diesels; 280 hp (206 kW); 2 shafts
Speed, knots: 12
Complement: 9
Guns: 1—20 mm
Radars: Surface search/navigation, Furuno M 1942 Mk 2; I-band.

Comment: Former minesweeper launched in 1971 at Mačvanska Mitrovnica. Used as a river patrol vessel. Based in Osijek on River Drava.



OB 93 10/2007, Croatian Navy / 1170102

1 KONČAR (TYPE R-02) CLASS
(FAST ATTACK CRAFT—MISSILE) (PTGF)

Name	No	Builders	Launched	Commissioned
SIBENIK (ex-Vlado Četković)	RTOP 21 (ex-402)	Tito SY, Kraljevica	20 Aug 1977	Mar 1978

Displacement, tons: 264 full load
Dimensions, feet (metres): 150.3 × 27.6 × 9.8 (45.8 × 8.4 × 3.0)
Main machinery: CODAG; 2 RR Proteus 52-M558 gas turbines, 7,200 hp (5.37 MW) sustained; 2 MTU 16V 538 TB91 diesels; 7,200 hp(m) (5.29 MW) sustained; 4 shafts; cp props
Speed, knots: 38, 23 (diesels)
Range, n miles: 500 at 35 kt; 880 at 23 kt (diesels)
Complement: 31 (5 officers)

Missiles: SSM. 4 Saab RBS 15B; active radar homing to 70 km (37.8 n miles) at 0.8 Mach; warhead 83 kg
Guns: 1 Bofors 57 mm/70; 200 rds/min to 17 km (9.3 n miles); weight of shell 2.4 kg
 1—30 mm/65 AK 630M, 6 barrels, 3,000 rds/min to 4 km
Countermeasures: Decoys: 2 Wallop Barricade double layer chaff launchers.
Weapons control: PEAB 9LV 202 GFCS.
Radars: Surface search: Decca 1226; I-band.
Fire control: PhilipsTAB; I/J-band.

Programmes: Type name, *Raketna Topovnjaca*. Recommissioned into the Croatian Navy on 28 September 1991. Others of the class serve with the Yugoslav Navy.
Modernisation: The original Styx missiles have been replaced by RBS 15 and the after 57 mm gun by a 30 mm AK 630. Fire-control radar was updated in 1994 and a new surface search radar is to be acquired in 2008.
Structure: Aluminium superstructure. Designed by the Naval Shipping Institute in Zagreb based on Swedish Spica class with bridge amidships like Malaysian boats.
Operational: Based at Split. Reported operational.



SIBENIK 10/2004, Croatian Navy / 1170103

4 MIRNA (TYPE 140) CLASS
(FAST ATTACK CRAFT—PATROL) (PCM)

Name	No	Builders	Launched
NOVIGRAD (ex-Bioakovo)	OB 61 (ex-171)	Kraljevica Shipyard	18 Dec 1980
ŠOLTA (ex-Mukas)	OB 62 (ex-176)	Kraljevica Shipyard	11 Nov 1982
CAVTAT (ex-Vrlika, ex-Cer)	OB 63 (ex-180)	Kraljevica Shipyard	27 Sep 1984
HRVATSKA KOSTAJNICA (ex-Durmitor)	OB 64 (ex-181)	Kraljevica Shipyard	10 Jan 1985

Displacement, tons: 142 full load
Dimensions, feet (metres): 106.9 × 22 × 7.5 (32.6 × 6.7 × 2.3)
Main machinery: 2 SEMT-Pielstick 12 PA4 200 VGDS diesels; 5,292 hp(m) (3.89 MW) sustained; 2 shafts
Speed, knots: 25
Range, n miles: 600 at 24 kt
Complement: 19 (3 officers)

Missiles: SAM: 1 SA-N-5 Grail quad mounting; manual aiming; IR homing to 6 km (3.2 n miles) at 1.5 Mach; altitude to 2,500 m (8,000 ft); warhead 1.5 kg.
Guns: 1 Bofors 40 mm/70. 4 Hispano 20 mm (quad) Type M75. 2—128 mm illuminant launchers.
Depth charges: 8 DCs.
Countermeasures: Decoys: chaff launcher (PB 62).
Radars: Surface search. Racal Decca 1216C; I-band.
Sonars: Simrad SQS-3D/SF, active high frequency.

Comment: An electric outboard motor has been removed. Two were captured after sustaining heavy damage, one by a missile and the other by a torpedo fired from the island of Brač. Both fully repaired and all four are operational and display coast guard markings.



SOLTA 5/2007, Marco Ghigino / 1167916

2 HELSINKI CLASS (FAST ATTACK CRAFT—MISSILE) (PTGM)

Name	No	Builders	Commissioned
VUKOVAR (ex-Dulu)	RTOP 41 (ex-62)	Wärtsilä, Helsinki	1 Oct 1985
DUBROVNIK (ex-Kotika)	RTOP 42 (ex-63)	Wärtsilä, Helsinki	16 June 1986

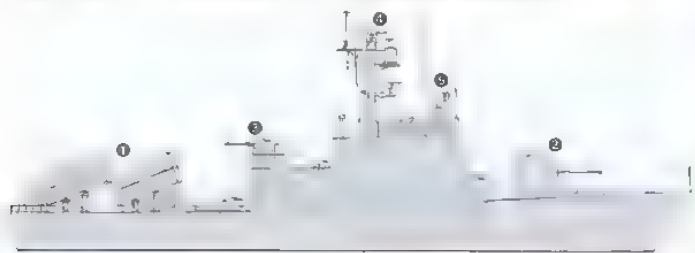
Displacement, tons: 280 standard; 300 full load
Dimensions, feet (metres): 147.6 × 29.2 × 9.9 (45 × 8.9 × 3)
Main machinery: 3 MTU 16V 538 TB92 diesels; 10,230 hp(m) (7.52 MW) sustained; 3 shafts
Speed, knots: 30
Complement: 30

Missiles: SSM. 8 Saab RBS 15 (inertial guidance; active radar homing to 70 km (37.8 n miles) at 0.8 Mach; warhead 150 kg, sea-skimmer.
Guns: 1 Bofors 57 mm/70 (200 rds/min to 17 km (9.3 n miles); weight of shell 2.4 kg. 6 103 mm rails for rocket illuminants. 2 Sako 23 mm/87 (twin).
Depth charges: 2 rails.
Countermeasures: Decoys: Phalax chaff and IR flare launcher
ESM: Argo, radar intercept
Weapons control: Saab EOS 400 optronic director.
Radars: Surface search. 9GR 600 (I-band).
Fire control: Philips 9LV 225 (J-band).
Navigation: Raytheon ARPA; I-band.
Sonars: Simrad Marine SS 304; high-resolution active scanning. Finnyards Sonac/PTA towed array; low frequency

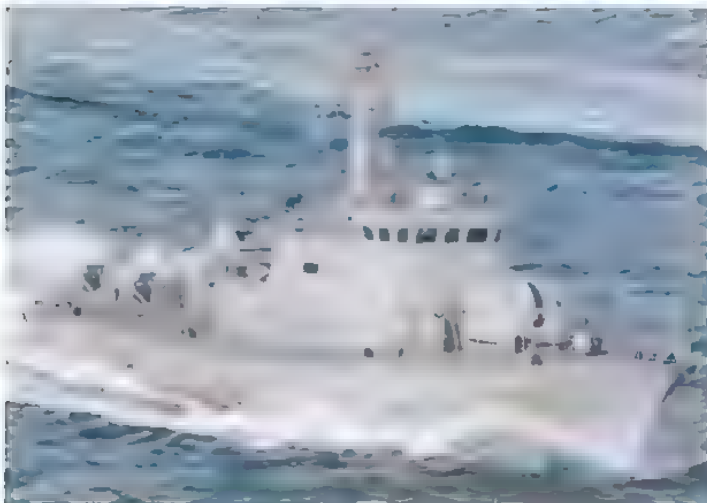
Programmes: Both ordered for the Finnish Navy on 13 January 1983. Decommissioned in 2007 and sold to Croatia in 2008. Details are as for ships in Finnish service and may be different.

Modernisation: A Sako barbette can take either twin 23 mm guns or a Sadral SAM launcher. The Sako mounting has replaced the original ZU version.

Structure: The light armament can be altered to suit the planned role. Missile racks can also be replaced by mine rails. Hull and superstructure of light alloy.



VUKOVAR (Scale 1 : 600), Ian Sturton / 1385453



VUKOVAR 6/2008, Croatian Navy / 1294947

2 KRALJ (TYPE R-03) CLASS (FSG)

Name	No	Builders	Launched	Commissioned
KRALJ PETAR KRESIMIR IV	RTOP 11	Kraljevic Shipyard	21 Mar 1992	7 July 1992
KRALJ DIMITAR ZVONIMIR	RTOP 12	Kraljevic Shipyard	30 Mar 2001	16 Sep 2001

Displacement, tons: 382 (11), 390 (12) full load
Dimensions, feet (metres): 177.8 × 28.2 × 11.8 (54.2 × 8.6 × 3.6)
Main machinery: 3 M 504B-2 diesels; 12,500 hp(m) (9.2 MW) sustained; 3 shafts
Speed, knots: 32 **Range, n miles:** 1,700 at 18 kt
Complement: 32 (5 officers)

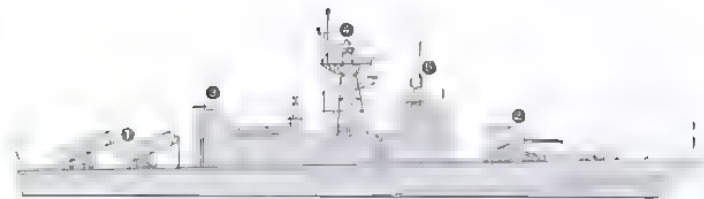
Missiles: SSM. 4 or 8 Saab RBS 15B (2 or 4 twin); active radar homing to 70 km (37.8 n miles) at 0.8 Mach; warhead 83 kg.
Guns: 1 Bofors 57 mm/70 (200 rds/min to 17 km (9.3 n miles); weight of shell 2.4 kg. Launchers for illuminants on side of mounting. 1–30 mm/65 AK 630M (6 barrels; 3,000 rds/min combined to 4 km).
Mines: 4 AIM-70 magnetic or 6 SAG-1 acoustic in lieu of SSMs.
Countermeasures: Decoys: 2 Wallop Barracade chaff/IR launchers.
Weapons control: PEAB 9LV 249 Mk 2 director. Kolonka for AK 630M
Radars: Surface search: Racal BT 502 (E/F-band).
Fire control: PEAB 9LV 249 Mk 2 (I/J-band).
Navigation: Racal 1290A; I-band.
Sonars: RIZ PP10M; hull-mounted, active search, high frequency.

Programmes: The building of this class (formerly called Kobra by NATO) was officially announced as 'suspended' in 1989 but was restarted in 1991. Designated as a missile Gunboat.

Modernisation: Both ships are to be modernised with new diesel engines, probably of German origin. The RBS 15 missiles are to be overhauled.

Structure: Derived from the Koncar class with a stretched hull and a new superstructure. Either missiles or mines may be carried. The second of class is 0.6 m longer than the first ship and incorporates modifications to the bridge structure.

Operational: Based at Split. The future of RTOP 12 is under consideration.



KRALJ DIMITAR ZVONIMIR (Scale 1 : 600), Ian Sturton / 1044094



KRALJ PETAR KRESIMIR IV 2/2002, Hrvatski Vojnik / 0528126



KRALJ PETAR KRESIMIR IV 10/2007, Croatian Navy / 1170104



KRALJ DIMITAR ZVONIMIR 10/2007, Croatian Navy / 1170105

AMPHIBIOUS FORCES

Notes: The former landing craft DSM 110, decommissioned in 2004, is reported to be undergoing refit at Marina Puna. It is likely to be re-activated as a transport ship although it is unclear whether this is to be under naval or civilian ownership.

2 CETINA (SILBA) CLASS (LCT/ML)

Name	No	Builders	Launched	Commissioned
CETINA	DBM 81	Brodosplit, Split	18 July 1982	19 Feb 1993
KRKA	DBV 82	Brodosplit, Split	17 Sep 1994	9 Mar 1995

Displacement, tons: 880 full load
Dimensions, feet (metres): 163.1 oa; 144 wl × 33.5 × 10.5 (49.7, 43.9 × 10.2 × 3.2)
Main machinery: 2 Alpha 10V23L-VO diesels; 3,100 hp(m) (2.28 MW) sustained; 2 shafts, cp props
Speed, knots: 12. **Range, n miles:** 1,200 at 12 kt
Complement: 27 (15 officers)
Military lift: 460 tons or 6 medium tanks or 7 APCs or 4–130 mm guns plus towing vehicles or 300 troops with equipment
Missiles: SAM. 1 SA-N-6 Grail quad mounting (Cetina).
Guns: 4–30 mm/65 (2 twin) AK 230 (Cetina). 2 (Krka) Hispano 20 mm M71.
Mines: SAG-2 (152 DBM 81, 114 DBM 82); MNS 90 (124 DBM 81, 92 DBM 82); AIM M70 (172 DBM 81, 52 DBM 82)
Radars: Surface search: Racal Decca 1290A; I-band

Comment: Ro-ro design with bow and stern ramps. Cetina's two 30 mm guns are either side of the bridge. Can be used for minelaying, transporting weapons or equipment and personnel. Krka is being used as a water carrier. Both are operational and based at Split.



CETINA 9/2005, Croatian Navy / 1170106



KRKA 6/2007, Freivogel Collection / 1167948

3 TYPE 21 (LCVP)

DJB 103 DJB 104 DJB 107

Displacement, tons: 38 full load
Dimensions, feet (metres): 69.9 x 14.1 x 5.2 (21.3 x 4.3 x 1.7)
Main machinery: 1 (2 in 103) MTU 12V 331 TCB1 diesel; 1,450 hp(m) (1.07 MW); 1 shaft (2 waterjets in 103)
Speed, knots: 21
Range, n miles: 320 at 18 kt
Complement: 6
Military lift: 6 tons or 40 troops
Guns: 1—20 mm M71, 1—30 mm grenade launcher.
Radars: Navigation: Decca 1213; I-band.

Comment: Built at Greben Shipyard 1987–88. DJB 103 upgraded with new main machinery in 1991



DJB 103 5/1997, Dario Vutjanic 00122/6

1 TYPE 22 (LCVPF)

DJC 106 (ex-624)

Displacement, tons: 42 full load
Dimensions, feet (metres): 73.2 x 15.7 x 3.3 (22.3 x 4.8 x 1)
Main machinery: 2 MTU MWM 604TDV8 diesels; 1,740 hp(m) (1.28 MW); 2 waterjets
Speed, knots: 35 **Range, n miles:** 320 at 22 kt
Complement: 8
Military lift: 40 troops or 15 tons cargo
Guns: 2 Hispano 20 mm, 1—30 mm grenade launcher.
Radars: Navigation: Decca 150; I-band.

Comment: Built at Greben Shipyard in 1987 of polyester and glass fibre



DJC 106 8/1998, N A Sifferlinger / 0036/489

MINE WARFARE FORCES

1 MPMB CLASS (MINEHUNTER—INSHORE) (MHI)

Name	No	Builders	Launched	Commissioned
KORCULA	LM 51	Greben, Vela Luka	22 Apr 2006	20 Apr 2007

Displacement, tons: 173 full load
Dimensions, feet (metres): 84.3 x 22.3 x 8.5 (25.7 x 6.8 x 2.6)
Main machinery: 2 MTU 8V 183TE62 diesels; 993 hp(m) (730 kW), 2 Holland Roerpropeller stern azimuth thrusters; bow thruster; 190 hp(m) (140 kW)
Speed, knots: 11 **Range, n miles:** 1,000 at 9 kt
Complement: 14 (3 officers)
Missiles: SAM: SA-N-10 (Iglia).
Guns: 1—20 mm M71
Countermeasures: Minehunting: 1 Super Sea Rover (Benthos), Minesweeping, MDL3 mechanical sweep.
Radars: Navigation: Kelvin Hughes 5000 ARPA, NINAS Mod.
Sonars: Reson mine avoidance, active, high frequency, Klein 2000 side scan; active for route survey; high frequency

Comment: Ordered in 1995 The ship has a trawler appearance with a gun on the forecastle and a hydraulic crane on the sweep deck. GRP hull. Due to a shortage of funds, building had stopped by late 1999 but was later revived. Became fully operational in mid-2008. Further ships, possibly to a modified design, are under consideration.



KORCULA 9/2007, Croatian Navy / 1170101

TRAINING SHIPS

Notes: A sail training ship is under construction at Greben Shipyard. Of GRP construction, the vessel is to replace *Jadran* (in Montenegro) and is to be available for both naval and maritime schools. The name is likely to be *Vila Velebita*.

1 MOMA (PROJECT 861) CLASS (AX)

Name	No	Builders	Commissioned
ANDRIJA MOHOROVIČIĆ	BS 72 (ex-PH 33)	Northern Shipyard, Gdansk	1972

Displacement, tons: 1,514 full load
Dimensions, feet (metres): 240.5 x 36.7 x 12.8 (73.3 x 11.2 x 3.9)
Main machinery: 2 Zgoda-Sulzer 6TD48 diesels, 3,300 hp(m) (2.4 MW) sustained; 2 shafts; cp props
Speed, knots: 17
Range, n miles: 9,000 at 11 kt
Complement: 27 (4 officers)
Radars: Navigation: Racal Decca BT 502; I-band

Comment: Built in 1971 for the Yugoslav Navy as a survey vessel. Based at Split. Has a 5-ton crane and carries a launch. Used as the Naval Academy training ship.



ANDRIJA MOHOROVIČIĆ 1/2007, Croatian Navy / 1170160

AUXILIARIES

Notes: In addition there are two harbour tugs LR-71 and LR-73, two diving tenders BRM-81 and BRM-83, auxiliary transport ship PDS-713, five harbour transport boats BMT-1/5, and two yachts Učka (ex-Fodgorika) and Jadranka (ex-civilian Smile). *Jadranka* was involved in a grounding incident in April 2006.



LR 71 12/2006, Croatian Navy / 1170099



BRM 83 2/2007, Croatian Navy / 133531/4

1 SPASILAC CLASS (ASR)

Name *FAUST VRANČIĆ* **No** BS 73 (ex-PS 12) **Builders** Tito Shipyard, Belgrade **Commissioned** 10 Sep 1976
(*ex-Spasilac*)

Displacement, tons: 1,590 full load
Dimensions, feet (metres): 182 x 39.4 x 12.5 (55.5 x 12 x 3.8)
Main machinery: 2 diesels; 4,340 hp(m) (3.19 MW); 2 shafts; Kort nozzle props; bow thruster
Speed, knots: 13
Range, n miles, 4,000 at 12 kt
Complement: 28 (4 officers)
Cargo capacity: 350 tons fuel; 300 tons deck cargo
Guns: 2—20 mm M 71.
Radars: Navigation: Kelvin Hughes Nucleus 5000R; I-band.

Comment: Former salvage ship now employed as a training and command unit. All salvage equipment has been removed. Underwent refit during 2005. Based at Split.



FAUST VRANČIĆ 12/2006, Croatian Navy / 1170098

1 PT 71 TYPE (TRANSPORT) (AKL)

PT 71 (*ex-Meduja*)

Displacement, tons: 710 full load
Dimensions, feet (metres): 152.2 x 23.6 x 12.1 (46.4 x 7.2 x 5.2)
Main machinery: 1 Burmeister & Wain diesel; 930 hp(m) (684 kW); 1 shaft
Speed, knots: 10
Complement: 16 (2 officers)
Guns: 1 Bofors 40 mm/60. 2 Hispano 20 mm M71 can be carried.
Radars: Navigation. Racal Decca 1216A; I-band.

Comment: Built in 1953. Underwent refit at Merina Puntat in 2007. Water capacity 320 tons.



PT 71 2/2007, Croatian Navy / 1170097

MINISTRY OF INTERIOR

Notes: (1) A Ministry of Interior maritime force polices inshore waters. These vessels are in five types:

Type 1: 3—24 m craft capable of 30 kt; P-1 (*Srd*), P-2 (*Marino*), P-101 (*Sveti Mihovic*)

Type 2: 6—13 m craft capable of 23 kt; P-11 to P-16

Type 3: 6—11 m craft capable of 23 kt; P-111 to P-116

Type 4: 4—14 m craft capable of 30 kt; P-201, P-202, P-203 and P-207

Type 5: Numerous small craft under 10 m; RIB or inflatable construction

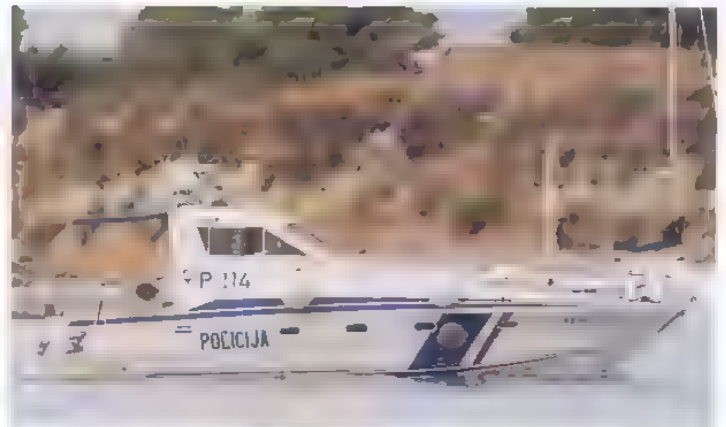
(2) In addition there are civilian registered base port craft with PU (Pula), SB (Sibenik), ST (Split) and so on markings.



P 207 9/2008*, Per Körnefeldt / 1335357



SVETI MIHOVIC 9/2008*, Per Körnefeldt / 1335353



P 114 9/2008*, Per Körnefeldt / 1335351



Cuba

MARINA DE GUERRA REVOLUCIONARIA

Country Overview

The Republic of Cuba is an independent republic located in the Caribbean Sea with which it has a 2,020 n mile coastline. The most westerly of the Greater Antilles group, the country comprises two main islands, Cuba (40,519 square miles) and Isla de la Juventud (849 square miles), and more than 1,600 small coral cays and islets. To the west, Cuba commands the approaches to the Gulf of Mexico; the Straits of Florida and the Yucatán Channel separate the country from Florida and Mexico respectively. To the east, the Windward Passage separates the island from Hispaniola (Haiti and the Dominican Republic). Jamaica lies to the south and the Bahamas to the north-east. Havana is the capital, largest city and principal port. Territorial seas (6 n miles) are claimed. A 200 n mile EEZ has been claimed but the limits have not been defined.

The Navy is in a parlous state and has no capability to sustain operations beyond territorial waters.

Headquarters Appointments

Chief of Naval Staff:
Vice Admiral Pedro Perez Miguel Betancourt

Personnel

2009: 2,000 (approximately) (including 500 marines)

Command Organisation

Western Naval District (HQ Cabanas);
Eastern Naval District (HQ Holguin).

Naval Aviation

Four Kamov Ka-28 and 14 Mi 14PL Haze A have been reported but operational status is not known.

Coast Defence

Truck mounted SS-N-2B Styx.

Bases

Cabanas, Nicaro, Cienfuegos, Havana, Santiago de Cuba, Banes
The Naval Academy is at Punta Santa Ana.

DELETIONS

Notes: Some vessels have been disposed of. Others are decaying alongside in harbour.

CORVETTES

1 PAUK II CLASS (PROJECT 1241PE) (FSM)

321

Displacement, tons: 440 full load
Dimensions, feet (metres): 191.9 × 33.5 × 11.2
 (58.5 × 10.2 × 3.4)
Main machinery: 2 Type M 521 diesels; 16,184 hp(m)
 (11.9 MW) sustained; 2 shafts
Speed, knots: 32. **Range, n miles:** 2,400 at 14 kt
Complement: 32
Missiles: SAM. SA-N-5 quad launcher; manual aiming, IR
 homing to 10 km (5.4 n miles) at 1.5 Mach; warhead 1.1 kg.

Guns: 1 USSR 76 mm/59 AK 176; 120 rds/min to 15 km
 (8 n miles); weight of shell 5.9 kg.
 1—30 mm/65, 6 barrels, 3,000 rds/min combined to 2 km
 4—25 mm (2 twin).
A/S mortars: 2 RBU 1200 6-tubed fixed; range 1,200 m;
 warhead 34 kg.
Countermessures: 2 PK 16 chaff launchers.
Radars: Air/surface search: Positive E; E/F-band.
Navigation: Pechora; I-band.

Fire control: Bass Tilt, H/I-band.
Sonars: Rat Tail; VDS (on transom); attack; high frequency.
Comment: Built at Yeroslav Shipyard in the USSR and
 transferred in May 1980. Similar to the ships built for
 India. Has a longer superstructure than the Pauk I and
 electronics with a radome similar to the Parchim II class.
 Torpedo tubes removed. Two twin 25 mm guns fitted on
 the stern. Based at Havana. Operational status doubtful.



PAUK II

2/2001, Michael Nitz / 0534082

PATROL FORCES

6 OSA II CLASS (PROJECT 205)
(FAST ATTACK CRAFT—MISSILE) (PTGF)

261 262 267 268 271 274

Displacement, tons: 171 standard; 245 full load
Dimensions, feet (metres): 126.6 × 24.9 × 8.8 (38.6 × 7.6 × 2.7)
Main machinery: 3 Type M 504 diesels, 10,800 hp(m) (7.94 MW) sustained; 3 shafts
Speed, knots: 37
Range, n miles: 500 at 35 kt
Complement: 30
Missiles: SSM: 4 SS-N-2B Styx; active radar or IR homing to 46 km (25 n miles) at
 0.9 Mach; warhead 513 kg.
Guns: 4—30 mm/65 (2 twin); 500 rds/min to 5 km (2.7 n miles); weight of shell 0.54 kg
Radars: Surface search: Square Tie; I-band.
Fire control: Drum Tilt; H/I-band.
IFF: Square Head, High Pole B

Comment: One Osa II delivered in mid-1976, one in January 1977 and one in March 1978.
 Further two delivered in December 1978, one in April 1979, one in October 1979, two
 from Black Sea November 1981, four in February 1982. While a few may be seagoing,
 most have been cannibalised for spares and all have had their missiles disembarked
 for use in shore batteries. One was sunk as a tourist attraction in 1998. Based at Nicara
 and Cabanas.



OSA II (Bulgarian colours)

8/1998, E & M Laursen / 001/645

MINE WARFARE FORCES

2 SONYA CLASS (PROJECT 1265)
(MINESWEEPERS/HUNTERS) (MSC/MH)

570 578

Displacement, tons: 450 full load
Dimensions, feet (metres): 157.4 × 28.9 × 6.6 (48 × 8.8 × 2)
Main machinery: 2 Kolonna Type 9-D-8 diesels, 2,000 hp(m) (1.47 MW) sustained;
 2 shafts
Speed, knots: 15
Range, n miles: 3,000 at 10 kt
Complement: 43
Guns: 2—30 mm/65 (twin); 500 rds/min to 5 km (2.7 n miles); weight of shell 0.54 kg
 2—25 mm/80 (twin); 270 rds/min to 3 km (1.6 n miles)
Mines: Can carry 8.
Radars: Navigation: Don 2; I-band.
IFF: 2 Square Head, High Pole B.
Sonars: MG 69/79; hull-mounted; active minehunting; high frequency.

Comment: Transferred from USSR in January and December 1985. Two others are non-
 operational and these two have not been reported at sea since 1999



SONYA (Russian colours)

5/1990 / 0056851

3 YEVGENYA CLASS (PROJECT 1258) (MINEHUNTERS) (MHC)

501 510 511

Displacement, tons: 77 standard; 90 full load
Dimensions, feet (metres): 80.7 x 18 x 4.9 (24.6 x 5.5 x 1.5)
Main machinery: 2 Type 3-D-12 diesels; 600 hp(m) (440 kW) sustained; 2 shafts
Speed, knots: 11. **Range, n miles:** 300 at 10 kt
Complement: 10
Guns: 2–14.5 mm (twin) MGs.
Countermeasures: Minehunting gear is lowered on a crane at the stern.
Radars: Navigation: Don 2; I-band.
Sonars: MG 7 lifted over the stern.

Comment: First pair transferred from USSR in November 1977, one in September 1978, two in November 1979, two in December 1980, two from the Baltic on 10 December 1981, one in October 1982 and four on 1 September 1984. There are two squadrons, based at Cabanas and Nicaro although these last three are the only seaworthy units.



YEVGENYA (Ukraine colours) 6/2003, *Ships of the World* / 057265Z



BIYA CLASS (Russian colours) 10/1993, *van Ginderen Collection* / 0506283

AUXILIARIES

Notes: In addition there are two other vessels: *Siboney* H 101 of 535 tons and used for cadet training, and a buoy tender *Taino* H 102 of 1,123 tons. Neither are active.

1 PELYM (PROJECT 1799) CLASS (AXT)

CARLOS MANUEL DE CESPEDES 40

Displacement, tons: 1,050 full load
Dimensions, feet (metres): 210.3 x 38.4 x 11.5 (64.1 x 11.7 x 3.5)
Main machinery: 1 diesel; 1,540 hp (1.1 MW); 1 shaft
Speed, knots: 13.5. **Range, n miles:** 1,000 at 13 kt
Complement: 40
Radars: Navigation: Don; I-band.

Comment: Transferred from the USSR in 1982 equipped as deperring vessel. Deperring gear deleted and converted to use as a training ship since about 1999. Based at Havana.



PELYM 4/2006, *Göran Olsson* / 1164744

1 BIYA (PROJECT 871) CLASS (ABU)

GUAMA H 103

Displacement, tons: 766 full load
Dimensions, feet (metres): 180.4 x 32.1 x 8.5 (55 x 9.8 x 2.6)
Main machinery: 2 diesels; 1,200 hp(m) (882 kW); 2 shafts; cp props
Speed, knots: 13. **Range, n miles:** 4,700+ at 11 kt
Complement: 29 (7 officers)
Radars: Navigation: Don 2; I-band.

Comment: Has laboratory facilities, one survey launch and a 5 ton crane. Built in Poland and acquired from USSR in November 1980. Subordinate to Institute of Hydrography. Last deployed in 1993, but is used locally as a buoy tender and is based at Havana.

BORDER GUARD

Notes: (1) A 5,000 strong force which operates under the Ministry of the Interior at a higher state of readiness than the Navy. Pennant numbers painted in red.
 (2) A 17 m patrol craft *Flecha* and an auxiliary craft 040 have been reported

2 STENKA (TARANTUL) CLASS (PROJECT 205P) (FAST ATTACK CRAFT – PATROL) (PB)

801 816

Displacement, tons: 211 standard; 253 full load
Dimensions, feet (metres): 129.3 x 25.9 x 8.2 (39.4 x 7.9 x 2.5)
Main machinery: 3 M 583A diesels; 12,172 hp(m) (8.95 MW); 3 shafts
Speed, knots: 34. **Range, n miles:** 2,250 at 14 kt
Complement: 25 (5 officers)
Guns: 4–30 mm/65 (2 twin) AK 230; 500 rds/min to 5 km (2.7 n miles); weight of shell 0.54 kg.
Radars: Surface search: Pot Drum; H/I-band
Fire control: Mufi Cob; G/H band
IFF: High Pole. Square Head.

Comment: Similar to class operated by Russian border guard with torpedo tubes and sonar removed. Transferred from USSR in February 1985 (two) and August 1985 (one). These two reported to be operational.



STENKA 1990 / 007685/

18 ZHUK (GRIF) CLASS (PROJECT 1400M) (COASTAL PATROL CRAFT) (PB)

589 117

Displacement, tons: 39 full load
Dimensions, feet (metres): 78.7 x 16.4 x 3.9 (24 x 5 x 1.2)
Main machinery: 2 Type M 401B diesels, 2,200 hp(m) (1.6 MW) sustained, 2 shafts
Speed, knots: 30. **Range, n miles:** 1,100 at 15 kt
Complement: 11 (3 officers)
Guns: 4–14.5 mm (2 twin) MGs
Radars: Surface search: Spin Trough; I-band

Comment: A total of 40 acquired since 1971. Last batch of two arrived December 1989. Some transferred to Nicaragua. The total has been reduced to allow for wastage. In some of the class the after gun has been removed. Most of the remaining vessels are still active.



ZHUK 589 4/2006, *Göran Olsson* / 1164743

Cyprus

Country Overview

Formerly a British colony, the Republic of Cyprus gained independence in 1960. The United Kingdom retained sovereignty over two military bases on the south coast. The total area of the country is 3,572 square miles but, since 1974, the northern third of the country has been occupied by Turkish troops and has formed, de facto, a separate (not UN recognised) state called the Turkish Republic of Northern Cyprus. Situated in the eastern Mediterranean Sea, with which it has a 361 n mile coastline, the island lies west of Syria and south of Turkey. Nicosia is the capital and largest city while Limassol and Larnaca are the principal

ports. Territorial seas (12 n miles) are claimed. A 200 n mile EEZ was claimed in 2004.

Headquarters Appointments

Commander Navy Command of the National Guard
 Captain Andreas Ioannides

General

Rail Donkias KKTCSSG 101, two 40 m craft (KKTCSSG 01-02), two *Kaon* 15 (KKTCSSG 11-12), two 14 m craft (KKTCSSG 102 103) and a converted cabin cruiser KKTCSSG 104 are patrol

craft permanently based at Kyrenia (Girne) in northern Cyprus. For details of these vessels see Turkey Coast Guard section

Bases

Limassol
 Mani

Coast Defence

Twenty-four Exocet MM 40 Block 2 Truck-mounted in batteries of four.

PATROL FORCES

Notes: There are also three launches and a number of RIBs in use by the Underwater Diving section of the Navy.

1 MODIFIED PATRA CLASS (PBM)

Name	No	Builders	Commissioned
SALAMIS	P 01	Chantiers de l'Estrel	24 May 1983

Displacement, tons: 92 full load
Dimensions, feet (metres): 105.3 × 21.3 × 5.9 (32.1 × 6.5 × 1.8)
Main machinery: 2 SACM 195 CZSHRY12 diesels, 4,680 hp(m) (3.44 MW); sustained; 2 shafts
Speed, knots: 30 **Range, n miles:** 1,200 at 15 kt
Complement: 22
Missiles: SAM: 1 Matra Simbad twin launcher; Mistral; IR homing to 4 km (2.2 n miles); warhead 3 kg
Guns: 1 Otobreda 40 mm/70. 1 Rheinmetall Wegmann 20 mm
Radars: Surface search. Decca 1226, I-band.

Comment: Laid down in December 1981 for Naval Command of National Guard.



SALAMIS 10/1999, E & M Laurssen / ON164814

1 DILOS CLASS (COASTAL PATROL CRAFT) (PBM)

Name	No	Builders	Commissioned
KYRENIA (ex-Knassos)	P 02 (ex-P 268)	Hellenic Shipyards, Skaramanga	1979

Displacement, tons: 92 full load
Dimensions, feet (metres): 95.1 × 16.2 × 5.6 (29 × 5 × 1.7)
Main machinery: 2 MTU 12V 331TC81 diesels, 2,700 hp(m) (1.97 MW) sustained; 2 shafts
Speed, knots: 26
Range, n miles: 1,600 at 24 kt
Complement: 17 (4 officers)
Missiles: 1 Matra Simbad twin launcher; Mistral; IR homing to 4 km (2.2 n miles); warhead 3 kg
Guns: 1 Rheinmetall Wegmann 20 mm.
Radars: Surface search: Racal Decca 914C, I-band

Comment: Ordered in May 1976 to a design by Abeking & Rasmussen. Transferred from Greece in March 2000 and used mainly for SAR. Others of the class are in service in Georgia, and with the Hellenic Coast Guard and Customs services.



KYRENIA (Greek colours) 61/1998, E M Cornish / 0052296

2 RODMAN 55HJ CLASS (PBF)

PANAGOS AGATHOS

Displacement, tons: 15.7 full load
Dimensions, feet (metres): 57.1 × 12.5 × 2.3 (17.4 × 3.8 × 0.7)
Main machinery: 2 MAN diesels, 2 waterjets
Speed, knots: 48
Range, n miles: 300 at 35 kt
Complement: 7
Guns: 1—12.7 mm MG. 2—7.62 mm MGs.
Radars: Surface search. Furuno, I-band.

Comment: GRP hulls built by Rodman, Vigo and commissioned on 8 June 2002.



PANAGOS 9/2002, van Ginderen Collection / 1044096

2 VITTORIA CLASS (COASTAL PATROL CRAFT) (PB)

Name	No	Builders	Commissioned
COMMANDER TSO MAKIS	P 03	Cantiere Navale Vittoria, Adria	Aug 2004
COMMANDER GEORGIU	P 04	Cantiere Navale Vittoria, Adria	Aug 2004

Displacement, tons: 95 full load
Dimensions, feet (metres): 88.6 × 21.0 × 4.3 (27.0 × 6.4 × 1.3)
Main machinery: 2 MTU diesels, 5,440 hp (4.05 MW); 2 waterjets
Speed, knots: 46 **Range, n miles:** 800 at 35 kt
Complement: 12
Guns: 1 Breda 25 mm. 2—12.7 mm MGs.

Comment: Built by Cantiere Navale Vittoria, Italy. Two similar craft are in service with the Police Force.

LAND-BASED MARITIME AIRCRAFT

Notes: There are also three Bell 206 utility helicopters.

Numbers/Type: 1 Pilatus Britten-Norman Maritime Defender BN 2A
Operational speed: 150 kt (280 km/h).
Service ceiling: 18,900 ft (5,760 m).
Range: 1,500 n miles (2,775 km).
Role/Weapon systems: Operated around southern coastline of Cyprus to prevent smuggling and terrorist activity. Sensors: Search radar, searchlight mounted on wings. Weapons: ASV; various machine gun pods and rockets.

POLICE

Notes: (1) In addition there are six speed boats, *Astrapi* 30–35, of 5.3 m with 280 hp engines built in Cyprus in 1999–2000.
 (2) Personnel numbers are approximately 330 Maritime Police.

2 VITTORIA CLASS (COASTAL PATROL CRAFT) (PB)

Name	No	Builders	Commissioned
THEXAS	PV 23	Cantiere Navale Vittoria, Adria	2004
ONISILOS	PV 24	Cantiere Navale Vittoria, Adria	2004

Displacement, tons: 95 full load
Dimensions, feet (metres): 88.9 × 13.4 × 1.0 (27.6 × 4.1 × 0.3)
Main machinery: 2 MTU diesels, 5,440 hp (4.05 MW); 2 waterjets
Speed, knots: 45. **Range, n miles:** 600 at 35 kt
Complement: 12
Guns: 2—12.7 mm MGs.

Comment: Built by Cantiero Navale Vittoria, Italy and delivered in 2004. *Thexas* based at Limassol, *Onisilos* at Larnaca.



THEXAS 4/2006, Paolo Marsan / 1166781

5 SAB 12 TYPE (PB)

DIONYSOS PL 11 (ex-G 55/GS 12)	KARPASIA PL 14 (ex-G 50/GS 10)
KOURION PL 12 (ex-G 54/GS 27)	AKAMAS PL 15 (ex-G 57/GS 28)
ILARION PL 13 (ex-G 52/GS 25)	

Displacement, tons: 14 full load
Dimensions, feet (metres): 41.3 × 13.1 × 3.6 (12.6 × 4 × 1.1)
Main machinery: 2 Volvo Penta diesels; 700 hp(m) (520 kW); 2 shafts
Speed, knots: 16
Range, n miles: 300 at 15 kt
Complement: 5
Guns: 1 7.62 mm MG
Radars: Surface search Raytheon; I-band.

Comment: Built in 1979 by Veb Yachwerf, Berlin. Harbour patrol craft of the former GDR MAB 12 class transferred in December 1992. New radars fitted. *Dionysos* based at Latsi, *Kourion* at Larnaca, *Ilarion* at Napa, *Karpasia* at Limassol and *Akamas* at Paphos.



DIONYSOS 8/2006, Marco Ghiglino / 1166745

FRIGATES

4 THETIS CLASS (FFHM)

Name	No	Builders	Laid down	Launched	Commissioned
THETIS	F 357	Svenborg Vaerft	10 Oct 1988	14 July 1989	1 July 1991
TRITON	F 358	Svenborg Vaerft	27 June 1989	16 Mar 1990	2 Dec 1991
VAEDDEREN	F 359	Svenborg Vaerft	19 Mar 1990	21 Dec 1990	9 June 1992
HVIDBJØRNEN	F 360	Svenborg Vaerft	2 Jan 1991	11 Oct 1991	30 Nov 1992

Displacement, tons: 2,600 standard; 3,500 full load
Dimensions, feet (metres): 369.1 oa; 327.4 wl × 47.2 × 19.7
 (112.5; 99.8 × 14.4 × 6.0)

Main machinery: 3 MAN/Burmeister & Wain Alpha 12V 28/32A diesels; 10,800 hp (m) (7.94 MW) sustained; 1 shaft; Kamewa cp prop; bow and azimuth thrusters; 880 hp (m) (647 kW), 1,100 hp (m) (800 kW)

Speed, knots: 20; 8 on thrusters
Range, n miles: 8,500 at 15.5 kt
Complement: 60 (12 officers) plus 30 spare berths

Missiles: SAM: 4 Stinger mountings (2 twin) on hangar roof near mast

Guns: 1 OTO Melara 3 in (76 mm)/62; Super Rapid 2; dual purpose; 120 rds/min to 16 km (8.7 n miles); SAPOMER round weight 12.7 kg.
 2—12.7 mm MGs.

Depth charges: 1 rail (door in stern).

Countermeasures: Decoys: 2 Sea Gnat DL-12T 12-barrelled launchers for chaff and IR flares

ESM: Racal Sabre; intercept.

Combat data systems: Terma TDS, SATCOM 2

Weapons control: Bofors 9LV 200 Mk 3 director. FSI Safire surveillance director 2

Radars: Air/surface search: Plessey AWS 6 2; G-band.

Surface search: Furuno 2135; E/F-band.

Navigation: Furuno 2115; I-band.

Fire control: CelsiusTech 9LV Mk 3 2; I/J-band.

Sonars: Thomson Sintra TSM 2640 Salmon; VDS; active search and attack; medium frequency.
 C-Teck, hull-mounted; active search; medium frequency.

Helicopters: 1 Westland Lynx Mk 90B 2

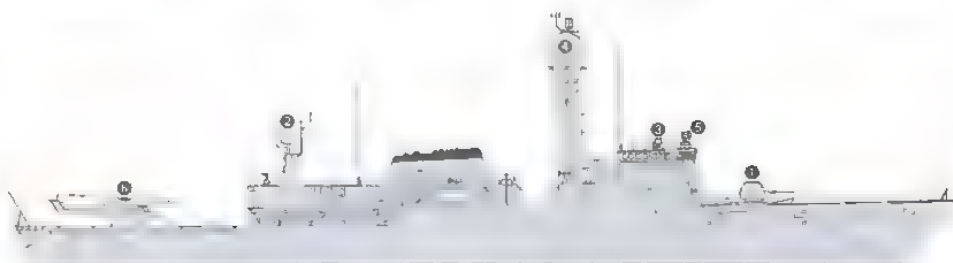
Programmes: Preliminary study by YARD in 1986 led to Dwingen Marine Consultants being awarded a contract for a detailed design completed in mid-1987. All four ordered in October 1987.

Modernisation: There are plans for a new air search radar and SAM in due course.

Structure: The hull is some 30 m longer than the decommissioned Hvidbjørnen class to improve sea-keeping qualities and allow considerable extra space for additional armament. The design allows the use of containerised equipment to be shipped depending on role and there is some commonality with the Flex 300 ships. The hull is ice strengthened to enable penetration of 1 m thick ice and efforts have been made to incorporate stealth technology, for instance by putting anchor equipment, bollards and winches below the upper deck. There is a double skin up to 2 m below the waterline. A rigid inflatable boarding craft plumb by a hydraulic crane is fitted alongside the fixed hangar. The bridge and ops room are combined. *Thetis* was modified in the stern for seismological survey. Since these operations have terminated, the stern has been remodified to facilitate the ability to act as a command ship and to conduct training. Modifications to *Vaedderen* for Galathea III have been removed.

Operational: Primary role is sovereignty patrol and fishery protection in the North Atlantic. *Vaedderen* supported the Galathea III oceanographic project in 2006-07.

THETIS
 9/2006, M Declerck
 1164/78



THETIS

(Scale 1 : 900), Ian Sturton / 0012258



THETIS

9/2005, Guy Toremans / 1133412



THETIS

8/2007, Per Körnfeldt / 1335459

3 NIELS JUEL CLASS (FFGM)

Name	No	Builders	Laid down	Launched	Commissioned
NIELS JUEL	F 354	Aalborg Vaerft	20 Oct 1976	17 Feb 1978	26 Aug 1980
OLFERT FISCHER	F 355	Aalborg Vaerft	6 Dec 1978	10 May 1979	16 Oct 1981
PETER TORDENSKIOLD	F 356	Aalborg Vaerft	3 Dec 1979	30 Apr 1980	2 Apr 1982

Displacement, tons: 1,320 full load
Dimensions, feet (metres): 275.5 × 33.8 × 10.2
 (84 × 10.3 × 3.1)

Main machinery: CODOG; 1 GE LM 2500 gas turbine; 24,600 hp (18.35 MW) sustained; 1 MTU 20 V 956 TB82 diesel; 5,210 hp(m) (3.83 MW) sustained; 2 shafts

Speed, knots: 28, gas; 20, diesel

Range, n miles: 2,500 at 18 kt

Complement: 94 (15 officers)

Missiles: SSM: 8 McDonnell Douglas Harpoon (2 quad launchers); active radar homing to 130 km (70 n miles) at 0.9 Mach; warhead 227 kg

SAM: 12 (2 sextuple) Raytheon Sea Sparrow Mk 48 Mod 3 VLS (12 missiles) or Mk 56 Mod 0 VLS (24 missiles) modular launchers; semi-active radar homing to 14.6 km (8 n miles) at 2.5 Mach; warhead 39 kg; 12 missiles.

4 Stinger mountings (2 twin)

Guns: 1 OTO Melara 3 in (76 mm)/62 compact; 85 rds/min to 16 km (8.7 n miles) anti-surface; 12 km (6.6 n miles) anti-aircraft, SAPOMER round weight 12.7 kg.

4 × 12.7 mm MGs

Depth charges: 1 rack.

Countermeasures: Decoys: 2 DL-12T Sea Gnat 12-barrelled chaff launchers



PETER TORDENSKIOLD

(Scale 1 : 900), Ian Sturton / 1047859

Combat data systems: CelciusTech 9LV Mk 3, Link 11, SATCOMs (can be fitted forward or aft of the funnel).

Weapons control: Philips 9LV 200 Mk 3 GFCS with TV tracker, Raytheon Mk 91 Mod 1 MFCS with two directors, Harpoon to 1A(V) standard.

Radars: Air search: DASATRS-3D, G/H-band.

Surface search: Philips 9GR 600, I-band.

Fire control: 2 Mk 95, I/J-band (for SAM).

Philips 9LV 200 Mk 1 Rakel 203C, J-band (for guns and SSM).

Navigation: Terma Scantier Mil; I-band.

Sonars: Plessey PMS 26; hull-mounted; active search and attack; 10 kHz.

Programmes: YARD Glasgow designed the class to Danish order

Modernisation: Mid-life update from 1996, including a NATO Sea Sparrow VLS, and new communications. Air search radar replaced by TST TRS-3D. Improved combat data system fitted. F 356 completed in May 1998, F 364 in April 1999, F 355 in December 2001. Stinger SAM mounted each side of the funnel

Operational: Normally only one sextuple SAM launcher is carried, but the second set can be embarked in a few hours. To be replaced by new frigates from 2011.



OLFERT FISCHER

6/2008*, Michael Nitz, 1335363



NIELS JUEL

11/2005, Martin Mokrus / 1158963



NIELS JUEL

4/2005, Per Körnefeldt / 1133391



PETER TORDENSKIOLD

6/2007, Michael Nitz / 1166534



NIELS JUEL

9/2005, Per Körnefeldt / 1159930

0 + 3 IVAR HUITFELDT CLASS (FFGHM)

Name	No	Builders	Laid down	Launched	Commissioned
IVAR HUITFELDT	F 361	Odense Shipyard, Lindø	2 June 2008	2010	2011
PETER WILLEMOES	F 362	Odense Shipyard, Lindø	17 Mar 2009	2011	2012
NIELS JUEL	F 363	Odense Shipyard, Lindø	Dec 2009	2012	2013

Displacement, tons: 5,850
Dimensions, feet (metres): 452.5 x 64.0 x 20.7 (138.7 x 19.8 x 6.3)
Main machinery: CODAD; 4 MTU 20V M70 diesels, 44,000 hp (32.8 MW); 2 shafts; cp props; bow thruster
Speed, knots: 28
Complement: 100 (accommodation for 165)

Missiles: SSM: 16 Boeing Harpoon Block 2 (2 octuple AHWCS VLS launchers) ●; active radar homing to 124 km (67 n miles) at 0.9 Mach, warhead 227 kg
SAM: 32 GDC Standard SM-2 MR Block IIIA ●; command/inertial guidance; semi-active radar homing to 167 km (90 n miles) at 2.5 Mach. Lockheed Martin Mk 41 VLS (32 cells) 24 Evolved Sea Sparrow RIM 162B ●; semi-active radar homing to 18 km (9.7 n miles) at 3.6 Mach, warhead 38 kg, 2 Raytheon Mk 56 VLS (2 x 12 cells), 6 twin Sea Stinger launchers.
Guns: 2 OTO Melara 76 mm ● 1 Oerlikon Contraves 35 mm ●
Torpedoes: 4—324 mm (2 twin) launchers ●; Eurotorp MU 90 Impact; active/passive homing to 15 km (8 n miles) at 29/50 kt.
Countermeasures: Decoys, Terna 130 mm Decoy Launching System; 2 DL-12T and 2 DL-6T launchers (36 barrels) ESM To be announced.
Combat data systems: Terna C-Flex Combat Management System
Weapons control: To be announced.



IVAR HUITFELDT

(Scale 1 : 1,200), Ian Sturton / 1335/54

Radars: Air/surface search: Thales Smart-L; 3D ●; D-band. Fire control (SAM): Thales APAR phased array ●; I/J-band. Fire control (guns): Saab Cerros 200 ●; J/K-band. Navigation: Furuno; E/F/I-bands.
Sonars: Atlas ASO 94 hull mounted. VDS/DTAS/ATAS to be decided.

Helicopters: 1 medium or 2 Lynx ●

Programmes: Construction of three frigates was approved in the 2004 Defence Agreement. The contract for construction was signed with Odense Shipyard on 20 December 2006. The blocks of the ships are under construction at Klaipeda, Lithuania, and at Loksä, Estonia. The first four blocks were delivered to Odense on 20 May 2008.

Structure: Built to DNV standards. The design is based on the Absalon class Flexible Support Ships and utilises the same hull (with one fewer deck) and the majority of equipment. There are to be dedicated staff facilities for national or NATO task group commanders. Four Stanflex container positions are to be located on the weapons deck and one at 8-position. There is to be cargo space for four 20 ft TEU containers. The flight deck is to be capable of operating 20 ton helicopters and prepared to operate UAVs. 'A' gun position is suitable for upgrade to a 127 mm gun if and when required.
Operational: The ships are to have a global, expeditionary role and to be capable of providing area air-defence and support of land forces.

SHIPBORNE AIRCRAFT

Notes: The Defence Agreement of 10 June 2004 (covering 2005–09) provided for the procurement of four maritime helicopters and a project to update Lynx helicopters. These projects have been superseded by a study to acquire a new maritime helicopter capability to replace Lynx. The new aircraft are to operate from the Ivar Huitfeldt-class frigates, and the Thetis, Absalon and Knud Rasmussen classes.

Numbers/Type: 8 Westland Lynx Mk 90B.
Operational speed: 125 kt (232 km/h)
Service ceiling: 12,500 ft (3,810 m).
Range: 320 n miles (593 km).

Role/Weapon systems: Shipborne helicopter for EEZ and surface search tasks. All upgraded to Super Lynx standard with first delivered November 2000. Sensors: Ferranti Seaspray; Racal Kestrel ESM; FLIR 2000. Weapons: Unarmed.



LYNX

9/2006, M Declercq / 1184767

Numbers/Type: 4 Sikorsky S-61A-1 Sea King.
Operational speed: 118 kt (219 km/h).
Service ceiling: 14,700 ft (4,480 m).
Range: 542 n miles (1,005 km)

Role/Weapon systems: Land-based SAR helicopter for combat rescue and surface search. To be replaced by EH 101 in 2009. Sensors: Bendix weather radar; GEC Avionics FLIR. Weapons: unarmed.



SEA KING

5/1999, H M Steele 0056851

Numbers/Type: 8 AgustaWestland EH 101 Mk 512.
Operational speed: 160 kt (296 km/h)
Service ceiling: 15,000 ft (4,572 m).
Range: 550 n miles (1,019 km)

Role/Weapon systems: Contract on 7 December 2001 for a total of 14 utility variants of the EH 101. Eight are configured for SAR duties and six for troop-carrying although the aircraft are designed for rapid role-change. By agreement with the UK, the delivery of six aircraft has been delayed in order to meet a high-priority UK operational requirement. Military lift is 28 troops and up to four tonnes underslung. Sensors: Telephonics RDR 1600 SAR Weather Avoidance Radar



EH 101

7/2006, Jane's/Patrick Allen / 1184189

LAND-BASED MARITIME AIRCRAFT

Numbers/Type: 3 Challenger 604.
Operational speed: 470 kt (870 km/h).
Service ceiling: 41,000 ft (12,497 m).
Range: 3,769 n miles (6,980 km).

Role/Weapon systems: Maritime reconnaissance for EEZ patrol in the Baltic and off Greenland. Sensors: Terna SLAR radar; IR/UV scanner. Weapons: unarmed.



CHALLENGER 604

6/2005, Massimo Anneti / 1153495

PATROL FORCES

10 FLYVEFISKEN CLASS (LARGE PATROL/ATTACK CRAFT AND MINEHUNTERS/LAYERS) (PGGM/MHCD/MLC/AGSC)

Name	No	Builders	Commissioned
HAVKATTEN	P 552	Danyard A/S, Aalborg	1 Nov 1990
LAXEN	P 553	Danyard A/S, Aalborg	22 Mar 1991
MAKRELEN	P 554	Danyard A/S, Aalborg	1 Oct 1991
STØREN	P 555	Danyard A/S, Aalborg	24 Apr 1992
GLENTEN	P 557	Danyard A/S, Aalborg	29 Apr 1993
GRIBBEN	P 558	Danyard A/S, Aalborg	1 July 1993
RAVNEN	P 560	Danyard A/S, Aalborg	17 Oct 1994
SKADEN	P 561	Danyard A/S, Aalborg	10 Apr 1995
VIBEN	P 562	Danyard A/S, Aalborg	15 Jan 1996
SØLØVEN	P 563	Danyard A/S, Aalborg	28 May 1996

Displacement, tons: 480 full load

Dimensions, feet (metres): 177.2 x 29.5 x 8.2 (54 x 9 x 2.5)

Main machinery: CODAG; 1 GE LM 500 gas turbine (centre shaft) (P 557, 560, 561 and 562); 5,450 hp (4.1 MW) sustained; 2 MTU 16V 396 TB94 diesels (outer shafts); 5,800 hp(m) (4.26 MW) sustained; 3 shafts, cp props on outer shafts; bow thruster. Auxiliary propulsion by hydraulic motors on outer gearboxes; hydraulic pumps driven by 1 GM 12V-71 diesel; 500 hp (375 kW)

Speed, knots: 30; 20 on diesels; 10 on hydraulic propulsion

Range, n miles: 2,400 at 18 kt

Complement: 19-29 (depending on role) (4 officers)

Missiles: SSM: 8 McDonnell Douglas Harpoon; active radar homing to 130 km (70 n miles) at 0.9 Mach; warhead 227 kg. Attack role only. Block II from 2004 gives land attack option.

SAM: Raytheon Sea Sparrow RIM 7P; Mk 48 Mod 3 VLS (6 missiles); semi-active radar homing to 16 km (8.5 n miles) at 2.5 Mach; warhead 38 kg. Fitted for Attack, MCM and Minelaying roles. In MCM role one Stinger twin launcher can be fitted instead of Sea Sparrow.

Guns: 1 OTO Melara 3 in (76 mm)/62 Super Rapid, dual purpose; 120 rds/min to 16 km (8.7 n miles); SAPOMER round weight 12.7 kg. 2-12.7 mm MGs.

Torpedoes: 4-324 mm tubes; Eurotorp MU 90 impact.

Depth charges: 4.

Mines: 80. Minelaying role only.

Countermeasures: MCMV: Ibis 43 minehunting system with Thomson Sintra 2061 tactical system and 2054 side scan sonar towed by MSF class drones (see *Mine Warfare Forces* section). Bofors Double Eagle ROV Mk II. Minehunting role only.

Decoys: 2 Sea Gnat 130 mm DL-6T 6-barrelled launcher for chaff and IR flares.

ESM: Rascal Sabre; radar warning.

Combat data systems: Terma/CelsiusTech TDS. Link 11

Weapons control: CelsiusTech 9LV Mk 3 optronic director Harpoon to 1A(V) standard or AHWCS with Block II

Radars: Air/surface search: Plessey AWS 6 (552-555); G-band; or EADSTRS-3D (557-563); G/H-band.

Surface search: Terma Scanter MII; I-band.

Navigation: Furuno; I-band

Fire control: CelsiusTech 9LV 200 Mk 3; J-band

Sonars: CelsiusTech CTS-36/39; hull-mounted; active search; high frequency.

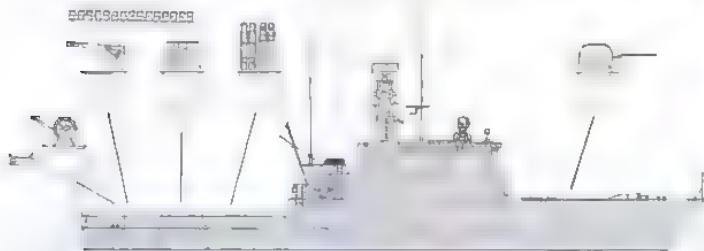
Thomson Sintra TSM 2640 Salmon; VDS; medium frequency. For ASW only

Programmes: Standard Flex 300 replaced Daphne class (seaward defence craft), Sølvøen class (fast attack craft torpedo), and Sund (MCM) class. First batch of seven with option on a further nine contracted with Danyard on 27 July 1985. Second batch of six ordered 14 June 1990 and last one authorised in 1993 to a total of 14, two less than originally planned.

Modernisation: Mk 48 Mod 3 SAM launchers replaced by Mk 56 launchers. Harpoon launchers upgraded to AHWCS version 2 capable of firing Block II missiles. Link 11 fitted. The combat data system is to be replaced by Terma C-Flex.

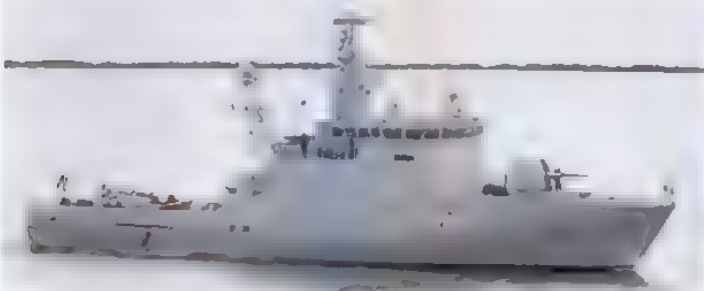
Structure: GRP sandwich hulls. Four positions prepared to plug in armament and equipment containers in combinations meeting the requirements of the various roles. Torpedo tubes and mineraisils detachable. Combat data system modular with standard consoles of which three to six are embarked depending on the role. SAV control aeriels are mounted on the bridge TRS-3D radar fitted in last seven.

Operational: Following an operational review of the class, the original concept, to be able to re-role by the interchange of mission-specific containers for different taskings (ASUW, ASW, MCM and Patrol) has been abandoned. Under a revised concept of employment, the class is to be reduced to ten ships. Of these, four ships are to be permanently roled for MCM (Laxen, Makrelen, Havkatten, Støren), four for a combat role (ASW or ASUW) (Glenten, Skaden, Viben, Ravnem) and two (Gribben and Sølvøen) for Patrol duties. Of the four ships decommissioned Svaerdfisken has been scrapped and Flyvefisken and Hajen have been sold to Lithuania. Lommen having served as a test platform for the Terma C-Flex combat system, is to be decommissioned in 2008 and is also to be sold to Lithuania. Gas turbines are not fitted in MCM and patrol ships.



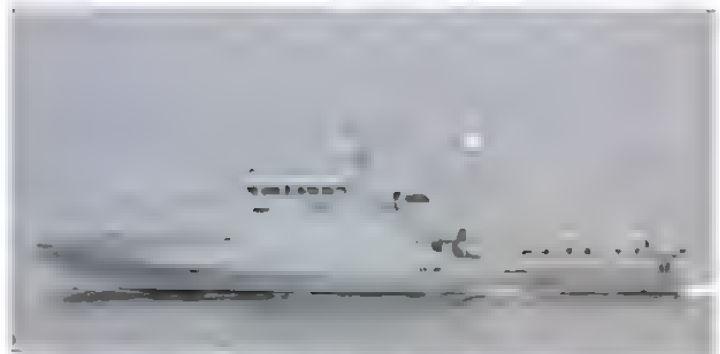
FLYVEFISKEN (composite fit)

(Scale 1 : 800), Ian Sturton / 0103/18



STØREN (MCM)

8/2007, Maritime Photographic / 1166519



GRIBBEN (patrol)

6/2007, Michael Nitz / 1166517



VIBEN (combat)

6/2008, Michael Nitz / 1359360

2 KNUD RASMUSSEN CLASS (ARCTIC PATROL SHIPS) (PGBH)

Name	No	Builders	Laid down	Launched	Commissioned
KNUD RASMUSSEN	P 570	Karstensens, Skibsværft, Skagen	21 Nov 2005	19 Oct 2006	18 Feb 2008
EJNAR MIKKELSEN	P 571	Karstensens, Skibsværft, Skagen	2006	1 July 2007	16 Jan 2009

Displacement, tons: 1,720

Dimensions, feet (metres): 235.8 x 47.9 x 16.2 (71.8 x 14.6 x 4.95)

Main machinery: 2 MAN B&W ALPHA 8L 27/38 diesels; 7,300 hp (5.4 MW); 1 shaft; cp prop

Speed, knots: 17

Complement: 18 (accommodation for 43)

Guns: 2-12.7 mm MGs.

Countermeasures: To be announced.

Combat data systems: Terma C-Flex

Radars: Surface/air search, Terma Scanter 4100, I-band.

Navigation: Furuno; E/F/I-bands.

Sonars: Reson; hull mounted (retractable).

Helicopters: Platform for 1 medium.

Programmes: Contract for the construction of two ships let in December 2004. Production started in September 2005. The hulls and propulsion were manufactured/installed by the Stocznia Północna (Northern) Shipyard in Gdansk and the ships subsequently completed at Skagen. Installation of military equipment was undertaken by Naval Materiel Command

Structure: Built to DNV Navy ICE 1A standards. A high-speed long-range rescue craft, an ice-strengthened version of the Combat Boat 90E, can be launched from a bay in the stern. Fitted with four Stanflex container positions for equipment and weapons, the design has the flexibility to operate in its (lightly armed) primary role or in a more heavily armed secondary role. The ships are to be equipped with SeaFLIR infrared imaging system.

Operational: Have replaced Agdek class. The principal role is sovereignty patrol in the arctic waters off Greenland while secondary roles, such as command and control of a small force, might be exercised globally. Contained weapons including a 76 mm gun, a Mk 56 launcher with evolved Sea Sparrow missiles and MU 90 torpedoes may be fitted



KNUD RASMUSSEN

7/2008, MOD Denmark / 1294598

2 VTS CLASS (COASTAL PATROL CRAFT) (PB)

VTS 3 VTS 4

Displacement, tons: 34 full load
 Dimensions, feet (metres): 55.8 x 16.1 x 6.9 (17 x 4.9 x 2.1)
 Main machinery: 2 MWM TBD 616 V12 diesels; 979 hp(m) (720 kW); 2 waterjets
 Speed, knots: 33. Range, n miles: 300 at 30 kt
 Complement: 3
 Guns: 1 – 7.62 mm MG can be carried.
 Radars: Surface search: Furuno FR-1831; I-band.
 Navigation: Furuno M1831; I-band.

Comment: Built by Mulder & Rijke, Netherlands. Completed in 1997 and 1998 to replace Botved type.



VTS 3 6/1999, Royal Danish Navy / 0056874

1 AGDLEK CLASS (LARGE PATROL CRAFT) (PB)

Name	No	Builders	Commissioned
TULUGAQ	Y 388	Svendborg Værft	26 June 1979

Displacement, tons: 394 full load
 Dimensions, feet (metres): 103 x 25.3 x 11.2 (31.4 x 7.7 x 3.4)
 Main machinery: 1 Burmeister & Wain Alpha A08-26 VO diesel; 800 hp(m) (588 kW); 1 shaft
 Speed, knots: 12
 Complement: 14 (3 officers)
 Guns: 2 – 12.7 mm MGs.
 Radars: Surface search: Furuno 2135; E/F-band.
 Navigation: Furuno 1510; I-band.

Comment: Ice strengthened. SATCOM fitted. *Agdlek* decommissioned in 2008 and replaced by *Knud Rasmussen*. *Agps* decommissioned in 2009. Last remaining craft, *Tulugaq*, stationed in Greenland.



TULUGAQ 10/2004, Per Körnerfeldt / 1044108

4 + 2 DIANA (SF MK II) CLASS (LARGE PATROL CRAFT) (PB)

DIANA P 520 FREJA P 521 HAVFRUEN P 522 NAJADEN P 523 — P 524 — P 525

Displacement, tons: 276 full load
 Dimensions, feet (metres): 141.1 x 26.9 x 7.2 (43.0 x 8.2 x 2.2)
 Main machinery: 2 MTU 396 16V TB94 diesels; 2,700 hp (2 MW); 2 shafts; cp props
 Speed, knots: 26
 Complement: 9 (accommodation for 15)
 Guns: 2 – 12.7 mm MGs.
 Radars: Navigation: Furuno FR-2117; I-band.

Comment: GRP vessels to replace the Ø class. Ordered on 3 December 2004 from Faaborg Værft, Denmark, the hull, superstructure and machinery are to be built by Kockums, Karlskrona. Fitted with one Stanflex container position. The first delivered on 12 December 2007, the second on 4 April 2008, the third on 25 September 2008 and the fourth on 11 December 2008.



FREJA 9/2008*, L-G Nilsson / 1335361

6 HOLM CLASS (MULTIROLE CRAFT) (MSD/AXL/AGSC)

BIRKHOLM A 541	ERTHOLM A 543	HIRSHOLM MSD 5
FYRHOLM A 542	ALHOLM A 544	SALTHOLM MSD 6

Displacement, tons: 138 full load
 Dimensions, feet (metres): 94.8 x 21.0 x 6.6 (28.9 x 6.4 x 2.0)
 Main machinery: 2 Scania DC 16 diesels; 1,005 hp(m) (750 kW); 2 azimuth thrusters
 Speed, knots: 12
 Complement: 3 (accommodation for 9)
 Radars: Navigation: Furuno FR-2117; I-band.

Comment: Multirole GRP vessels constructed by Danish Yacht A/S, Skagen. One Stanflex container position. Two vessels (A 541 and A 542) are inshore survey craft to replace SKA 11 and SKA 15, two (A 543 and A 544) are training vessels. Two MCM drones were delivered by late 2007.



BIRKHOLM 8/2008*, Frank Findler / 1335458



ALHOLM 8/2008*, Michael Nitz / 1335362

10 + 1 (1) MHV 900 CLASS (COASTAL PATROL CRAFT) (PB)

Name	No	Builders	Commissioned
ENØ	MHV 901	Søby Shipyard	10 Oct 2003
MANØ	MHV 902	Søby Shipyard	8 May 2004
HJORTØ	MHV 903	Søby Shipyard	29 Jan 2005
LYØ	MHV 904	Søby Shipyard	30 Sep 2005
ASKØ	MHV 905	Søby Shipyard	5 July 2006
FAENØ	MHV 906	Søby Shipyard	14 Apr 2007
HVIDSTEN	MHV 907	Søby Shipyard	8 Mar 2008
BRIGADEN	MHV 908	Søby Shipyard	15 June 2008
SPEDITØREN	MHV 909	Søby Shipyard	18 Jan 2009
RINGEN	MHV 910	Søby Shipyard	Apr 2009
BOPA	MHV 911	Søby Shipyard	Nov 2009

Displacement, tons: 95 full load
 Dimensions, feet (metres): 89.3 x 18.7 x 8.2 (27.2 x 5.7 x 2.5)
 Main machinery: 2 Saab Scania DI 16V8 diesels; 980 hp(m) (730 kW); 2 shafts
 Speed, knots: 13
 Complement: 10
 Guns: 2 – 7.62 mm MGs.
 Radars: Navigation: Furuno FR-2117.

Comment: Similar to but 3.5 m longer than the MHV 800 class. Steel construction. Eleven vessels ordered and there is an option for a twelfth. Operated by the Naval Home Guard



MANØ 7/2008*, Martin Mokrus / 1335458

18 MHV 800 CLASS (COASTAL PATROL CRAFT) (PB)

Name	No	Builders	Commissioned
ALDEBARAN	MHV 801	Soby Shipyard	9 July 1992
CARINA	MHV 802	Soby Shipyard	30 Sep 1992
ARIES	MHV 803	Soby Shipyard	30 Mar 1993
ANDROMEDA	MHV 804	Soby Shipyard	30 Sep 1993
GEMINI	MHV 805	Soby Shipyard	28 Feb 1994
DUBHE	MHV 806	Soby Shipyard	1 July 1994
JUPITER	MHV 807	Soby Shipyard	30 Nov 1994
LYRA	MHV 808	Soby Shipyard	30 May 1995
ANTARES	MHV 809	Soby Shipyard	30 Nov 1995
LUNA	MHV 810	Soby Shipyard	30 May 1996
APOLLO	MHV 811	Soby Shipyard	30 Nov 1996
HERCULES	MHV 812	Soby Shipyard	28 May 1997
BAUNEN	MHV 813	Soby Shipyard	17 Dec 1997
BUDSTIKKEN	MHV 814	Soby Shipyard	30 Aug 1998
KUREREN	MHV 815	Soby Shipyard	30 May 1999
PATRIOTEN	MHV 816	Soby Shipyard	25 Feb 2000
PARTISAN	MHV 817	Soby Shipyard	29 Nov 2000
SABOTØREN	MHV 818	Soby Shipyard	13 Oct 2001

Displacement, tons: 83 full load
 Dimensions, feet (metres): 77.8 x 18.4 x 6.6 (23.7 x 5.6 x 2)
 Main machinery: 2 Saab Scania DSI-14 diesels, 900 hp(m) (661 kW); 2 shafts
 Speed, knots: 13
 Range, n miles: 990 at 11 kt
 Complement: 8 + 4 spare
 Guns: 2—7.62 mm MGs, 2—12.7 mm MGs (can be fitted)
 Radars: Navigation: Furuno FR-1505; I-band.

Comment: First six ordered in April 1991, second six in July 1992, six more in 1997. Steel hulls with a moderate ice capability. Operated by the Naval Home Guard



BUDSTIKKEN 6/2008, A A de Kruijf / 1335358



ALDEBARAN 6/2006, Harald Carstens / 1159948



ANDROMEDA 7/2007, Michael Nitz / 1166509

6 LCP CLASS (COASTAL PATROL CRAFT) (PB)

LCP 1-4 SAR 1-2

Displacement, tons: 6.5 full load
 Dimensions, feet (metres): 39.0 x 9.5 x 2.3 (11.9 x 2.9 x 0.7)
 Main machinery: 1 Scania DSI 14 V8 diesel; 625 hp (465 kW); 1 Kamewa water-jet
 Speed, knots: 38
 Complement: 3
 Guns: 1—12.7 mm or 7.62 mm MG.

Comment: Based on the Swedish Combatboat 90E, these craft were developed as a joint venture between Forsvarvarets Materielverk and Storebro by whom LCP 1-4 were constructed and completed in 2004. Used as fast landing craft from the Absalon class support ships, they can carry 10 fully equipped soldiers or four stretchers. Two ice-strengthened variants are to be operated by the Arctic Patrol Ships. Painted orange, they were delivered in 2006.



LCP 1 4/2005, Martin Mokrus / 1133403

1 MHV 90 CLASS (COASTAL PATROL CRAFT) (PB)

HOLGER DANSKE MHV 92

Displacement, tons: 85 full load
 Dimensions, feet (metres): 64.9 x 18.7 x 8.2 (19.8 x 5.7 x 2.5)
 Main machinery: 1 Burmeister & Wein diesel; 400 hp(m) (294 kW); 1 shaft
 Speed, knots: 11
 Complement: 12
 Guns: 2—7.62 mm MGs.
 Radars: Navigation: Furuno 1505; I-band.

Comment: Built between 1973 and 1975. New radars fitted. MHV 90 class being progressively replaced by MHV 900 class. This last one expected to decommission in 2009. Operated by Naval Home Guard.



MHV 90 CLASS 6/2006, Martin Mokrus / 1159964

MINE WARFARE FORCES

Notes: See also Flyvefisken class under Patrol Forces.

4 MSF CLASS (MRD)

MSF 1-4

Displacement, tons: 125 full load
 Dimensions, feet (metres): 86.9 x 23 x 6.9 (26.5 x 7 x 2.1)
 Main machinery: 2 Scania DSI 14 diesels; 1,000 hp(m) (736 kW); 2 Schottel waterjets or 2 Schottel azimuth thrusters
 Speed, knots: 12
 Complement: 4
 Combat data systems: IN-SNEC/INFOCOM
 Radars: Navigation: Raytheon 40 or Terma; I-band.
 Sonars: Thomson Marconi STS 2054 side scan active; high frequency.

Comment: MSF (Minor Standard Vessel). Ordered in January 1997 from Danyard, Aalborg, and five delivered June 1998 to January 1999. Used primarily as MCM drones although built as multipurpose platform (with one Stanflex container position). Fitted with containerised MCM gear for working in conjunction with Flyvefisken class minehunters. GRP hulls. IN-SNEC is a high data rate sonar/TV link. INFOCOM is a low data rate command link. Plans for further craft are under consideration. One transferred to Sweden in 2001.



MSF 3 6/2008, M Declercq / 1335359

6 SAV CLASS (MINEHUNTER—DRONES) (MSD)

MRD 1 (ex-MRF 1) MRD 2 (ex-MRF 2) MRD 3-6

Displacement, tons: 32 full load
Dimensions, feet (metres): 59.7 × 15.6 × 3.9 (18.2 × 4.8 × 1.2)
Main machinery: 2 Detroit diesels; 350 hp(m) (257 kW); 2 Schottel waterjet propulsors
Speed, knots: 12
Complement: 4
Combat data systems: Terma link to Flyvefisken class (in MCMV configuration).
Radars: Navigation: Furuno, I-band
Sonars: Thomson Sintra; TSM 2054 side scan; active minehunting; high frequency

Comment: Built by Danyard with GRP hulls. First one completed in March 1991, second in December 1991. Four more ordered in mid-1994 and delivered in 1996. The vessels are robot drones (or Surface Auxiliary Vessels (SAV)) operated in pairs by the Flyvefisken class in MCMV configuration. Hull is based on the Hugin class TRVs with low noise propulsion. The towfish with side scan sonar is lowered and raised from the stern-mounted gantry. The first two craft have slightly different funnel designs. MRD 4 is used as a station vessel at Korsør and the remainder are laid-up.



MRD 4 5/2008*, E & M Laursen / 1335367

1 RESEARCH SHIP (AGE)

DANA

Displacement, tons: 3,700 full load
Dimensions, feet (metres): 257.5 × 48.6 × 19.7 (78.5 × 14.8 × 6)
Main machinery: 2 Burmeister and Wain Alpha 16V23-LU diesels; 4,980 hp(m) (3.65 MW); 1 shaft cp prop; bow and stern thrusters
Speed, knots: 15
Range, n miles: 8,000 at 14 kt
Complement: 27 plus 12 scientists

Comment: Built by Dannebrog, Aarhus in 1982. Used mostly for Fisheries survey and research. Has an ice-strengthened hull and three 6 ton cranes



DANA 6/2002, Royal Danish Navy / 0533223

SURVEY SHIPS

4 SURVEY LAUNCHES (YGS)

SKA 12-14 SKA 16

Displacement, tons: 52 full load
Dimensions, feet (metres): 65.6 × 17.1 × 6.9 (20 × 5.2 × 2.1)
Main machinery: 1 GM diesel; 540 hp (403 kW); 1 shaft
Speed, knots: 12
Complement: 6 (1 officer)
Radars: Navigation: Furuno, I-band.

Comment: GRP hulls. Built 1981-84 by Rantsausminde. SKA 12 has strengthened hull and is permanently deployed to Naval Station Grønødal (Greenland) for surveying of Greenland waters. SKA 11 was lost off Greenland on 3 May 2006. Multibeam echo sounders are fitted. SKA 13 and 14 have been modified for other tasks at the Naval Bases. SKA 11 and 15 were replaced by two Holm class. The survey launches can work alone, in pairs or in conjunction with Flyvefisken class vessels. All have red hulls and white superstructures.



SKA 16 9/2006, E & M Laursen / 1159935

TRAINING SHIPS

Notes: There are two small Sail Training Ships, *Svanen* Y 101 and *Thyra* Y 102. Of 32 tons they have a sail area of 480 m² and an auxiliary diesel of 72 hp(m) (53 kW). Built in 1960 by Molich yacht builders, Hundested. Used to train midshipmen before attending the naval academy.



THYRA 6/2008*, Frank Findler / 1335457

AUXILIARIES

Notes: (1) The OPLOG organisation consists of the former Mobile Logistic Unit and parts of the maintenance and supply facilities of the naval bases at FredericksHAVN and Korsør. The mobile capability includes containerised workshops, stores, accommodation and helicopter refuelling facilities carried on approximately 40 trucks and trailers.

(2) Sealift: The ARK project, to secure availability of strategic sealift to NATO, was launched by Denmark in 2003. Germany became a full partner in 2006. Full time charter of the 171 m *Tor Anglia* (2,450 lane-metres + 627 TEU) was arranged in 2003, of the 183 m *Tor Futura* (2,308 lane-metres + 644 TEU) in 2004, of the 182 m *Ark Forwarder*

(2,715 lane-metres) in 2006 and of the 193 m *Tor Dania* (2,240 lane-metres) in 2007. The ships are on call for the NATO Response Force and also for Danish and German national operations.

2 ABSALON CLASS (COMBAT SUPPORT SHIPS) (AGF/AKR/AH)

Name	No	Builders	Laid down	Launched	Commissioned
ABSALON	L 16	Odense Shipyard, Linds	28 Nov 2003	25 Feb 2004	19 Oct 2004
ESBERN SNARE	L 17	Odense Shipyard, Linds	2004	21 June 2004	18 Apr 2005

Displacement, tons: 6,300 full load
 Dimensions, feet (metres): 449.6 × 64.0 × 20.7
 (137.0 × 19.5 × 6.3)
 Main machinery: CODAD. 2 MTU 8000 M 70 diesels;
 22,300 hp (16.63 MW); 2 shafts; CP propellers; bow thruster
 Speed, knots: 23
 Range, n miles: 11,500 at 14 kt
 Complement: 99 + 70 staff

Missiles: SSM: 16 Boeing Harpoon Block II (2 octuple
 AHWCS VLS launchers); active radar homing to 124 km
 (67 n miles) at 0.9 Mach; warhead 227 kg.
 SAM: 36 Evolved Sea Sparrow RIM 162B (semi-active
 radar homing to 18 km (9.7 n miles) at 3.6 Mach; warhead
 38 kg. 3 Raytheon Mk 56 VLS (3 × 12 cells).
 4 twin Sea Stinger launchers.
 Guns: United Defense 5 in (127 mm)/62 Mk 45 Mod 4 (20
 rds/min to 23 km (12.6 n miles); weight of shell 32 kg.
 Prepared for extended range capable munitions.
 2 Oerlikon Contraves 35 mm GDM08 Millennium guns.
 4 × 12.7 mm MGs
 Torpedoes: 6–324 mm (2 triple) launchers (Eurotorp
 Mu 90 Impact; active/passive homing to 15 km (8 n miles)
 at 29/50 kt.
 Countermeasures: Decoys: Terma 130 mm Decoy Launching
 System 2 DL-12T and 2 DL-6T launchers (36 barrels)
 ESM. EDO ES 3701



ABSALON

(Scale 1 : 1,200), Ian Sturton / 1166532

Combat data systems: Terma C-Flex.
 Electro-optic systems: FLIR Systems Sea Star Safire III (E/F-band).
 Radars: Air/surface search: Thales SMART-S 3D (E/F-band).
 Surface search/navigation: Terma Scantec 2001 (I-band).
 Fire control: 2 Saab Tech Ceros 200 Mk 3 (J/K-band).
 Navigation: 2 FR-2135 (E/F/I-band).
 Sonars: Atlas ASO 94 hull mounted. VDS/DTAS/ATAS to be
 decided
 Helicopter: 2 EH 101

ships. Construction of first of class started on 30 April
 2003.

Structure: Built to DNV Navy standards with five Stanflex
 container positions. Ro-Ro ramp aft gives access to 900 m²
 of multipurpose deck (vehicles (including 62 ton MBT),
 logistics, ammunition, up to 34 TEU containers). 2 Combat
 Boat 90E high-speed insertion craft carried on cargo deck.
 Flight deck capable of operating 20 ton helicopters.

Operational: To be capable of acting as a command platform,
 transporting up to 200 personnel and equipment,
 provision of joint logistic support, and as a hospital ship.
 Absalon achieved full operational capability in 2007 and
 Esbern Snare in mid-2008.

Programmes: Contract on 16 October 2001 for detailed
 design and construction of two multirole support



ABSALON

9/2007, Royal Danish Navy / 1166513



ABSALON

9/2007, B Moutrie / 1166512



ESBERN SNARE

5/2008, B Moutrie / 1335357

1 TRANSPORT SHIP (AKS)

Name	No	Builders	Commissioned
SLEIPNER	A 559	Åbenrå Værft og A/S	18 July 1986

Displacement, tons: 465 full load
 Dimensions, feet (metres): 119.8 × 24.9 × 8.8 (36.5 × 7.6 × 2.7)
 Main machinery: 1 Callesen diesel; 575 hp(m) (423 kW); 1 shaft
 Speed, knots: 11
 Range, n miles: 2,400 at 11 kt
 Complement: 7 (1 officer)
 Cargo capacity: 150 tons
 Radars: Navigation; Furuno FR 2115, I-band.



SLEIPNER 4/2007, E & M Laurson / 1335455

4 RESCUE VESSELS (PBO)

NORDSØEN	VESTKYSTEN	HAVØRNEN	VIBEN
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Measurement, tons: 594 gwt (Nordsøen); 667 gwt (Vestkysten); 188 gwt (Havørnen); 23 gwt (Viben)
 Dimensions, feet (metres): 174.6 × 33.8 × 10.8 (53.2 × 10.3 × 3.3) (Nordsøen)
 163.7 × 32.8 × 13.8 (49.9 × 10 × 4.2) (Vestkysten)
 101.4 × 21.6 × 7 (30.9 × 6.6 × 2) (Havørnen)
 56.4 × 11.8 × 5.2 (17.2 × 3.6 × 1.6) (Viben)

Comment: Non-naval ships operated by the Ministry of Food and Fisheries. Nordsøen and Vestkysten operate primarily in the North Sea and Kattegat area, Havørnen in the Baltic Sea around Bornholm and Viben in shallow waters. Capable of 14–18 kt



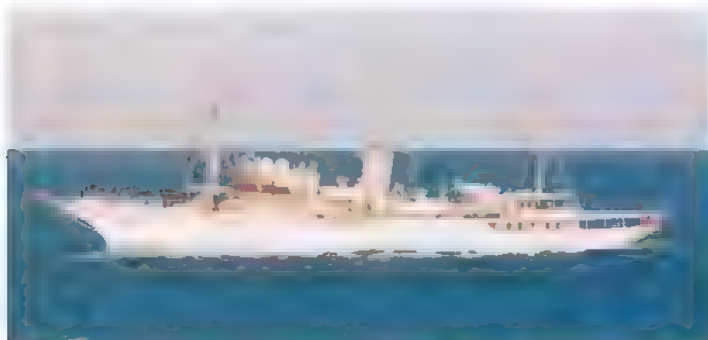
NORDSØEN 1/1999, Harald Carstens / 0056889

1 ROYAL YACHT (YAC)

Name	No	Builders	Commissioned
DANNEBROG	A 540	R Dockyard, Copenhagen	20 May 1932

Displacement, tons: 1,130 full load
 Dimensions, feet (metres): 246 × 34 × 12.1 (75 × 10.4 × 3.7)
 Main machinery: 2 Burmeister & Wain Alpha T23L-KVO diesels; 1,800 hp(m) (1.32 MW); 2 shafts; cp props
 Speed, knots: 14
 Complement: 54 (12 officers)
 Guns: 2–40 mm saluting guns.
 Radars: Navigation. Furuno FR-2115; I-band.

Comment: Laid down 2 January 1931, launched on 10 October 1931. Major refit 1980 included new engines and electrical gear. Marisat fitted in 1992



DANNEBROG 4/2008*, E & M Laurson / 1335365

2 OIL POLLUTION CRAFT (YPC/ABU)

GUNNARTHORSON A 560	GUNNAR SEIDENFADEN A 561
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Displacement, tons: 750 full load
 Dimensions, feet (metres): 183.7 × 40.3 × 12.8 (56 × 12.3 × 3.9)
 Main machinery: 2 Burmeister and Wain Alpha 8V23L-VO diesels, 2,320 hp(m) (1.7 MW); 2 shafts; cp props; bow thruster
 Speed, knots: 12.5
 Complement: 16 (7 officers)

Comment: Built by Ørnskov Stålskibsværft, Frederikshavn. Delivered 8 May and 2 July 1981 respectively. G Thorson at Copenhagen, G Seidenfaden at Korsør. Carry firefighting equipment. Large hydraulic crane fitted in 1988 for the secondary task of buoy tending. Orange painted hulls.



GUNNARTHORSON 8/2007, Michael Nitz / 1165510

2 POLLUTION CONTROL CRAFT (YPC)

MILJØ 101-102

Displacement, tons: 16 full load
 Dimensions, feet (metres): 53.8 × 14.4 × 7.1 (16.2 × 4.2 × 2.2)
 Main machinery: 1 MWM TBD232V12 diesel; 454 hp(m) (334 kW); sustained; 1 shaft
 Speed, knots: 15
 Range, n miles: 350 at 8 kt
 Complement: 3 (1 officer)

Comment: Built by Ejvind's Plastikbodeværft, Svendborg. Carry derricks and booms for framing oil slicks and dispersant fluids. Naval manned. Delivered 1 November and 1 December 1977



MILJØ 102 7/2008* / 1335356



GUNNAR SEIDENFADEN 5/2002, L-G Nilsson / 0526823

2 SEA TRUCKS (AKL)

METTE MILJØ A 582

MARIE MILJØ A 563

Displacement, tons: 157 full load
Dimensions, feet (metres): 97.7 × 26.2 × 5.2 (29.8 × 8 × 1.6)
Main machinery: 2 Grenaa diesels; 660 hp(m) (485 kW); 2 shafts
Speed, knots: 10
Complement: 9 (1 officer)

Comment: Built by Carl B Hoffmann A/S, Esbjerg and Søren Larsen & Sønners Skibsværft A/S, Nykøbing Mors. Delivered 22 February 1980. Have orange and yellow superstructure



METTE MILJØ

7/2008* / 1335355

2 ARVAK CLASS (HARBOUR TUGS) (YTL)

ARVAK Y 344

ALSIN Y 345

Displacement, tons: 79 full load
Dimensions, feet (metres): 52.5 × 21.7 × 8.2 (16.0 × 6.6 × 2.5)
Main machinery: 1 MTU 12V 183TE62 diesel; 737 hp(m) (550 kW)
Speed, knots: 10

Comment: Built by Hvide Sande Skibs & Baadebyggeri and delivered on 18 November 2002. In service at Korsør and Frederikshavn. Fitted with Stanflex container position aft to facilitate transport of containerised stores and equipment between naval bases



ALSIN

5/2008*, E & M Laurson / 1335366

ICEBREAKERS

Notes: Icebreakers, are controlled by the Navy but have a combined naval and civilian crew. Maintenance is done at Frederikshavn in Summer. Surveying is no longer conducted by these vessels

1 THORBJØRN CLASS (AGB/AGS)

Name
 THORBJØRN

No
 A 553

Builders
 Svendborg Værft

Commissioned
 June 1981

Displacement, tons: 2,344 full load
Dimensions, feet (metres): 221.4 × 50.2 × 15.4 (67.5 × 15.3 × 4.7)
Main machinery: Diesel-electric; 4 Burmeister & Wain Alpha 16U28L-VO diesels; 6,800 hp(m) (5 MW); 2 motors; 2 shafts
Speed, knots: 16.5
Range, n miles: 22,000 at 16 kt
Complement: 22 (7 officers)

Comment: No bow thruster. Side rolling tanks. Fitted for surveying duties in non-ice periods



THORBJØRN

9/2006, M Declerck / 1164771

2 DANBJØRN CLASS (AGB)

Name
 DANBJØRN
 ISBJØRN

No
 A 551
 A 552

Builders
 Linds Værft, Odense
 Linde Værft, Odense

Commissioned
 1965
 1966

Displacement, tons: 3,685 full load
Dimensions, feet (metres): 252 × 56 × 20 (76.8 × 17.1 × 6.1)
Main machinery: Diesel-electric; 6 Burmeister and Wain 12-26MT-40V diesels; 10,500 hp(m) (7.72 MW); 8 motors; 5,240 hp(m) (38.5 MW); 4 shafts
Speed, knots: 14
Range, n miles: 11,500 at 14 kt
Complement: 25 (9 officers)

Comment: Two of the four propellers are positioned forward, two aft.



ISBJØRN

8/2008*, E & M Laurson / 1335384

Djibouti**MARINE NATIONALE DJIBOUTIENNE****Country Overview**

Formerly the French territory of French Somaliland and later the Afars and the Issas, Djibouti became independent in 1977. With an area of 8,957 square miles and a coastline of 170 n miles, the country is situated in a strategic position on the Bab el Mandeb, the strait that links the Red Sea with the Gulf of Aden. It is bordered to the north by Eritrea, to the west by Ethiopia and to the south by Somalia. The largest town and capital is also called Djibouti whose port serves as an international transshipment and refueling centre. It also provides Ethiopia with its only rail link to the

sea. Territorial seas (12 n miles) are claimed. A 200 n mile Exclusive Economic Zone (EEZ) has been claimed but the limits are not fully defined.

Headquarters Appointments

Commander of Navy:
 Colonel Abdourahman Aden Cher

Personnel

2009. 380

Bases

Djibouti

French Navy

The permanent French naval contingent usually includes up to three frigates and a repair ship.

PATROL FORCES

Notes: (1) Up to six RIBs are in use. Zodiac and Avon types.
 (2) One LCM (ex-CTM 14) transferred from France in 1999.
 (3) There is a small patrol craft P 02.
 (4) Two Cantieri del Golfo 500L class were acquired in 2006. The 10 m craft are capable of 37 kt.

1 PLASCOA CLASS (COASTAL PATROL CRAFT) (PB)

Name	No	Builders	Commissioned
MONT ARREH	P 11	Plascoa, Cannes	16 Feb 1986

Displacement, tons: 35 full load
Dimensions, feet (metres): 75.5 × 18 × 4.9 (23 × 5.5 × 1.5)
Main machinery: 2 SACM Poyaud V12-520 M25 diesels; 1,700 hp (m) (1.25 MW); 2 shafts
Speed, knots: 25
Range, n miles: 750 at 12 kt
Complement: 15
Guns: 1 Giat 20 mm. 1—12.7 mm MG.
Radars: Navigation: Decca 36; I-band.

Comment: Ordered in October 1984 and transferred as a gift from France. GRP hulls. Refitted in 1988 and 1994. *Moussa Ali* decommissioned in 2001



MONT ARREH

1986, Plascoa / 0056896

1 SWARI CLASS (INSHORE PATROL CRAFT) (PBR)

P 13

Comment: 21 m craft acquired from Iraq in 1989. Can be armed with MGs and rocket launchers. Outboard engines give speeds up to 25 kt in calm conditions. Four further craft are no longer operational.

2 BATTALION 17 (PBF)

P 16 P 17

Displacement, tons: 35.5 full load
Dimensions, feet (metres): 55.9 × 17 × 5.2 (17.05 × 5.2 × 1.6)
Main machinery: 2 MTU 12V 183 TE 92 diesels
Speed, knots: 35.2
Range, n miles: 680 at 30 kt
Complement: 9
Guns: 2—14.5 mm MGs (1 twin).
Radars: Surface search: Raytheon; I-band.

Comment: Australian design craft built by Herens Boat Yard at Assab, Eritrea and delivered in 2001. Five similar craft in service in Eritrea.



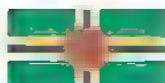
BATTALION 17 (Eritrean colours)

8/2000, Eritrean Navy / 0103788

4 PATROL CRAFT (PC)

Displacement, tons: 177 full load
Dimensions, feet (metres): 44.0 × 12.5 × 3.9 (13.4 × 3.8 × 1.2)
Main machinery: 2 General Motors Detroit 6V53 diesels; 2 shafts
Speed, knots: 13
Range, n miles: 200 at 11 kt
Complement: 4

Comment: Former US Coast Guard lifeboats constructed in the 1960s. Four were delivered in June 2006 under FMS funding arrangements. A further craft was transferred as spares.



Dominica

Country Overview

Formerly a British colony, the Commonwealth of Dominica became an independent republic in 1978. With an area of 290 sq miles and coastline of 80 n miles, it is the largest and most northerly of the Windward Islands in the Lesser Antilles chain and is situated in the Caribbean Sea between the French possessions of Guadeloupe to the north and Martinique to the south. The capital, major town, and port

is Roseau. Territorial seas (12 n miles) are claimed. A 200 n mile Exclusive Economic Zone (EEZ) has been claimed but the limits are not fully defined.

Personnel

2009: 35

Headquarters Appointments

Head of Police Coast Guard:
 Inspector Eric Elizee

Bases

Roseau

COAST GUARD

1 SWIFT 65 FT CLASS (PB)

Name	No	Builders	Commissioned
MELVILLE	D 4	Swiftships, Morgan City	1 May 1984

Displacement, tons: 33 full load
Dimensions, feet (metres): 64.9 × 18.4 × 6.6 (19.8 × 5.6 × 2)
Main machinery: 2 Detroit 12V-71TA diesels; 840 hp (616 kW) sustained; 2 shafts
Speed, knots: 23. **Range, n miles:** 250 at 18 kt
Complement: 10
Guns: 1—7.62 mm MG.
Radars: Furuno; I/J-band

Comment: Donated by US government. Similar craft supplied to Antigua and St Lucia. Aluminium construction.



MELVILLE

11/1993, Maritime Photographic / 0506143

1 DAUNTLESS CLASS (PB)

Name	No	Builders	Commissioned
UKALE	D 05	SeaArk Marine	8 Nov 1995

Displacement, tons: 11 full load
Dimensions, feet (metres): 40 × 14 × 4.3 (12.2 × 4.3 × 1.3)
Main machinery: 2 Caterpillar 3208TA diesels; 870 hp (650 kW) sustained; 2 shafts
Speed, knots: 27
Range, n miles: 600 at 18 kt
Complement: 6
Guns: 1—7.62 mm MG (can be carried)
Radars: Raytheon; I-band

Comment: Similar to craft delivered by the US to many Caribbean coast guards under FMS. Aluminium construction.



UKALE

11/1995, SeaArk / 0056897

3 PATROL CRAFT (PBR)**VIGILANCE** **OBSERVER** **RESCUER**

Displacement, tons: 2.4 full load
Dimensions, feet (metres): 27 × 8.4 × 1 (8.2 × 2.6 × 0.3)
Main machinery: 1 Evinrude outboard; 225 hp (168 kW) sustained or 2 Johnson outboards (Rescuer), 280 hp (205 kW)
Speed, knots: 28 or 45 (Rescuer)
Complement: 3

Comment: First two are Boston Whalers acquired in 1988. Rescuer is of similar size but is an RHIB acquired in 1994.



OBSERVER
 11/1993
 Maritime Photographic
 0506227

Dominican Republic

MARINA DE GUERRA

**Country Overview**

The Dominican Republic is an independent state whose constitution was promulgated in 1966. With an area of 18,816 square miles, it occupies the eastern two thirds of the island of Hispaniola, which it shares with Haiti to the west. There are also a number of adjacent islands, notably Beata and Saona. It has a 697 n mile coastline and is bordered to the north by the Atlantic Ocean, to the east by the Mona Passage, which separates it from Puerto Rico, and to the south by the Caribbean Sea. Santo Domingo is the capital, largest city and principal port. Territorial seas (8 n miles) are claimed. A 200 n mile EEZ has been claimed but the limits have not been defined by boundary agreements.

Headquarters Appointments

Chief of Naval Staff:
 Vice Admiral Julio C Ventura Bayonet

Personnel

- (a) 2009: 3,800 officers and men (including naval infantry)
 (b) Selective military service

Bases

27 de Febrero, Santo Domingo. HQ of CNS, Naval School
 Supply base
 Las Calderas, Las Calderas, Bani: Naval dockyard, 700 ton
 synchrolift Training centre. Supply base
 Haina. Dockyard facility. Supply base.
 Puerto Plata. Small naval base.

Organisation

There are three naval zones:
 North: Haitian border east to the Mona passage.

South: Mona passage west to the Haitian border.

Santo Domingo: Naval establishments in the capital and its environs

DELETIONS

Notes: *Melia* still flies an ensign as a museum ship.

Auxiliaries

2006 *Capitán Boatguit*

PATROL FORCES**2 BALSAM CLASS (PBO/WMEC)**

Name	No	Builders	Commissioned
ALMIRANTE JUAN ALEXANDRO ACOSTA (ex-Citrus)	PA 302 (ex-C 456, ex-WMEC 300)	Marine Iron, Duluth	30 May 1943
ALMIRANTE DIDIEZ BURGOS (ex-Buttonwood)	PA 301 (ex-C 457, ex-WLB 308)	Duluth Shipyard, Minnesota	24 Sep 1943

Displacement, tons: 1,034 full load
Dimensions, feet (metres): 180 × 37 × 12 (54.9 × 11.3 × 3.8)
Main machinery: Diesel-electric; 2 Cooper Bessemer diesels; 1,402 hp (1.06 MW); 2 motors; 1,200 hp (895 kW); 1 shaft; bow thruster
Speed, knots: 13
Complement: 64 (4 officers)
Guns: 1—4 in; 2—20 mm (456). 2—20 mm; 2—12.7 MGs (457)
Radars: Surface search: Raytheon SPS-64(V)1; I-band

Comment: C 456 built as a buoy tender but served as a US Coast Guard cutter from 1979 to 1994. Transferred by gift on 16 September 1995 and recommissioned in January 1996 after a short refit. C 457 transferred from US Coast Guard on 30 June 2001.



ALMIRANTE JUAN ALEXANDRO ACOSTA

8/2002, A Sheldon-Duplaix / 0534105

2 WHITE SUMAC CLASS (ABU)

Name	No	Builders	Commissioned
TORTUGUERO (ex-White Pine)	PM 203 (ex-BA 1, ex-WLM 547)	Erie Concrete and Steel, Erie	11 July 1944
CAPOTILLO (ex-White Sumac)	PM 204 (ex-BA 2, ex-WLM 504)	Niagara Shipbuilding	1943

Displacement, tons: 485 full load
Dimensions, feet (metres): 133 × 31 × 9 (40.5 × 9.5 × 2.7)
Main machinery: 2 Caterpillar 353 diesels; 600 hp (448 kW); 2 shafts
Speed, knots: 9
Complement: 24

Comment: PM 203 transferred from US Coast Guard in 1999 and PM 204 on 20 September 2002. Fitted with a 10 ton capacity boom. Reclassified as patrol ships in 2006.



TORTUGUERO

12/1998, A Sheldon-Duplaix 0056903

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jfs.janes.com

2 CANOPUS (SWIFTSHIPS 110 ft) CLASS (LARGE PATROL CRAFT) (PB)

Name	No	Builders	Commissioned
CANOPUS (ex-Cristobal Colon)	GC 107	Swiftships, Morgan City	June 1984
ORION	GC 109	Swiftships, Morgan City	Aug 1984

Displacement, tons: 93.5 full load
Dimensions, feet (metres): 109.8 x 23.9 x 5.9 (33.5 x 7.3 x 1.8)
Main machinery: 3 Caterpillar 3412E diesels; 1,700 hp (1.3 MW) sustained; 3 shafts
Speed, knots: 23
Range, n miles: 1,500 at 12 kt
Complement: 19 (3 officers)
Guns: 1—20 mm or 2—12.7 mm MGs.
Radars: Surface search: Raytheon; I-band

Comment: Built of aluminium. GC 107 completely rebuilt and reconditioned by Swiftships in 2003. GC 109 was similarly refitted in 2004.



CANOPUS 1/2004, Swiftships / 0587700

3 POINT CLASS (PB)

Name	No	Builders	Commissioned
ARIES (ex-Point Martin) (ex-Point Baton)	GC 101 (ex-82379)	USCG Yard, Curtis Bay, MD	20 Aug 1970
ANTARES	GC 105 (ex-82340)	J Martinec, Tecoma	20 Aug 1970
SIRIUS (ex-Point Spencer)	GC 110 (ex-82349)	J Martinec, Tecoma	25 Oct 1968

Displacement, tons: 67 full load
Dimensions, feet (metres): 83 x 17.2 x 5.8 (25.3 x 5.2 x 1.8)
Main machinery: 2 Caterpillar D3412 diesels; 1,600 hp (1.19 MW); 2 shafts
Speed, knots: 22
Range, n miles: 1,200 at 8 kt
Complement: 10
Guns: 2—12.7 mm MGs.
Radars: Surface search: Hughes/Furuno SPS 73; I-band.

Comment: Antares transferred from US Coast Guard 1 October 1999 and Sirius transferred 12 December 2000. Aries reported decommissioned in 2005 but returned to service after refit in 2007.



SIRIUS 8/2004, A Sheldon-Duplaix / 0587699

4 BELLATRIX CLASS (COASTAL PATROL CRAFT) (PB)

Name	No	Builders	Commissioned
PROCION	GC 103	Sewart Seacraft Inc, Berwick, LA	1957
ALDEBARÁN	GC 104	Sewart Seacraft Inc, Berwick, LA	1972
BELLATRIX	GC 106	Sewart Seacraft Inc, Berwick, LA	1967
CAPELLA	GC 108	Sewart Seacraft Inc, Berwick, LA	1968

Displacement, tons: 60 full load
Dimensions, feet (metres): 85 x 18 x 5 (25.9 x 5.5 x 1.5)
Main machinery: 2 Caterpillar 3412E diesels; 1,700 hp (1.3 MW) sustained; 2 shafts
Speed, knots: 18.7
Range, n miles: 800 at 15 kt
Complement: 12
Guns: 3—12.7 mm MGs
Radars: Surface search: Raytheon SPS-64; I-band

Comment: Transferred to the Dominican Navy by the US. Procion was taken out of service in 1995 but returned in 1997 after a long refit. GC 103 and GC 106 completely rebuilt and reconditioned by Swiftships, Morgan City, in 2003. GC 104 and GC 108 were similarly refitted in 2004.



CAPELLA 8/2002, A Sheldon-Duplaix / 0534085



BELLATRIX 8/2004, A Sheldon-Duplaix / 0587699

2 SWIFTSHIPS 35 M CLASS (LARGE PATROL CRAFT) (PB)

Name	No	Builders	Commissioned
ALTAIR	GC 112	Swiftships, Morgan City	Oct 2003
ARCTURUS	GC 114	Swiftships, Morgan City	Mar 2004

Displacement, tons: 95 standard
Dimensions, feet (metres): 115.1 x 24.0 x 5.0 (35.1 x 7.3 x 1.5)
Main machinery: 3 CAT 3412 diesels; 3,600 hp (2.7 MW); 3 Hamilton HM 851 waterjets
Speed, knots: 25
Range, n miles: To be announced
Complement: To be announced
Guns: 1—25 mm 2—12.7 mm MGs.

Comment: Two craft ordered from Swiftships, Morgan City, LA as part of wider programme to increase capability to conduct counter-smuggling and drug-trafficking operations. Fitted with launching ramp for 4.7 m RIB



ALTAIR 12/2003, A Sheldon-Duplaix / 0568169

4 DAMEN 1505 PATROL CRAFT (LARGE PATROL CRAFT) (PB)

Name	No	Builders	Commissioned
HAMAL	LR 151	Astilleros Navales de la Bahía de las Calderas	Dec 2004
VEGA	LR 152	Astilleros Navales de la Bahía de las Calderas	Dec 2004
DENEB	LR 153	Astilleros Navales de la Bahía de las Calderas	14 Apr 2005
ACAMAR	LR 154	Astilleros Navales de la Bahía de las Calderas	14 Apr 2005

Displacement, tons: 16
Dimensions, feet (metres): 49.5 x 14.8 x 3.3 (15.1 x 4.5 x 1.0)
Main machinery: 2 Caterpillar 2406 diesels; 1,800 hp (1.3 MW)
Speed, knots: 34. Range, n miles: To be announced
Complement: 6
Guns: 1—7.62 mm MG (fitted for).

Comment: Damen Stan Patrol 1505 design craft constructed in the Dominican Republic. Aluminium construction. Employed as patrol craft on counter-drugs and illegal immigration duties.



VEGA 6/2006, Damen Shipyards / 1164479

4 INTERCEPTOR CRAFT (PBF)

POLLUX LR 155 CASTOR LR 156 SHAULA LR 157 ATRIA LR 158

Displacement, tons: To be announced
Dimensions, feet (metres): 44.0 x 9.0 x 3.0 (13.4 x 2.75 x 0.9)
Main machinery: 3 Yanmar DE 315 diesels, 945 hp (704 kW); Bravo X drives
Speed, knots: 60
Range, n miles: 600 at 25 kt
Complement: 6

Comment: Manufactured by Nor-Tech, Fort Myers, Florida. Composite and glass fibre V-bottomed hull. The first two donated by the US Southern Command on 13 July 2007 and the second two on 6 September 2007. Employed on counter drugs, arms trafficking and illegal immigration duties.



INTERCEPTOR CRAFT 6/2007, US Southern Command / 1167968

LAND-BASED MARITIME AIRCRAFT

Numbers/Type: 2 Bell OH-58 Kiowa.
Operational speed: 102 kt (188 km/h)
Service ceiling: 14,000 ft (4,267 m)
Range: 260 n miles (481 km)

Role/Weapon systems: Light observation helicopters. The first was acquired in November 2003 and two further were received from the US in 2006. Two remain in service. Fitted for 7.62 mm MG



OH-58 (Australian colours) 6/1996, Rockwell Australia / 1164548

AUXILIARIES

Notes: (1) There are also two dredgers manned by the Navy. Puerto Plata BD 11, San Pedro BD 12.
 (2) There are eight auxiliary craft. Nizao LA 1, Soco LA 2, Chavon LA 3, Yuma LA 4, Cayo Arena LA 5, Rio Ozama LA 7, Beata LA 8, Cayo Levantado LA 9.



DREDGER 10/1996, A Sheldon-Duplax / 0056902

1 FLOATING DOCK (YFD)

ENDEAVOR DF 1 (ex-AFDL 1)

Comment: Lift, 1,000 tons. Commissioned in 1943. Transferred from US on loan 8 March 1986 and approved for transfer 10 June 1997. DF 2 (ex-AFDM 2), previously reported, was not acquired.

1 LCU 1600 CLASS (UTILITY LANDING CRAFT) (LCU)

NEYBA (ex-Commando) LD 31 (ex-LDM 4, ex-LCU 1675)

Displacement, tons: 200 light; 375 full load
Dimensions, feet (metres): 134.9 x 29 x 6.1 (41.1 x 8.8 x 1.9)
Main machinery: 4 Detroit 6-71 diesels; 696 hp (519 kW) sustained; 2 shafts; Kort nozzles
 2 Detroit 12V-71 diesels (LCU 1680-1681); 680 hp (508 kW) sustained; 2 shafts; Kort nozzles
Speed, knots: 11
Range, n miles: 1,200 at 8 kt
Complement: 14 (2 officers)
Military lift: 134 tons or 400 troops
Guns: 2 12.7 mm MGs.
Radars. Navigation: Furuno; I-band.

Comment: Steel hulled construction. Built by General Ship and Engineering Works in 1978. Formerly operated by the US Army and transferred in 2004.



LCU 1600 CLASS (US colours) 8/2004, Hachiro Nakai / 1043687

1 SOTOYOMO CLASS (ATA)

Name	No	Builders	Commissioned
ENRIQUILLO	RM 3 (ex-RM 22)	Levington SB Co, Orange TX	26 Feb 1945

Displacement, tons: 534 standard, 860 full load
Dimensions, feet (metres): 143 x 33.9 x 13 (43.6 x 10.3 x 4.0)
Main machinery: Diesel-electric; 2 GM 12-278A diesels; 2,200 hp (1.64 MW); 2 generators, 1 motor; 1,500 hp (1.12 MW); 1 shaft
Speed, knots: 13
Range, n miles: 8,000 at 10 kt
Complement: 45
Radars. Surface search: Raytheon SPS-5D; G/H-band

Comment: Leased from the US on 30 October 1980 and transferred on 10 June 1997. Reported decommissioned in 2005 but returned to service in 2007. Employed as afloat support ship.



ENRIQUILLO (old number) 8/2002, A Sheldon-Duplax / 0534084

TUGS

4 COASTAL/HARBOUR TUGS (YTM/YTL)

GUAROCUYA RM 1	GUAROA RM 3
GUARIONEX RM 2	MAGUA RM 4

Displacement, tons: 265 full load
Dimensions, feet (metres): 85.6 x 28.0 x 13.3 (26.1 x 7.9 x 4.05)
Main machinery: 2 Caterpillar 3512B diesels; 3,500 hp (2.6 MW); 2 shafts
Speed, knots: 12.7
Complement: 6

Comment: Details given are for RM 1 and RM 2, Damen Stantug 2608, built at Astilleros Navales de la Bahía de las Calderas and commissioned in April 2004 and June 2005 respectively. The details of RM 3 and RM 4 are not known.



East Timor

Country Overview

The Democratic Republic of Timor-Leste (also known as East Timor) has an area of 7,400 square miles and lies in the eastern part of Timor Island, the largest and easternmost of the Lesser Sunda Islands in the Malay Archipelago. Originally settled in the early 16th century, the Portuguese and Dutch competed for influence until boundaries became established. Dutch Timor, in the west, later became part of the Republic of Indonesia in 1960. Portuguese Timor, comprising the region of Dili, in the east, and the small area of Oecussi in the north-west, was annexed by Indonesia in 1975. Following an armed conflict and two and a half years of UN administration

(UNTAET), East Timor gained independence on 20 May 2002 and became a UN member on 27 September 2002. There has been a succession of further UN missions. UNMISSET was withdrawn on 20 May 2005 and was succeeded by a political mission, UNOTIL. Following internal security problems, an expanded mission, UNMIT, was established on 25 August 2006. This includes police personnel and military advisers. The capital, principal city and port is Dili. Maritime claims are not known.

The role of the Naval Component of The East Timor Defence Force is to conduct Fishery Protection duties in the East Timorese EEZ and to safeguard the only direct access to the enclave of Oecussi which is by sea.

Headquarters Appointments

Commander in Chief Defence Forces: Brigadier General Taur Matan Ruak

Personnel

2009: 150 (under training)

Bases

Hera Harbour

PATROL FORCES

2 ALBATROZ CLASS (RIVER PATROL CRAFT) (PB)

Name	No	Builders	Commissioned
OECUSSI (ex-Açor)	P 101 (ex-P 1163)	Arsenal do Alfete	9 Dec 1974
ATAURO (ex-Albatroz)	P 102 (ex-P 1162)	Arsenal do Alfete	9 Dec 1974

Displacement, tons: 45 full load

Dimensions, feet (metres): 77.4 × 18.4 × 5.2 (23.6 × 5.6 × 1.6)

Main machinery: 2 Cummins diesels; 1,100 hp (820 kW); 2 shafts

Speed, knots: 20 **Range, n miles:** 2,500 at 12 kt

Complement: 8 (1 officer)

Guns: 1 Oerlikon 20 mm/65. 2—12.7 mm MGs.

Radars: Surface search. Decca RM 316P, I-band.

Comment: Transferred by Portugal in 2001 to establish the Naval Component of the ETDF

0 + 2 SHANGHAI II CLASS (FAST ATTACK CRAFT—GUN) (PB)

Displacement, tons: 134 full load

Dimensions, feet (metres): 127.3 × 17.7 × 5.6 (38.8 × 5.4 × 1.7)

Main machinery: 2 Type L12-180 diesels, 2,400 hp (m) (1.76 MW) (forward); 2 Type 12-D-6 diesels, 1,820 hp (m) (1.34 MW) (aft); 4 shafts

Speed, knots: 30

Range, n miles: 700 at 16.5 kt

Complement: 38

Guns: 4—37 mm/63 (2 twin). 4—25 mm/80 (2 twin).

Radars: Surface search: Skin Head; E/F-band.

Comment: Agreement by the East Timor government for the transfer of two Chinese Shanghai II-class patrol craft was reached in April 2008. The date of the transfer has not been confirmed. The contract is reported to include upgrade of shore infrastructure



OECUSSI

4/2008, John Mortimer / 1305302



Ecuador

ARMADA DEL ECUADOR

Country Overview

The Republic of Ecuador is situated in northwestern South America. With an area of 105,037 square miles it straddles the equator and has borders to the north with Colombia and to the south with Peru. It has a coastline of 1,210 n miles with the Pacific Ocean. The country also includes the Galápagos Islands about 520 n miles west of the mainland. The capital is Quito while Guayaquil is the principal port and commercial centre. Ecuador has not claimed an EEZ but is one of a few coastal states which claims a 200 n mile territorial sea.

Headquarters Appointments

Commander-in-Chief of the Navy:
Rear Admiral Livio Espinoza
Chief of Naval Staff:
Rear Admiral Aland Molestina
Chief of Naval Operations:
Rear Admiral Milton Lalama

Headquarters Appointments—continued

Flag Officer Fleet:
Captain Oswaldo Zambrano

Diplomatic Representation

Naval Attaché in Rome:
Captain Renan Ruiz
Naval Attaché in London and Paris:
Captain Carlos Rivera
Naval Attaché in Washington:
Captain Javier Ricaurte
Naval Attaché in Santiago:
Captain Manolo Alava
Naval Attaché in Bogota:
Captain Francisco Recaurte
Naval Attaché in Caracas:
Captain Miguel Quelal
Naval Attaché in Lima:
Captain Alejandro Vela
Naval Attaché in Brasilia:
Captain Ronald Munoz

Personnel

- (a) 2009: 7,283 (including naval aviation, marines and Coast Guard)
(b) 1 year's selective national service

Organisation

1st Naval Zone: HQ at Guayaquil Provinces of El Oro, Guayas and Manabi.
2nd Naval Zone: HQ at San Cristobal, Provinces of Galapagos Islands.
3rd Naval Zone: HQ at Esmeraldas Provinces of Esmeraldas and Amazonas

Prefix to Ships' Names

BAE (Buque de Armada de Ecuador)

Bases

Guayaquil (Fleet HQ and main naval base), Jaramijo, San Cristobal, Esmeraldas

Guayaquil (rotary wing) and Manta (fixed wing) air bases.

Establishments

The Naval Academy and Merchant Navy Academy in Salinas; Naval War College in Guayaquil.

Naval Infantry

There are four battalions each comprising amphibious warfare, coastal defence, local security and special forces elements. They are based at: Guayaquil (HQ), Esmeraldas (1st Battalion), Jaramijo (2nd Battalion), San Eduardo (3rd Battalion) and Jambeli (4th Battalion).

Coast Guard

Small force formed in 1980. Hull markings include diagonal thick and thin red stripes on the hull.

PENNANT LIST

Submarines		Patrol Forces		RB 78	Altar	LG 33	Isla Santa Cruz
S 101	Shyri	LM 21	Quito	RB 78	Quilotoa	LG 34	Isla San Cristóbal
S 102	Huancavilca	LM 23	Guayaquil			LG 35	Isla Santa Rosa
		LM 24	Cuenca			LG 36	Isla Puna
Frigates				Auxiliaries		LG 37	Isla de la Plata
FM 01	Presidente Alfaro			TR 62	Calcuchima	LG 38	Isla Santa Clara
FM 02	Moran Valverde			TR 63	Atehuilpa	LG 39	Isla Fernandina
Corvettes				TR 64	Quisquis	LG 40	Isla Española
CM 11	Esmeraldas	BI 91	Orion	TR 65	Taurus	LG 41	Isla San Salvador
CM 12	Mangbi	LH 94	Rigel	BE 91	Guayas	LG 111	Río Puyango
CM 13	Los Rios			DF 82	Río Napo	LG 112	Río Mataje
CM 14	El Oro					LG 113	Río Zarumilla
CM 15	Los Galápagos					LG 114	Río Chone
CM 16	Loja					LG 115	Río Daute
						LG 116	Río Esbahoyo
						LG 121	Río Esmeraldas
						LG 122	Río Santiago
				Coast Guard			
				LG 31	Isla Isabela		
				LG 32	Isla Seymour		

SUBMARINES

2 SHYRI (TYPE 209/1300) CLASS (SSK)

Name	No	Builders	Laid down	Launched	Commissioned
SHYRI	S 101 (ex-S 11)	Howaldtswerke, Kiel	5 Aug 1974	5 Oct 1976	5 Nov 1977
HUANCAVILCA	S 102 (ex-S 12)	Howaldtswerke, Kiel	2 Jan 1975	15 Mar 1977	16 Mar 1978

Displacement, tons: 1,285 surfaced; 1,390 dived
Dimensions, feet (metres): 195.1 × 20.5 × 17.9 (59.5 × 6.3 × 5.4)

Main machinery: Diesel-electric; 4 MTU 12V 493 AZ80 GA31L diesels; 2,400 hp(m) (1.76 MW) sustained; 4 Siemens alternators; 1.7 MW; 1 Siemens motor; 4,600 hp(m) (3.38 MW) sustained; 1 shaft

Speed, knots: 10 surfaced/snorting; 20 dived
Complement: 45 (10 officers)

Torpedoes. 8–21 in (533 mm) bow tubes. Whitehead A 184 Mod 3; dual purpose; wire-guided; active/passive homing to 25 km (13.7 n miles) at 24 kt; 17 km (9.2 n miles) at 38 kt, warhead 250 kg. AEG SST 4; anti-surface; wire-guided; active/passive homing to 12.7 km (6.8 n miles) at 33 kt; 28 km (15.0 n miles) at 23 kt; warhead 260 kg. Total of 14 weapons.

Countermasures: ESM Thomson-CSF DR 2000U; intercept

Weapons control: Signaal M8 Mod 24.

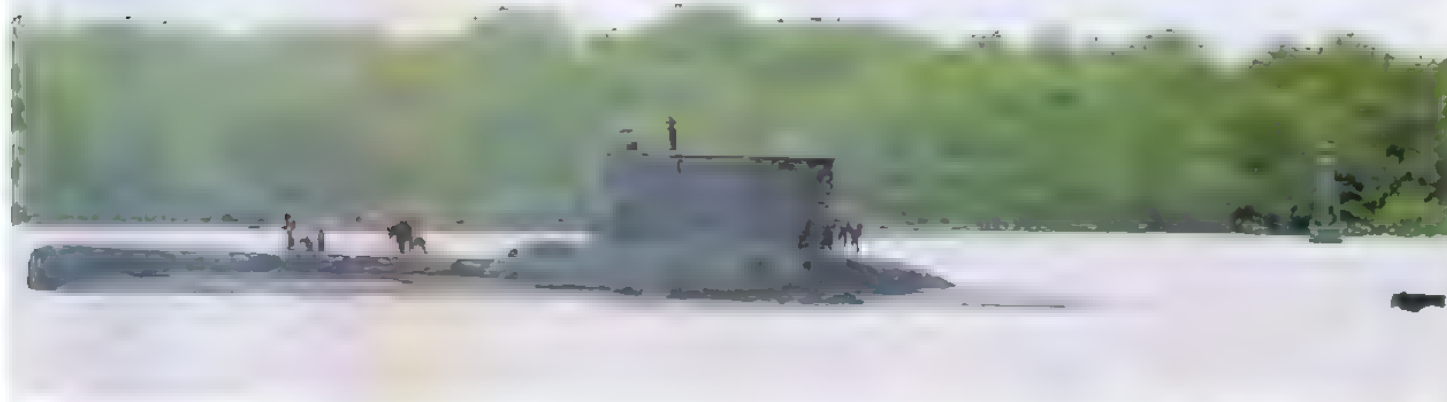
Radars: Surface search: Furuno 1832, I-band.

Sonars: Atlas Elektronik CSU 3; hull-mounted; active/passive search and attack; medium frequency. Thomson Sintra DUUX 2; passive ranging

Programmes. Ordered in March 1974.

Modernisation: *Shyri* underwent major refit in West Germany in 1983; *Huancavilca* in 1984. Second refits by Astinave, Ecuador; *Shyri* in 1994 and *Huancavilca* in 1996. Batteries were changed in both boats 2006–07, the contract for modernisation of both submarines was signed with ASMAR, Talcahuano, on 10 January 2008. DCNS subsequently sub-contracted to modernise the combat systems and technical assistance. The upgrade is to include replacement of the combat system with SUBTICS, replacement of the sonar system with Thales S-Cube multimission suite (including passive bow cylindrical array, passive flank array), Velox M8 intercept array, and a self-noise monitoring system), replacement of the batteries and improvements to the periscopes, machinery control and navigation systems. Work on *Shyri* began on 5 September 2008 and is to be completed in 2010. *Huancavilca* is to be refitted 2010–12. The refits are to extend service lives until about 2030.

Operational: Based at Guayaquil



TYPE 209

6/2001, Maritime Photographic / 0114670



SHYRI

6/1998 / 0017796

FRIGATES

0 + 2 (1) LEANDER CLASS (FFGHM)

Name	No	Builders	Laid down	Launched	Commissioned
PRÉSIDENTE ELOY ALFARO (ex- <i>Almirante Condell</i>)	FM 01 (ex-06)	Yarrow & Co, Scotstoun	5 June 1971	12 June 1972	21 Dec 1973
MORAN VALVERDE (ex- <i>Almirante Lynch</i>)	FM 02(ex-07)	Yarrow & Co, Scotstoun	5 Dec 1971	6 Dec 1972	25 May 1974

Displacement, tons: 2,500 standard, 3,200 full load
Dimensions, feet (metres): 372 oa; 360 wl × 43 × 18 (screws)
 (113.4; 109.7 × 13.1 × 5.5)

Main machinery: 2 Babcock & Wilcox boilers, 550 psi
 (38.7 kg/cm²); 850°F (450°C); 2 White/English Electric
 turbines; 30,000 hp (22.4 MW); 2 shafts

Speed, knots: 27
Range, n miles: 4,500 at 12 kt
Complement: 248 (20 officers)

Missiles: SSM: 2 Aerospatiale MM 38 Exocet; inertial cruise;
 active radar homing to 42 km (23 n miles) at 0.9 Mach;
 warhead 165 kg

SAM 3 twin Matra Simbad launchers for Mistral (may
 be fitted), IR homing to 4 km (2.2 n miles); warhead
 3 kg

Guns: 2 Vickers 4.5 in (115 mm)/45 Mk 6 (twin) semi-
 automatic; 20 rds/min to 19 km (10 n miles) anti-
 surface; 6 km (3.2 n miles) anti-aircraft; weight of shell
 25 kg

4 Oerlikon 20 mm Mk 9 (2 twin); 800 rds/min to 2 km
Torpedoes: 6–324 mm Mk 32 (2 triple) tubes; Whitehead
 A 244, anti-submarine; pattern running to 7 km (3.8 n
 miles) at 33 kt; warhead 34 kg.

Countermeasures: Decoys 2 Corvus 8-barrelled trainable
 chaff rocket launchers; distraction or centroid
 patterns to 1 km. Wa/lop Barricade double layer chaff
 launchers.

ESM/ECM Elta EW system; intercept and jammer.

Combat data systems: Sisdef Imagan SP 100 includes
 datalink, Link 11 receive.

Weapons control: Maiten-1/CH for gunnery

Radars: Air search Marconi Type 965/966; A-band
 Surface search: Marconi Type 992 Q; E/F-band.

Navigation: Liton Type 1008; I-band

Fire control: Selenia; I-band (for guns).

Sonars: Graseby Type 184 M/P; hull-mounted, active search
 and attack; medium frequency (6/9 kHz)

Helicopters: 1 Bell 230.

Programmes: Following service in the Chilean Navy, both
 ships were decommissioned in 2007 and subsequently
 acquired by the Ecuador Navy. Following overhaul and
 modification in Chilean yards, they were transferred
 on 18 April 2008 (FM 01) and 15 October 2008 (FM 02)
 They replaced two ex-British Leanders (*Penslope* and
Danae) originally built in the 1960s and acquired in 1991.

The acquisition of a third ship (ex-*Ministro Zenteno*
 (ex-*Achilles*)) is also under consideration.

Modernisation: While in Chilean service, *Lynch* (1989)
 and *Condell* (1993) were both modernised by ASMAR,
 Talcahuano. Upgrades included enlargement of the
 hangar and flight deck, the fitting of the Indal Assist
 helicopter recovery system, mounting of two twin
 MM 40 Exocet launchers on each side of the hangar
 and moving the torpedo tubes down one deck. Other
 modifications included a new combat data system,
 improvements to the fire-control radars and the
 installation of Israeli EW systems. *Lynch* was further
 modernised in 2002. Upgrades included complete
 overhaul of propulsion and machinery systems. Phalanx
 close-in weapon systems have been removed and it
 is assumed that SSM, SAM and torpedoes have been
 transferred from the decommissioned ships.



PRESIDENTE ELOY ALFARO

4/2008*, Ecuador Navy / 1335375

CORVETTES

6 ESMERALDAS CLASS (FSGHM)

Name	No	Builders	Laid down	Launched	Commissioned
ESMERALDAS	CM 11	Fincantieri Muggiano	27 Sep 1979	1 Oct 1980	7 Aug 1982
MANABI	CM 12	Fincantieri Ancona	19 Feb 1980	9 Feb 1981	21 June 1983
LOS RIOS	CM 13	Fincantieri Muggiano	5 Dec 1979	27 Feb 1981	9 Oct 1983
EL ORO	CM 14	Fincantieri Ancona	20 Mar 1980	9 Feb 1981	11 Dec 1983
LOS GALAPÁGOS	CM 15	Fincantieri Muggiano	4 Dec 1980	4 July 1981	26 May 1984
LOJA	CM 16	Fincantieri Ancona	25 Mar 1981	27 Feb 1982	26 May 1984

Displacement, tons: 685 full load
Dimensions, feet (metres): 204.4 × 30.5 × 8
 (62.3 × 9.3 × 2.5)

Main machinery: 4 MTU 20V 956 TB92 diesels; 22,140 hp (m)
 (16.27 MW) sustained; 4 shafts

Speed, knots: 37 **Range, n miles:** 4,400 at 14 kt
Complement: 51

Missiles: SSM: 6 Aerospatiale MM 40 Exocet (2 triple)
 launchers (●); inertial cruise; active radar homing to 70 km
 (40 n miles) at 0.9 Mach; warhead 165 kg; sea skimmer.

SAM: Selenia Elsig Albatros quad launcher (●); Aspide;
 semi-active radar homing to 13 km (7 n miles) at 2.6
 Mach; warhead 30 kg.

Guns: 1 OTO Melara 3 in (76 mm)/62 compact (●); 85 rds/min
 to 16 km (8.7 n miles); weight of shell 6 kg.
 2 Breda 40 mm/70 (twin) (●); 300 rds/min to 12.5 km
 (6.8 n miles) anti-surface; weight of shell 0.96 kg

Torpedoes: 6–324 mm ILAS-3 (2 triple) tubes (●); Whitehead
 Motofides A244; anti-submarine; self-adaptive patterns
 to 7 km (3.8 n miles) at 33 kt; warhead 34 kg shaped
 charge. Not fitted in all.

Countermeasures: Decoys: 1 Breda 105 mm SCLAR
 launcher; chaff to 5 km (2.7 n miles); illuminants to 12 km
 (6.6 n miles).

ESM/ECM: Elettronika Gamma ED; radar intercept and jammer
Combat data systems: Selenia IPN 10 action data
 automation Link Y.



ESMERALDAS

(Scale 1 : 600), Ian Sturton / 0505980

Weapons control: 2 Selenia NA21 with C03 directors.

Radars: Air/surface search: Selenia RAN 10S (●); E/F-band;
 range 155 km (85 n miles).

Navigation: Furuno 2115; I-band

Fire control: 2 Selenia Orion 10X (●); I/J-band; range 40 km
 (22 n miles).

Sonars: Thomson Sintra Diodon; hull-mounted; active
 search and attack; 11, 12 or 13 kHz.

Helicopters: Platform for 1 Bell 205B.

Programmes: Ordered in 1979

Modernisation: A modernisation programme began in
 2005. *Esmeraldas* was reportedly fitted with new Israeli
 systems, including the combat data system; the engines
 were also refurbished. The other five ships are expected
 to be similarly upgraded.

Operational: Torpedo tubes removed from two of the class
 to refit in frigates. CM 16 took part in Exercise Unitas
 during 2008.



EL ORO

2/2000 / 0103731



MANABI

6/2002, Ecuador Navy / 0533898

SHIPBORNE AIRCRAFT

Numbers/Type: 2 Bell 230T.
Operational speed: 145 kt (269 km/h).
Service ceiling: 18,000 ft (5,500 m).
Range: 307 n miles (568 km).

Role/Weapon systems: Support helicopter for afloat reconnaissance and SAR. Naval sed
 Bell 230s acquired in 1995. **Sensors:** Surveillance radar. **Weapons:** None.

Numbers/Type: 3/3 Bell 206 Jet Ranger/206TH 57 Sea Ranger.
Operational speed: 115 kt (213 km/h).
Service ceiling: 13,500 ft (4,115 m).
Range: 368 n miles (682 km).

Role/Weapon systems: Support helicopter for afloat reconnaissance and SAR. Sensors:
 None. **Weapons:** Depth bombs, 7.62 mm MG.



BELL 230

6/2003, Ecuador Navy / 0568888



BELL 206

5/2004, Paul Jackson / 0568919

LAND-BASED MARITIME AIRCRAFT(FRONT LINE)

Notes: (1) The Navy operates one CASA CN-235M-100 transport aircraft, four ENAERT-35 Pifan training aircraft, one Beech King Air B-300, one Beech King Air B-350 and two Beech T-34C.

(2) Up to two Unmanned Air Vehicles (UAV) are to be procured for surveillance of maritime areas. The UAVs are to be equipped with synthetic aperture radar and electro-optic sensors.

Numbers/Type: 1 Casa CN-235-300MP Persuader.

Operational speed: 210 kt (394 km/h).

Service ceiling: 24,000 ft (7,315 m).

Range: 2,000 n miles (3,718 km).

Role/Weapon systems: EEZ surveillance. Delivered in 2005/06. Sensors: surveillance radar. Weapons: unarmed.



CN 235-300MP

6/2008*, Ecuador Navy / 1335374

Numbers/Type: 3 Beech King Air B-200.

Operational speed: 239 kt (443 km/h).

Service ceiling: 9,144 m (30,000 ft).

Range: 2,000 n miles (3,718 km).

Role/Weapon systems: Maritime Patrol aircraft delivered in January and June 1987. Sensors: Bottom-mounted surveillance radar and ESM



B-200

8/1999, Ecuador Navy / 0054061

PATROL FORCES

Notes: There are plans to acquire an offshore patrol ship of 1,500-1,800 tons.

3 QUITO (LÜRSSEN 45) CLASS

Name	No	Builders	Launched	Commissioned
QUITO	LM 21	Lürssen, Vegesack	20 Nov 1975	13 July 1976
GUAYAQUIL	LM 23	Lürssen, Vegesack	5 Apr 1976	22 Dec 1977
CUENCA	LM 24	Lürssen, Vegesack	6 Dec 1976	17 July 1977

Displacement, tons: 255

Dimensions, feet (metres): 147.6 × 23 × 8.1 (45 × 7 × 2.5)

Main machinery: 4 MTU 16V 396 diesels, 13,600 hp(m) (10 MW) sustained; 4 shafts

Speed, knots: 40. Range, n miles: 700 at 40 kt; 1,800 at 16 kt

Complement: 35

Missiles: SSM: 4 Aerospatiale MM 38 Exocet; inertial cruise; active radar homing to 42 km (23 n miles) at 0.9 Mach; warhead 165 kg, sea-skimmer.

Guns: 1 OTO Melara 3 in (76 mm)/62 compact; 85 rds/min to 16 km (8.7 n miles); weight of shell 6 kg.

2 Oerlikon 35 mm/80 (twin); 650 rds/min to 6 km (3.3 n miles); weight of shell 1.55 kg

Countermeasures: ESM: ELISRA NS-9010; intercept

Weapons control: Thomson-CSF Vega system.

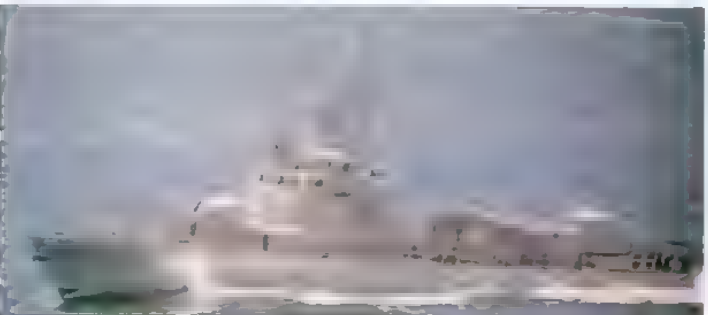
Radars: Air/surface search: Thomson-CSF Triton; G-band; range 33 km (18 n miles) for 2 m² target.

Fire control: Thomson-CSF Pollux; IJ-band; range 31 km (17 n miles) for 2 m² target.

Navigation: Furuno 2115; I-band

Modernisation. New engines fitted during refits in 1994-95 at Guayaquil. A further modernisation programme was initiated in 2005. Upgrades are to include replacement of the Oerlikon 35 mm gun with a new Breda 40 mm/70 twin turret and a new combat data system.

Operational: Quito may be laid up.



CUENCA

2/2000 / 0103/32

SURVEY AND RESEARCH SHIPS

1 SURVEY CRAFT (YFS)

Name	No	Builders	Commissioned
RIGEL	LH 94 (ex-LH 92)	Halter Marine	1975

Displacement, tons: 50 full load

Dimensions, feet (metres): 64.5 × 17.1 × 3.6 (19.7 × 5.2 × 1.1)

Main machinery: 2 diesels; 2 shafts

Speed, knots: 10

Complement: 10 (2 officers)

Comment: Used for inshore oceanographic work.



RIGEL (old number)

6/2005, Ecuador Navy / 1151078

1 SURVEY SHIP (YGS)

Name	No	Builders	Commissioned
ORION (ex-Dameter)	BI 91 (ex-HI 91, ex-HI 92)	Ishikawajima, Tokyo	10 Nov 1982

Measurement, tons: 1,105 gross

Dimensions, feet (metres): 210.6 pp × 35.1 × 11.8 (64.2 × 10.7 × 3.6)

Main machinery: Diesel-electric; 3 Caterpillar 3412 diesel generators; 2,380 hp (1.77 MW) sustained; 2 motors; 1,900 hp (1.42 MW); 1 shaft

Speed, knots: 12.6. Range, n miles: 6,000 at 12 kt

Complement: 45 (6 officers) plus 14 civilians

Radars: Surface search/Navigation: Furuno 2837, E/F-band

Navigation: Sperry Marine Bridgmaster; I-band.

Comment: Research vessel for oceanographic, hydrographic and meteorological work. A refit 2007-08 included installation of a flight deck and new engines.



ORION

6/2008*, Ecuador Navy / 1335373

TRAINING SHIPS

1 SAIL TRAINING SHIP (AXS)

Name	No	Builders	Commissioned
GUAYAS	BE 91 (ex-BE 01)	Ast Celaya, Spain	23 July 1977

Measurement, tons: 234 dwt; 934 gross

Dimensions, feet (metres): 264 × 33.5 × 13.4 (80 × 10.2 × 4.2)

Main machinery: 1 GM 12V-149T diesel; 875 hp (652 kW) sustained; 1 shaft

Speed, knots: 11.3

Complement: 50 plus 80 trainees

Comment: Three masted. Launched 23 September 1976. Has accommodation for 180. Similar to ships in service with Colombia, Mexico and Venezuela. Modernised 2006-07.



GUAYAS

7/2008*, Kazumasa Watanabe / 1335460

AUXILIARIES

Notes: A new dredger, *Francisco de Orellana*, was commissioned in July 2008.

1 YW CLASS (WATER TANKER) (AWT)

Name	No	Builders	Commissioned
ATAHUALPA (ex-YW 131)	TR 63	Leatham D Smith SB Co	17 Sep 1945

Displacement, tons: 460 light; 1,481 full load
 Dimensions, feet (metres): 174 x 32 x 15 (53.1 x 9.8 x 4.6)
 Main machinery: 1 GM 8V-278A diesel; 640 hp (477 kW); 2 shafts
 Speed, knots: 8
 Complement: 25 (5 officers)
 Cargo capacity: 930 tons

Comment: Acquired from the US on 2 May 1963. Purchased on 1 December 1977. Paid off in 1988 but back in service in 1990 to provide water for the Galapagos Islands.



ATAHUALPA 6/2005, Ecuador Navy / 11510/7

1 OIL TANKER (AOTL)

Name	No	Builders	Commissioned
TAURUS	TR 65 (ex-T 68)	Astinave, Guayaquil	1985

Measurement, tons: 1,175 dwt; 1,110 gross
 Dimensions, feet (metres): 174.2 x 36 x 14.4 (53.1 x 11 x 4.4)
 Main machinery: 2 GM diesels; 1,050 hp (783 kW); 1 shaft
 Speed, knots: 11
 Complement: 20

Comment: Acquired for the Navy in 1987.



TAURUS 6/2003, Ecuador Navy / 0568887

1 ARMAMENT STORES CARRIER (AETL)

Name	No	Builders	Commissioned
CALICUCHIMA (ex-Throsk)	TR 62 (ex-A 379)	Cleland SB Co, Wallsend	20 Sep 1977

Displacement, tons: 2,184 full load
 Dimensions, feet (metres): 231.2 x 39 x 15 (70.5 x 11.9 x 4.6)
 Main machinery: 2 General Motors diesels; 2,100 hp (1.56 MW); 1 shaft
 Speed, knots: 11
 Range, n miles: 4,000 at 11 kt
 Complement: 29 (5 officers)
 Cargo capacity: 785 tons
 Radars: Navigation: Decca 926; I-band.

Comment: Acquired from the UK in November 1991. Recommissioned 24 March 1992.



CALICUCHIMA 11/2004, Globke Collection / 1129955

1 WATER CLASS (WATER TANKER) (AWT)

Name	No	Builders	Commissioned
QUISQUIS (ex-Waterside)	TR 64 (ex-Y 20)	Drypool Engineering, Hull	1968

Measurement, tons: 519 gross
 Dimensions, feet (metres): 131.5 x 25.7 x 11.7 (40.1 x 7.7 x 3.5)
 Main machinery: 1 Lister-Blackstone ERS-8-MCR diesel, 660 hp (492 kW); 1 shaft
 Speed, knots: 10
 Range, n miles: 1,585 at 9 kt
 Complement: 20 (4 officers)
 Cargo capacity: 150 tons
 Radars: Navigation: Furuno; I-band.

Comment: Acquired from the UK in November 1991.



QUISQUIS 2/1992, A J Moorey / 0056909

2 ARD 12 CLASS (FLOATING DOCKS) (YFD)

Name	No	Builders	Commissioned
RIO NAPO (ex-ARD 24)	DF 82	USA	1944
CENEPA (ex-ARD 26)		USA	1944

Dimensions, feet (metres): 492 x 81 x 17.7 (150 x 24.7 x 5.4)

Comment: *Napo* bought from the US in 1988. Suitable for docking ships up to 3,200 tons. *Cenepe* is 48 ft longer and was transferred from US service in 2000.

1 SUPPLY SHIP (AKL)

Name	No	Builders	Commissioned
GALAPAGOS (ex-Arca Foz, ex-Riveira)		Astilleros de Huelva, Spain	1982

Measurement, tons: 2,617 grt
 Dimensions, feet (metres): 245 x 47.6 x 15.1 (74.7 x 14.2 x 4.6)
 Main machinery: 1 diesel, 2,100 hp (1.56 MW); 1 cp prop
 Speed, knots: 12
 Complement: To be announced

Comment: Spanish-built refrigerated cargo ship acquired in July 2008. The ship is used to supply the Galapagos Islands.

TUGS

5 HARBOUR TUGS (YTM/YTL)

SANGAY RB 72	ILINIZA RB 75	QUILOTOA RB 78
COTOPAXI RB 73	ALTAR RB 76	

Comment: Mostly built in the 1950s and 1960s.

1 CHEROKEE CLASS (ATF)

Name	No	Builders	Commissioned
CHIMBORAZO (ex-Chowanoc ATF 100)	RA 70 (ex-R 710, ex-R 71, ex-R 105)	Charleston SB & DD Co	21 Feb 1945

Displacement, tons: 1,235 standard; 1,640 full load
 Dimensions, feet (metres): 205 x 38.5 x 17 (62.5 x 11.7 x 5.2)
 Main machinery: Diesel-electric; 4 Caterpillar D 399 diesels; 4 generators; 1 motor; 3,000 hp (2.24 MW); 1 shaft
 Speed, knots: 12
 Range, n miles: 7,000 at 15 kt
 Complement: 67 (5 officers)
 Guns: 1—40 mm. 2—12.7 mm MGs.
 Radars: Navigation: Simrad; I-band

Comment: Launched 20 August 1943 and transferred 1 October 1977.



CHIMBORAZO 6/2001, Maritime Photographic / 0114524

COAST GUARD

Notes: In addition to the vessels listed below, there are up to 40 river patrol launches operated by both the Coast Guard and the Army.

3 ISLA FERNANDINA (VIGILANTE) CLASS (OFFSHORE PATROL CRAFT) (PBO)

Name	No	Builders	Commissioned
ISLA FERNANDINA (ex-6 de Diciembre)	LG 39	Astilleros de Murueta, Spain	Jan 2006
ISLA ESPAÑOLA (ex-11 de Noviembre)	LG 40	Astilleros de Murueta, Spain	Jan 2006
ISLA SAN SALVADOR (ex-11 de Abril)	LG 41	Astilleros de Murueta, Spain	Jan 2006

Displacement, tons: 320
Dimensions, feet (metres): 147.7 × 32.1 × 8.0 (45.0 × 9.8 × 2.5)
Main machinery: 2 MTU 16V 4000 M90; 1 MTU 12V 4000 M80; 3 shafts
Speed, knots: 25
Range, n miles: 3,000 at 12 kt
Complement: 27 (4 officers)
Guns: 1—12.7 mm MG. 2—7.62 mm MGs
Radars: Navigation: I-band.

Comment: Contract for three craft for the coast Guard let to FBM Babcock Marine in partnership with Astilleros de Murueta, Spain, on 4 March 2004. The steel-hulled craft, to be built in Spain, is based on the FBM Marine Protector 45 class. Propulsion arrangements allow for the use of two main engines or a smaller central engine for loiter. A 5 m interception craft is carried on the aft work deck. LG 39 based at Esmeraldas, LG 40 at Manta and LG 41 in the Galapagos Islands.



ISLA ESPAÑOLA 1/2006, Ecuador Coast Guard / 1158715

2 MANTA CLASS (LARGE PATROL CRAFT) (WPBF)

Name	No	Builders	Commissioned
ISLA DE LA PLATA (ex-9 de Octubre, ex-Manta)	LG 37 (ex-LM 25)	Lürssen, Vegesack	11 June 1971
ISLA SANTA CLARA (ex-27 de Octubre, ex-Nuevo Rocafuerte)	LG 38 (ex-LM 27)	Lürssen, Vegesack	23 June 1971

Displacement, tons: 119 standard; 134 full load
Dimensions, feet (metres): 119.4 × 19.1 × 6 (36.4 × 5.8 × 1.8)
Main machinery: 2 MTU 392 TE 94 diesels; 4,370 hp (m) (3.26 MW); 2 shafts
Speed, knots: 30
Range, n miles: 700 at 30 kt; 1,500 at 15 kt
Complement: 19 (3 officers)
Guns: 1—20 mm, 1—12.7 mm MG
Radars: Navigation: I-band.

Structure: Similar design to the Chilean Guacolda class with an extra diesel, 3 kt faster.
Operational: A third of class sank in September 1998 after a collision with a tug. Transferred from the Navy in 2000. Refitted and modernised in 2003–04 at Astinane, Guayaquil.



ISLA DE LA PLATA 6/2001, Ecuador Coast Guard / 0114527

2 ESPADA CLASS (LARGE PATROL CRAFT) (WPB)

Name	No	Builders	Commissioned
ISLA SANTA ROSA (ex-5 de Agosto)	LG 35	Moss Point Marine, Escatawpa	May 1991
ISLA PUNA (ex-27 de Febrero)	LG 36	Moss Point Marine, Escatawpa	Nov 1991

Displacement, tons: 190 standard; 220 full load
Dimensions, feet (metres): 119.4 × 19.0 × 5.9 (36.4 × 5.8 × 1.8)
Main machinery: 2 Detroit 16V-1497I diesels; 2,322 hp (1.73 MW) sustained; 1 Detroit 16V-92TA; 690 hp (514 kW) sustained; 3 shafts
Speed, knots: 18
Range, n miles: 1,500 at 14 kt
Complement: 19 (3 officers)
Guns: 1—20 mm GAM 801, 2—12.7 mm MGs
Radars: Surface search: Furuno Marine; I-band.

Comment: Built under FMS programme. Steel hulls and aluminium superstructure. Accommodation is air conditioned. Carry a 10-man RIB and launching crane on the stern. Both modernised 2007–08.



ISLA SANTA ROSA 6/2002, Ecuador Coast Guard / 0533896

2 SWIFTSIPS CLASS (RIVER PATROL CRAFT) (WPBR)

Name	No	Builders	Commissioned
RIO ESMERALDAS (ex-9 de Octubre)	LG 121 (ex-LG 47, ex-LG 37)	Swiftships, Morgan City	1 Oct 1992
RIO SANTIAGO (ex-27 de Octubre)	LG 122 (ex-LG 48, ex-LG 38)	Swiftships, Morgan City	1 Oct 1992

Displacement, tons: 17 full load
Dimensions, feet (metres): 45.5 × 11.8 × 1.8 (13.9 × 3.6 × 0.6)
Main machinery: 2 Detroit 6V-92TA diesels; 900 hp (671 kW); 2 Hamilton water-jets
Speed, knots: 20
Range, n miles: 600 at 22 kt
Complement: 4 (1 officer)
Guns: 2 M2HB 12.7 mm MGs; 2 M60D 7.62 mm MGs
Radars: Surface search: Raytheon 40; I-band.

Comment: Transferred from US under MAP to the Navy and thence to the Coast Guard. Hard chine modified V hull form. Can carry up to eight troops. Used as command craft for river flotillas.



RIO SANTIAGO 6/2005, Ecuador Coast Guard / 1151076

1 POINT CLASS (COASTAL PATROL CRAFT) (WPB)

Name	No	Builders	Commissioned
ISLA SEYMOUR (ex-24 de Mayo, ex-Point Richmond)	LG 32 (ex-82370)	CG Yard, Curtis Bay	25 Aug 1967

Displacement, tons: 54 standard, 66 full load
Dimensions, feet (metres): 83 × 17.2 × 5.8 (25.3 × 5.2 × 1.8)
Main machinery: 2 Caterpillar 3412 diesels; 1,600 hp (1.19 MW); 2 shafts
Speed, knots: 18
Range, n miles: 1,500 at 8 kt
Complement: 10 (2 officers)
Guns: 2—12.7 mm MGs
Radars: Navigation: Raytheon SPS 64(V)1; I-band.

Comment: Transferred from US Coast Guard on 22 August 1997



ISLA SEYMOUR 6/2001, Ecuador Coast Guard / 0114515

4 PIRAÑA CLASS (RIVER PATROL CRAFT) (WPBR)

LG 131 (ex-LG 51) LG 132 (ex-LG 52) LG 133 (ex-LG 53) LG 134 (ex-LG 54)

Main machinery: 2 outboard motors; 300 hp (224 kW)

Speed, knots: 35

Complement: 6

Guns: 1 Ametralladora MAG 7.62 mm.

Comment: Built by Astinave and commissioned 1994–95.



LG 134 (old number)

6/2001, Ecuador Coast Guard / 0114517

1 PGM-71 CLASS (LARGE PATROL CRAFT) (WPB)

Name	No	Builders	Commissioned
ISLA ISABELA (ex-25 de Julio, ex-Quito)	LG 31 (ex-LGC 31, ex-LC 71)	Peterson, USA	30 Nov 1965

Displacement, tons: 150 standard; 180 full load

Dimensions, feet (metres): 101.5 x 21 x 5 (30.9 x 6.4 x 1.5)

Main machinery: 2 Detroit diesels; 1,500 hp (1.1 MW); 2 shafts

Speed, knots: 15. **Range, n miles:** 1,000 at 12 kt

Complement: 21 (3 officers)

Guns: 1 Oerlikon 20 mm. 2—12.7 mm MGs.

Radars: Surface search: Furuno Marine; I-band

Comment: Transferred from US to the Navy under MAP on 30 November 1965 and then to the Coast Guard in 1980. Paid off into reserve in 1983 and deleted from the order of battle. Refitted with new engines in 1988–89. Second of class deleted in 1997.



ISLA ISABELA

6/2005, Ecuador Coast Guard / 1151075

2 10 DE AGOSTO CLASS (LARGE PATROL CRAFT) (WPB)

Name	No	Builders	Commissioned
ISLA SANTA CRUZ (ex-10 de Agosto)	LG-33 (ex-LGC-33)	Bremen, Germany	1954
ISLA SAN CRISTÓBAL (ex-3 de Noviembre)	LG-34 (ex-LGC-34)	Bremen, Germany	1955

Displacement, tons: 35 standard; 46 full load

Dimensions, feet (metres): 76.75 x 15.7 x 4.8 (23.4 x 4.8 x 1.4)

Main machinery: 2 Detroit diesels

Speed, knots: 10. **Range, n miles:** 450 at 12 kt

Complement: 11 (1 officer)

Radars: Surface search: Raytheon; I-band

Guns: 2 Ametralladora 30

Comment: Transferred from Coopno-Coopin to the coast guard on 12 January 1992 and 4 June 1992. Were to have been replaced by the Vigilante class but remain in service.



ISLA SAN CRISTÓBAL

11/2004, Globke Collection / 1129994

6 RIO PUYANGO CLASS (RIVER PATROL CRAFT) (WPBR)

Name	No	Builders	Commissioned
RIO PUYANGO	LG 111 (ex-LG 41, ex-LGC 40)	Halter Marine, New Orleans	15 June 1986
RIO MATAJE	LG 112 (ex-LG 42, ex-LGC 41)	Halter Marine, New Orleans	15 June 1986
RIO ZARUMILLA	LG 113 (ex-LG 43, ex-LGC 42)	Astinave, Guayaquil	11 Mar 1988
RIO CHONE	LG 114 (ex-LG 44, ex-LGC 43)	Astinave, Guayaquil	11 Mar 1988
RIO DAULE	LG 115 (ex-LG 45, ex-LGC 44)	Astinave, Guayaquil	17 June 1988
RIO BABAHOYO	LG 116 (ex-LG 46, ex-LGC 45)	Astinave, Guayaquil	17 June 1988

Displacement, tons: 17

Dimensions, feet (metres): 44 x 13.5 x 3.5 (13.4 x 4.1 x 1.1)

Main machinery: 2 Detroit 8V-71 diesels; 460 hp (343 kW) sustained; 2 shafts

Speed, knots: 26. **Range, n miles:** 500 at 18 kt

Complement: 5 (1 officer)

Guns: 1—12.7 mm MG. 2—7.62 mm MGs.

Radars: Surface search: Furuno 2400; I-band.

Comment: Two delivered by Halter Marine in June 1986. Four more ordered in February 1987; assembled under licence at Astinave shipyard, Guayaquil. Used mainly for drug interdiction.



RIO BABAHOYO (old number)

6/2002, Ecuador Coast Guard / 0533895

3 NAPO CLASS (PBF)

LG 151 (ex-LG 59) LG 152 (ex-LG 60) LG 153 (ex-LG 61)

Main machinery: 2 inboard motors; 300 hp (224 kW)

Speed, knots: 40

Complement: 6

Guns: 1 Ametralladora MAG 7.62 mm MG

Comment: Built by Astinave, Guayaquil. Entered service in 2002



LG 151 (old number)

6/2003, Ecuador Coast Guard / 0568805

2 RINKER CLASS (PBF)

LG 191 (ex-LG 57) LG 192 (ex-LG 58)

Main machinery: 2 outboard motors, 300 hp (224 kW)

Speed, knots: 40

Complement: 5

Guns: 1 Ametralladora MAG 7.62 mm MG.

Comment: Built in US. Entered service in 2002



RINKER CLASS

6/2003, Ecuador Coast Guard / 0568804

212 Ecuador/Coast guard

2 ALBATROS CLASS (WPBR)

LG 63-64

Main machinery: 1 outboard motor; 115 hp (85 kW)
Speed, knots: 40
Complement: 5
Guns: 1 Ametralladora MAG 7.62 mm MG

Comment: Built in Chile. Entered service in 2004.



ALBATROS CLASS 6/2005, Ecuador Coast Guard / 1151074

8 FAST INTERCEPT CRAFT (WPBF)

Name	No	Builders	Commissioned
RIO VERDE	LG 611	FB Design shipyard, Italy	Jan 2008
RIO BULU BULU	LG 612	FB Design shipyard, Italy	Jan 2008
RIO MACARA	LG 613	FB Design shipyard, Italy	Jan 2008
RIO YAGUACHI	LG 614	FB Design shipyard, Italy	Jan 2008
RIO CAÑAR	LG 615	FB Design shipyard, Italy	Jan 2008
RIO SAN MIGUEL	LG 616	FB Design shipyard, Italy	Jan 2008
RIO QUININDÉ	LG 617	FB Design shipyard, Italy	Jan 2008
RIO CATAMAYO	LG 618	FB Design shipyard, Italy	Jan 2008

Displacement, tons: 6 full load
Dimensions, feet (metres): 37.5 × 9.2 × 2.8 (11.43 × 2.81 × 0.84)
Main machinery: 2 Cummins diesels; 710 hp (530 kW); 2 surface drives
Speed, knots: 52
Complement: 4
Guns: 1 chainsaw MAG 7.62 mm MG
Raders: Navigation. Furuno; I-band.

Comment: Fabio Buzzzi FB 38 STAB design. The principal feature of the design is a rigid hull of cored sandwich construction stabilised by two torpedo-shaped inflatable sections on the side of the stern sections to improve stability and safety in rough seas.



RIO VERDE 6/2008, Ecuador Coast Guard / 1335372

1 ALBATROS 1100 CLASS (WPBR)

Name	No	Builders	Commissioned
RIO JUBONES	LG-601	Astilleros SITECNA, Chile	2008

Displacement, tons: To be announced
Dimensions, feet (metres): 36.1 × 10.5 × 4.9 (11.00 × 3.20 × 1.50)
Main machinery: 3 outboard motors
Speed, knots: 40
Complement: 5

Comment: Delivered in 2008.



RIO JUBONES 6/2008, Ecuador Coast Guard / 1335371

3 ALBATROS 830 CLASS (WPBR)

Name	No	Builders	Commissioned
RIO COANGOS	LG-161	Astilleros SITECNA, Chile	2008
RIO MUISNE	LG-162	Astilleros SITECNA, Chile	2008
RIO TANGARE	LG-163	Astilleros SITECNA, Chile	2008

Displacement, tons: To be announced
Dimensions, feet (metres): 27.2 × 7.9 × 3.8 (8.3 × 2.4 × 1.15)
Main machinery: 2 outboard motors
Speed, knots: 40
Complement: 4

Comment: Delivered in 2008.



RIO COANGOS 6/2008, Ecuador Coast Guard / 1335370

4 ALBATROS 730 CLASS (WPBR)

Name	No	Builders	Commissioned
RIO TENA	LG-171	Astilleros SITECNA, Chile	2008
RIO PUYO	LG-172	Astilleros SITECNA, Chile	2008
RIO PORTOVIEJO	LG-173	Astilleros SITECNA, Chile	2008
RIO MANTA	LG-174	Astilleros SITECNA, Chile	2008

Displacement, tons: To be announced
Dimensions, feet (metres): 20.7 × 7.5 × 3.8 (6.3 × 2.3 × 1.15)
Main machinery: 1 outboard motor
Speed, knots: 35
Complement: 5

Comment: Delivered in 2008.



RIO TENA 6/2008, Ecuador Coast Guard / 1335369

2 ALBATROS 630 CLASS (WPBR)

Name	No	Builders	Commissioned
RIO ZAMORA	LG-181	Astilleros SITECNA, Chile	2008
RIO PALORA	LG-182	Astilleros SITECNA, Chile	2008

Displacement, tons: To be announced
Dimensions, feet (metres): 20.7 × 7.2 × 3.9 (6.3 × 2.2 × 1.2)
Main machinery: 1 outboard motor
Speed, knots: 30
Complement: 4

Comment: Delivered in 2008.



RIO ZAMORA 6/2008, Ecuador Coast Guard / 1335368

FRIGATES

Notes: Acquisition of two Koni-class frigates, one as spares, from Montenegro was reportedly discussed in 2004 but there have been no further reports of progress

4 OLIVER HAZARD PERRY CLASS (FFGHM)

Name	No	Builders	Laid down	Launched	Commissioned
MUBARAK (ex-Copeland)	911 (ex-FFG 25)	Todd Shipyards, San Pedro	24 Oct 1979	26 July 1980	7 Aug 1982
TABA (ex-Gallery)	916 (ex-FFG 26)	Bath Iron Works	17 May 1980	20 Dec 1980	5 Dec 1981
SHARM EL SHEIKH (ex-Fahriah)	901 (ex-FFG 22)	Todd Shipyards, Seattle	1 Dec 1978	24 Aug 1979	16 Jan 1982
TOUSHKA (ex-Lewis B Puller)	906 (ex-FFG 23)	Todd Shipyards, San Pedro	23 May 1979	15 Mar 1980	17 Apr 1982

Displacement, tons: 2,750 light, 3,638 full load
Dimensions, feet (metres): 445 x 45 x 14.8, 24.5 (sonar)
 (135.6 x 13.7 x 4.5; 7.5)
Main machinery: 2 GE LM 2500 gas turbines; 41,000 hp
 (30.59 MW) sustained; 1 shaft; cp prop
 2 auxiliary retractable props; 650 hp (484 kW)
Speed, knots: 29. **Range, n miles:** 4,500 at 20 kt
Complement: 206 (13 officers) including 19 aircrew

Missiles: SSM: 4 McDonnell Douglas Harpoon Block 1B; active radar homing to 92 km (50 n miles) at 0.9 Mach; warhead 227 kg.

SAM: 36 GDC Standard SM-1MR Block VI; command guidance; semi-active radar homing to 38 km (20.5 n miles) at 2 Mach. 1 Mk 13 Mod 4 launcher for both SSM and SAM missiles.

Guns: 1 OTO Melara 3 in (76 mm)/62 Mk 75; 85 rds/min to 16 km (8.7 n miles) anti-surface; 12 km (6.6 n miles) anti-aircraft, weight of shell 6 kg

1 General Electric/General Dynamics 20 mm/76 6-barrelled Mk 15 Vulcan Phalanx; 3,000 rds/min combined to 1.5 km. 4-12.7 mm MGs.

Torpedoes: 6-324 mm Mk 32 (2 triple tubes); 24 Alliant Mk 46 Mod 5, anti-submarine; active/passive homing to 11 km (5.9 n miles) at 40 kt; warhead 44 kg.

Countermeasures: Decoys: 2 Loral Hycor SRBOC 6-barrelled fixed Mk 36; IR flares and chaff to 4 km (2.2 n miles). T-Mk-6 Fanfare/SLQ-25 Nixie; torpedo decoy.

ESM/ECM: Raytheon SLQ-32; radar warning.

Combat data systems: NTDS with Link Y.

Weapons control: SWG-1 Harpoon LCS. Mk 92 (Mod 4) Mk 13 weapon direction system. 2 Mk 24 optical directors.

Radars: Air search: Raytheon SPS-49(V)4; C/D-band.

Surface search: ISC Cardion SPS-55; I-band.

Fire control: Lockheed STIR (modified SPG-60); I/J-band, range 110 km (60 n miles).

Sperry Mk 92 (Signal WM28); I/J-band.

Navigation Furuno; I-band; JRC; I-band.

Tacan: URN 25. IFF Mk XII AIMS UPX-29.

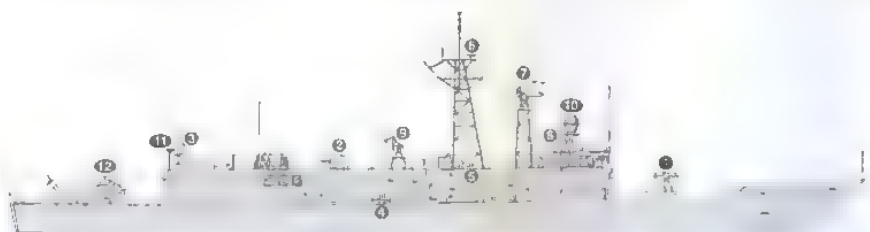
Sonars: Raytheon SQS-56; hull-mounted, active search and attack; medium frequency.

Helicopters: 2 Kaman SH-2G Seasprite.

Programmes: First one acquired from US on 18 September 1996, second on 28 September 1996, third on 31 March 1998, and fourth on 30 September 1998.

Modernisation: JRC radar fitted on hangar roof.

Operational: First pair arrived in Egypt in mid-1997 after working up, third in late 1998 and fourth in 1999. All reported active, at least one in the Red Sea.



MUBARAK

(Scale 1 : 1,200), Ian Sturton / 0103734



TABA

6/2006 / 1167111



TABA

6/2006 / 1167112



TABA

6/2006 / 1167113

2 KNOX CLASS (FFGH)

Name	No	Builders	Laid down	Launched	Commissioned	Recommissioned
DAMYAT (ex-Jesse L Brown)	961 (ex-FF 1089)	Avondale Shipyard	8 Apr 1971	18 Mar 1972	17 Feb 1973	1 Oct 1994
RASHEED (ex-Mainester)	966 (ex-FF 1097)	Avondale Shipyard	25 Aug 1972	12 May 1973	2 Nov 1974	1 Oct 1994

Displacement, tons: 3,011 standard; 4,260 full load
Dimensions, feet (metres): 439.6 × 46.8 × 15; 24.8 (sonar) (134 × 14.3 × 4.6, 7.8)
Main machinery: 2 Combustion Engineering/Babcock & Wilcox boilers; 1,200 psi (84.4 kg/cm²); 950 F (510° C); 1 turbine, 35,000 hp (26 MW); 1 shaft
Speed, knots: 27
Range, n miles: 4,000 at 22 kt on 1 boiler
Complement: 288 (17 officers)

Missiles: SSM: 8 McDonnell Douglas Harpoon, active radar homing to 130 km (70 n miles) at 0.9 Mach; warhead 227 kg.

A/S: Honeywell ASROC Mk 16 octuple launcher with reload system (has 2 cells modified to fire Harpoon) ●; inertial guidance to 1.6–10 km (1–5.4 n miles); payload Mk 46

Guns: 1 FMC 5 in (127 mm)/54 Mk 42 Mod 9 ●; 20–40 rds/min to 24 km (13 n miles) anti-surface, 14 km (7.7 n miles) anti-aircraft; weight of shell 32 kg.

1 General Electric/General Dynamics 20 mm/76 6-barrelled Mk 15 Vulcan Phalanx ●; 3,000 rds/min combined to 1.5 km.

Torpedoes: 4–324 mm Mk 32 (2 twin) fixed tubes ●, 22 Alliant Mk 46 Mod 5; anti-submarine, active/passive homing to 11 km (5.9 n miles) at 40 kt; warhead 44 kg.

Countermeasures: Decoys, 2 Loral Hyco SRBOC 6-barrelled fixed Mk 38 ●; IR flares and chaff to 4 km (2.2 n miles) T Mk 6 Fanfare/SLQ-25 Nixie; torpedo decoy, Prairie Masker hull and blade rate noise suppression.

ESM/ECM Electronics: ● intercept and jammer.

Combat data systems: FFISTS mini NTDS with Link Y.

Weapons control: SWG-1A Harpoon LCS Mk 68 GFCS Mk 114 ASW FCS Mk 1 target designation system.

Radars: Air search, Lockheed SPS-40B ●; B-band; range 320 km (175 n miles).

Surface search, Raytheon SPS-10 or Norden SPS-67 ●; G-band.

Navigation: Marconi LN66; I-band.

Fire control: Western Electric SPG-53A/D/F ●; I/J-band

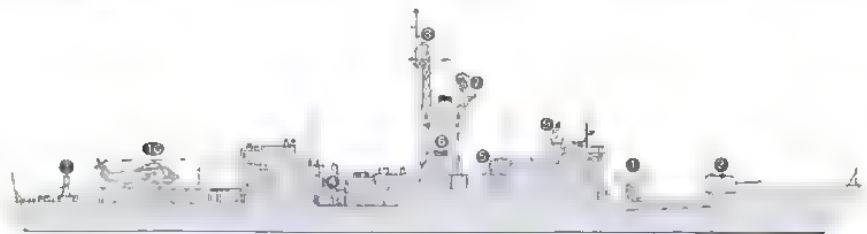
Tacan: SRN 15.

Sonars: EDO/General Electric SQS-26 CX, bow-mounted, active search and attack; medium frequency.

Helicopters: 1 Kaman SH 2G Seasprite ●.

Programmes: Lease agreed from USA in mid-1993 and signed 27 July 1994 when both ships sailed for Egypt. Two others were transferred for spares in 1996. Ships of this class have been transferred to Greece, Taiwan, Turkey and Thailand.

Modernisation: Vulcan Phalanx fitted in the mid-1980s. There are plans to fit quadruple Harpoon launchers



DAMYAT

(Scale 1 : 1,200), Ian Sturton / 0506185



RASHEED

3/2007, Marco Ghigino / 1166535

and possibly to remove the ASROC launcher. EW suite replaced.

Structure: Four torpedo tubes are fixed in the midship superstructure, two to a side, angled out at 45°. A lightweight anchor is fitted on the port side and an

8,000 lb anchor fits in to the aft section of the sonar dome.

Operational: These ships have had boiler problems in Egyptian service. Refits may be undertaken with US assistance if and when funds become available.

2 DESCUBIERTA CLASS (FFGM)

Name	No	Builders	Laid down	Launched	Commissioned
EL SUEZ (ex-Serviola)	F 946	Bazán, Ferrol	28 Feb 1979	20 Dec 1979	27 Oct 1984
ABU QIR (ex-Continela)	F 941	Bazán, Ferrol	31 Oct 1978	6 Oct 1979	21 May 1984

Displacement, tons: 1,233 standard, 1,479 full load

Dimensions, feet (metres): 291.3 × 34 × 12.5

(88.8 × 10.4 × 3.8)

Main machinery: 4 MTU-Bazán 16V 956 TB91 diesels, 15,000 hp (m) (11 MW) sustained; 2 shafts; cp props

Speed, knots: 25.5; 28 trials

Range, n miles: 4,000 at 18 kt

Complement: 116 (10 officers)

Missiles: SSM: 8 McDonnell Douglas Harpoon (2 quad) launchers ●; active radar homing to 130 km (70 n miles) at 0.9 Mach; warhead 227 kg.

SAM: Selenia Elsig Albatros octuple launcher ●; 24 Aspide; semi-active radar homing to 13 km (7 n miles) at 2.5 Mach, height envelope 15–5,000 m (49.2–16,405 ft); warhead 30 kg

Guns: 1 OTO Melara 3 in (76 mm)/62 compact ●; 85 rds/min to 16 km (8.7 n miles); weight of shell 6 kg.

2 Bofors 40 mm/70 ●; 300 rds/min to 12.5 km (6.8 n miles); weight of shell 0.96 kg.

Torpedoes: 6–324 mm Mk 32 (2 triple) tubes ●. MUSL Stingray; anti-submarine; active/passive homing to 11 km (5.9 n miles) at 45 kt; warhead 35 kg (shaped charge), depth to 750 m (2,460 ft).

A/S mortars: 1 Bofors 375 mm twin-barrelled trainable launcher ●; automatic loading; range 1,600 or 3,600 m depending on type of rocket.

ESM/ECM Electronics: SpA Bota, intercept and jammer.

Countermeasures: ESM/ECM Electronics SpA Bota, intercept and jammer.

Combat data systems: Signal SEWACO action data automation, Link Y.

Radars: Air/surface search: Signaal DA05 ●; E/F-band; range 137 km (75 n miles) for 2 m² target.

Navigation: Signaal ZW06; I-band.

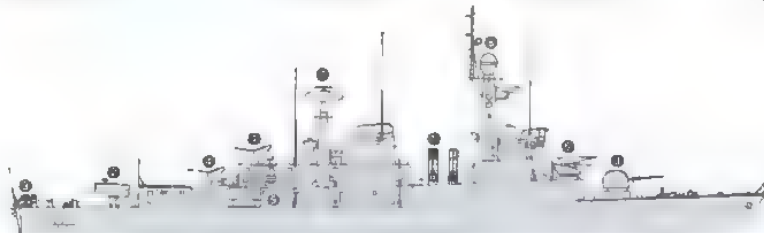
Fire control: Signaal WM25 ●; I/J-band

Sonars: Raytheon 1160B; hull-mounted, active search and attack, medium frequency.

Raytheon 1167 ●, VDS; active search; 12–7.5 kHz.

EL SUEZ

(Scale 1 : 900), Ian Sturton / 0505984



EL SUEZ

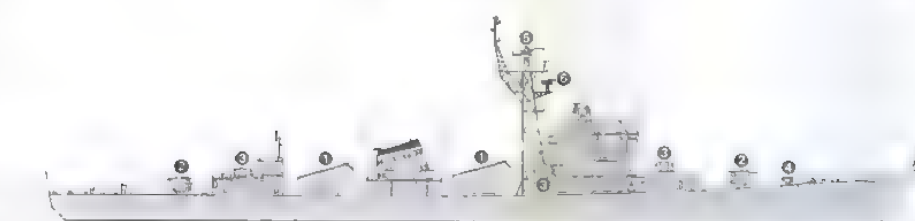
10/1999 0085001

2 JIANGHU I CLASS (FFG)

Name	No	Builders	Commissioned
NAJIM AL ZAFFER	951	Hudong, Shanghai	27 Oct 1984
EL NASSER	956	Hudong, Shanghai	16 Apr 1985

Displacement, tons: 1,425 standard; 1,702 full load
Dimensions, feet (metres): 338.5 × 35.4 × 10.2
 (103.2 × 10.8 × 3.1)
Main machinery: 2 Type 12 E 390V diesels; 14,400 hp(m)
 (10.6 MW) sustained; 2 shafts
Speed, knots: 26
Range, n miles: 4,000 at 15 kt
Complement: 195

Missiles: SSM: 4 HY-2 (C-201) (2 twin) ●; active radar or passive IR homing to 80 km (43.2 n miles) at 0.9 Mach, warhead 513 kg.
Guns: 4 China 57 mm/70 (2 twin) ●; 120 rds/min to 12 km (6.5 n miles); weight of shell 6.31 kg.
 12 China 37 mm/63 (6 twin) ●; 180 rds/min to 8.5 km (4.6 n miles); weight of shell 1.42 kg
A/S mortars: 4 RBU 1200 5-tubed fixed launchers ●; range 1,200 m; warhead 34 kg
Depth charges: 4 projectors.
Mines: Up to 60.
Countemeasures: ESM/ECM: Elettronica SpA Beta or Litton Triton; intercept and jammer.
Radars: Air search: Type 765 ●; A-band
 Surface search: Eye Shield ●; G-band.



NAJIM AL ZAFFER

(Scale 1 : 900), Ian Sturton / 0056914

Surface search/gun direction: Square Tie; I-band.
Fire control: Fog Lamp.

Navigation: Decca RM 1290A; I-band.

Sonars: China Type E5; hull-mounted; active search and attack; high frequency.

Programmes: Ordered from China in 1982. This is a Jianghu I class modified with 57 mm guns vice the standard 100 mm. These were the 17th and 18th hulls of the class.

Modernisation: Combat data system to be fitted together with CSEE Naja optronic fire-control directors. There are also plans, confirmed in October 1994, to remove the after superstructure and guns and build a flight deck for an SH-2G Seasprite helicopter. Although a refit programme is reported to have been proposed by China, there is still no sign yet of work being done.

Structure: The funnel is the rounded version of the Jianghu class.

Operational: Both ships are active.



EL NASSER

5/2006, B Prézélin / 11040744



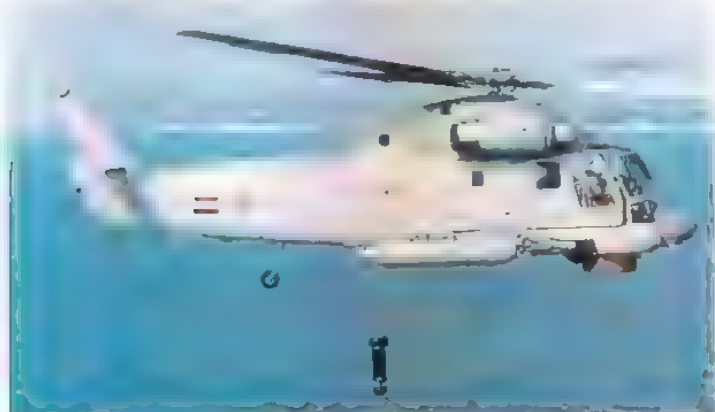
NAJIM AL ZAFFER

5/2007, Camil Busquets i Vilanova / 1166549

SHIPBORNE AIRCRAFT

Numbers/Type: 10 Kaman SH-2G(E) Seasprite.
Operational speed: 130 kt (241 km/h).
Service ceiling: 22,500 ft (6,860 m).
Range: 367 n miles (679 km).

Role/Weapon systems: Total of 10 upgraded SH-2F aircraft transferred under FMS by September 1998. New engines and avionics. A further avionics upgrade was reportedly under consideration in 2004. Sensors: LN66/HP radar; ALR-66 ESM; ALE-39 ECM; ARN-118 Tacan; Ocean Systems AQS-18A dipping sonar. Possible mine detection optronic sensor. Weapons: 2 x Mk 46 torpedoes or a depth bomb.



SEASPRITE 1/2004, Kaman / 0568188

LAND-BASED MARITIME AIRCRAFT (FRONT LINE)

Notes: There are also 2/4 Westland Commando Mk 2B/2E helicopters. Some refitted in 1997/98.

Numbers/Type: 9 Aerospatiale SA 342L Gazelle
Operational speed: 142 kt (264 km/h).
Service ceiling: 14,105 ft (4,300 m).
Range: 407 n miles (755 km).

Role/Weapon systems: Air Force helicopter for coastal anti-shiping strike, particularly against FAC and insurgents. Sensors: SFIM sight. Weapons: ASV; 2 x AS-12 wire-guided missiles

Numbers/Type: 6 Grumman E-2C Hawkeye 2000
Operational speed: 323 kt (598 km/h).
Service ceiling: 37,000 ft (11,278 m).
Range: 1,540 n miles (2,852 km).

Role/Weapon systems: Air Force airborne early warning and control tasks; capable of handling up to 30 tracks over water or land. A sixth Hawkeye 2000 aircraft ordered in June 2001. Sensors: APS-138 search/warning radar being replaced by APS-145 from October 2002 as part of major upgrade programme. The first upgraded aircraft delivered in February 2003, second in early 2004, third in August 2004, fourth in May 2005 and fifth in December 2006. A request for an additional two aircraft was made in October 2007. Various ESM/ECM systems. Weapons: Unarmed.



HAWKEYE 2000 3/2003, Northrop Grumman / 0530203

Numbers/Type: 2 Westland Sea King Mk 47.
Operational speed: 112 kt (208 km/h).
Service ceiling: 14,700 ft (4,480 m).
Range: 664 n miles (1,230 km).

Role/Weapon systems: Air Force helicopter for ASW and surface search; secondary role as SAR helicopter. Airframe and engine refurbishment in 1990. Seven more are in reserve and out of service. Sensors: MEL search radar. Weapons: ASW; 4 x Mk 46 or Stingray torpedoes or depth bombs. ASV; Otomat.

Numbers/Type: 2 Beechcraft 1900C.
Operational speed: 267 kt (495 km/h).
Service ceiling: 25,000 ft (7,620 m).
Range: 1,569 n miles (2,907 km).

Role/Weapon systems: Two (of six) Air Force aircraft acquired in 1988 and used for maritime surveillance. Sensors: Litton search radar; Motorola multimode SLAMMR radar; Singer S-3075 ESM; Datalink Y. Weapons: Unarmed.

PATROL FORCES

**5 TIGER CLASS (TYPE 148)
 (FAST ATTACK CRAFT—MISSILE) (PGGF)**

Name	No	Builders	Commissioned
23 OF JULY (ex- <i>Alli</i>)	601 (ex-P 6155)	CMN, Cherbourg	7 Jan 1975
6 OF OCTOBER (ex- <i>Fuchs</i>)	602 (ex-P 6146)	CMN, Cherbourg	17 Oct 1973
21 OF OCTOBER (ex- <i>Löwe</i>)	603 (ex-P 6148)	CMN, Cherbourg	9 Jan 1974
18 OF JUNE (ex- <i>Dommel</i>)	604 (ex-P 6156)	CMN, Cherbourg	12 Feb 1975
25 OF APRIL (ex- <i>Weihe</i>)	605 (ex-P 6157)	CMN, Cherbourg	3 Apr 1975

Displacement, tons: 234 standard; 265 full load
Dimensions, feet (metres): 154.2 x 23 x 8.9 (47 x 7 x 2.7)
Main machinery: 4 MTU MD 16V 538 TB90 diesels; 12,000 hp(m) (8.82 MW) sustained; 4 shafts
Speed, knots: 36
Range, n miles: 570 at 30 kt; 1,600 at 15 kt
Complement: 30 (4 officers)

Missiles: SSM: 4 Aerospatiale MM 38 Exocet (2 twin) launchers, inertial cruise; active radar homing to 42 km (23 n miles) at 0.9 Mach; warhead 165 kg; sea-skimmer.
Guns: 1 OTO Melara 3 in (76 mm)/62 compact; 85 rds/min to 16 km (8.6 n miles) anti-surface; 12 km (6.5 n miles) anti-aircraft; weight of shell 6 kg.
 1 Bofors 40 mm/70, 330 rds/min to 12 km (6.5 n miles) anti-surface; 4 km (2.2 n miles) anti-aircraft; weight of shell 0.96 kg; fitted with GRP dome (1984) (see *Modernisation*).

Mines: Laying capability.
Countermeasures: Decoys: Wolke chaff launcher. Hot Dog IR launcher.
Combat data systems: PALIS and Link 11.
Weapons control: CSEE Panda optical director. Thomson-CSF Vega PCET system, controlling missiles and guns.
Radars: Air/surface search: Thomson-CSF Triton; G-band; range 33 km (18 n miles) for 2 m² target.
Navigation: SMA 3 RM 20; I-band; range 73 km (40 n miles).
Fire control: Thomson-CSF Castor; VJ-band

Programmes: 601 transferred from Germany in July 2002 and the remainder in March 2003. Weapons and sensors have also been transferred with the possible exception of EW equipment.
Modernisation: Triton search and Castor fire-control radars fitted to the whole class.
Structure: Steel-hulled craft. Similar to *Combatante II* craft.



21 OF OCTOBER 4/2003, Michael Nitz / 0552713



25 OF APRIL 4/2003, Michael Nitz / 0552711



18 OF JUNE 4/2003, Michael Nitz / 0552777

For details of the latest updates to *Jane's Fighting Ships* online and to discover the additional information available exclusively to online subscribers please visit jfs.janes.com

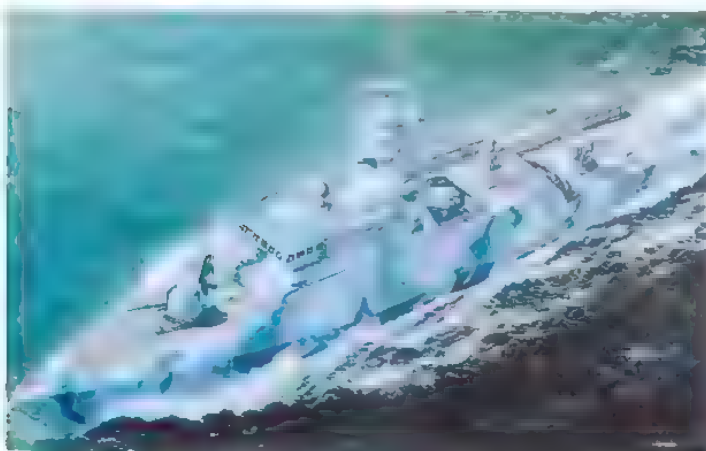
218 Egypt/Patrol forces

0 + 3 AMBASSADOR III CLASS (FAST ATTACK CRAFT—MISSILE) (PCFG)

Displacement, tons: 550 full load
Dimensions, feet (metres): 198.8 × 29.2 × 8.5 (60.6 × 8.9 × 2.6)
Main machinery: 3 MTU diesels, 30,400 hp(m) (22.7 MW) sustained, 3 shafts
Speed, knots: 41 **Range, n miles:** 2,000 at 15 kt
Complement: 36 (8 officers)

Missiles: SSM: 8 (2 quad) McDonnell Douglas Harpoon Block II; active radar homing to 130 km (76 n miles) at 0.9 Mach; warhead 227 kg.
SAM: 1 Raytheon Mk 49 RAM (RIM-116) launcher; 21 RAM block 1A missile; passive IR anti-radiation homing to 9.6 km (5.2 n miles) at 2 Mach; warhead 9.1 kg
Guns: 1 OTO Melara 3 in (76 mm)/62 Super Rapid; 120 rds/min to 16 km (8.6 n miles) anti-surface; 12 km (6.6 n miles) anti-aircraft; weight of shell 6 kg.
 1 Raytheon Mk 15 Mod 21 (block 1B) Phalanx; 300 rds/min combined to 1.5 km.
 2—7.62 mm MGs.
Countermeasures: Decoys: To be announced.
ESM: To be announced.
ECM: To be announced.
Combat data systems: To be announced.
Weapons control: Thales STING optronic director
Radars: Air/surface search: EADS TRS-3D; C-band.
Fire control: Thales STING, I band
Navigation: Thales Scout, I band

Comment: Following responses to an ITT issued in 1999, the Egyptian Navy placed an order in January 2001 for four Fast Attack Craft (Missile). These craft were to have been built by Halter Marine. However, following suspension of the project in 2002 and the subsequent purchase of the shipbuilder by Singapore Technologies, the project was revived in 2004 and a contract for the design of a new craft was then let to VT Halter Marine in late 2005. This was followed on 22 November 2006 by a contract (modified in September 2008) for the construction of three craft. The vessels are to be sold to Egypt under US FMS funding arrangements. Delivery of the first craft is expected in 2012.



AMBASSADOR III (artist's impression) 6/2001, Halter Marine / 0073895

6 RAMADAN CLASS (FAST ATTACK CRAFT—MISSILE) (PGGF)

Name	No	Builders	Launched	Commissioned
RAMADAN	670	Vosper Thornycroft	6 Sep 1979	20 July 1981
KHYBER	672	Vosper Thornycroft	31 Jan 1980	16 Sep 1981
EL KADESSAYA	674	Vosper Thornycroft	19 Feb 1980	6 Apr 1982
EL YARMOUK	676	Vosper Thornycroft	12 June 1980	18 May 1982
BADR	678	Vosper Thornycroft	17 June 1981	17 June 1982
HETTEIN	680	Vosper Thornycroft	25 Nov 1980	28 Oct 1982

Displacement, tons: 307 full load
Dimensions, feet (metres): 170.6 × 25 × 7.5 (52 × 7.6 × 2.3)
Main machinery: 4 MTU 20V 536 TB91 diesels; 15,360 hp(m) (11.29 MW) sustained; 4 shafts
Speed, knots: 40 **Range, n miles:** 1,600 at 18 kt
Complement: 30 (4 officers)

Missiles: SSM: 4 OTO Melara/Matra Otomat Mk 2, active radar homing to 160 km (86.4 n miles) at 0.9 Mach; warhead 210 kg
Guns: 1 OTO Melara 3 in (76 mm) compact; 85 rds/min to 18 km (8.7 n miles); weight of shell 6 kg
 2 Breda 40 mm/70 (twin); 300 rds/min to 12.5 km (6.8 n miles) anti-surface; weight of shell 0.96 kg.
Countermeasures: Decoys: 4 Protean fixed launchers each with 4 magazines containing 36 chaff decoy and IR flare grenades.
ESM: Raca Cutlass, radar intercept
ECM: Raca Cygnus, jammer
Combat data systems: AMS Nautis 3.
Weapons control: Marconi Sapphire System with 2 radar/TV and 2 optical directors.
Radars: Air/surface search: Marconi sS 820; E/F-band; range 73 km (40 n miles).
Navigation: Marconi S 810; I-band
Fire control: 2 Marconi ST 802, I-band

Programmes: The contract was carried out at the Porchester yard of Vosper Thornycroft Ltd with some hulls built at Portsmouth Old Yard, being towed to Porchester for fitting out.
Modernisation: Contracts for the modernisation of these craft was let in 2001 Alenia Marconi Systems upgraded the Otomat missiles to Mk 2, renovated the S 820 and ST 802 radars and replaced the CAAS combat system by NAUTIS 3. Work carried out 2002–2007.
Operational: Portable SAM SA-N-5 sometimes carried.



EL YARMOUK 3/2006, M Declerck / 1161109

12 OSA I (PROJECT 205) CLASS (FAST ATTACK CRAFT—MISSILE) (PTFG)

631	643	651 (ex-306)	— (ex-304)	— (ex-11)	— (ex-14)
633	649 (ex-305)	653 (ex-307)	— (ex-308)	— (ex-12)	— (ex-15)

Displacement, tons: 171 standard; 210 full load
Dimensions, feet (metres): 126.6 × 24.9 × 8.9 (38.6 × 7.6 × 2.7)
Main machinery: 3 MTU diesels; 12,000 hp(m) (8.82 MW); 3 shafts
Speed, knots: 35
Range, n miles: 400 at 34 kt
Complement: 30

Missiles: SSM: 4 SS-N-2A Styx; active radar or IR homing to 46 km (25 n miles) at 0.9 Mach; altitude preset up to 300 m (984.3 ft); warhead 513 kg.
SAM: SA-N-5 Grail; manual aiming; IR homing to 6 km (3.2 n miles) at 1.5 Mach; altitude to 2,500 m (8,000 ft); warhead 1.5 kg.
Guns: 4 USSR 30 mm/65 (2 twin); 500 rds/min to 5 km (2.7 n miles) anti-aircraft; weight of shell 0.54 kg.
 2—12.7 mm MGs.
Countermeasures: ESM: Thomson-CSF DR 875; radar warning
ECM: Raca; jammer.
Radars: Air/surface search: Kelvin Hughes; I-band
Navigation: Raca, Decca 916, band.
Fire control: Drum T II, H/I-band.
IFF: High Pole, Square Head

Programmes: Of the 13 reported to have been delivered to Egypt by the Soviet Navy in 1966–68, three remained in service in 2003. Acquisition of additional craft has been reported from two sources. Five Osa I class, originally acquired by the Yugoslav Navy in the 1960s, were delivered by May 2007. 651 and 653 were reported commissioned on 28 October 2007. Also, four Osa II were transferred from Finland in late 2006. These were originally acquired from the then Soviet Union by Finland in 1974; subsequently converted in 1993 to a minelaying role and decommissioned in 2000.

Modernisation: Refitted with MTU diesels, two machine guns, improved radars and EW equipment.

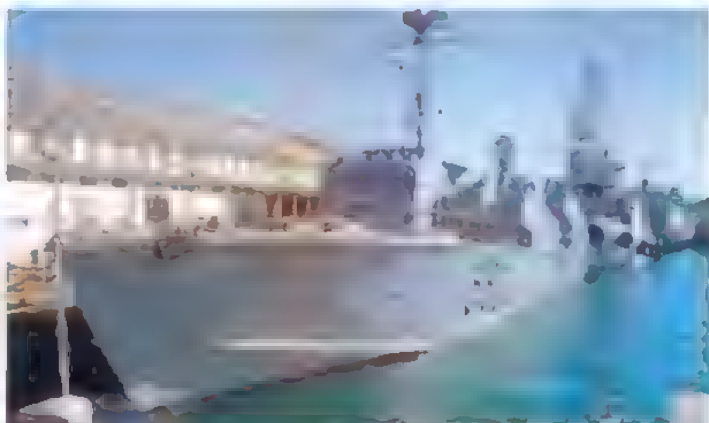
Operational: Three more 637 and 639 and 641 are laid up. The operational status of 631, 633 and 643 is doubtful. It is unclear whether the ex-Yugoslav and Finnish craft are to have an operational role or to be used as spares.



OSA 643 3/2007, Marco Ghiglino / 1166520



OSA 649 5/2007, Freivogel Collection / 1166529



OSA 653 5/2007, Freivogel Collection / 1166530

4 OCTOBER CLASS (FAST ATTACK CRAFT—MISSILE) (PTFG)

781 783 787 789

Displacement, tons: 82 full load
Dimensions, feet (metres): 84 × 20 × 5 (25.5 × 6.1 × 1.3)
Main machinery: 4 CRM 12 D/SS diesels, 5,000 hp(m) (3.67 MW) sustained; 4 shafts
Speed, knots: 38. **Range, n miles:** 400 at 30 kt
Complement: 20

Missiles: SSM: 2 OTO Melara/Matra Otomat Mk 2; active radar homing to 160 km (86.4 n miles) at 0.9 Mach; warhead 210 kg, can be carried
Guns: 4 BMARC/Oerlikon 30 mm/75 (2 twin); 650 rds/min to 10 km (5.5 n miles) anti-surface; 3 km (1.6 n miles) anti-aircraft; weight of shell 1 kg and 0.36 kg mixed.
Countermeasures: Decoys: 2 Protean fixed launchers each with 4 magazines containing 36 chaff decoy and IR flare grenades.
ESM: Raca, Cutlass; radar warning
Weapons control: Marconi Sapphire radar/TV system.
Radars: Air/surface search: Marconi S 810; range 48 km (25 n miles).
Fire control: Marconi/ST 802, I-band

Programmes: Built in Alexandria 1975–76. Hull of same design as USSR Komar class. Refitted by Vosper Thornycroft, completed 1979–81 791 was washed overboard on return trip, recovered and returned to Portsmouth for refit. Left UK after repairs on 12 August 1982. Probably Link fitted.

Modernisation: Alenia Marconi systems to upgrade Otomat missiles to Mk 2 between 2002–2007

Operational: 791 reported non-operational and 785 is laid up.



OCTOBER 783

2/2004 / 1044173

5 SHERSHEN CLASS (FAST ATTACK CRAFT—GUN) (PTFM)

753 755 757 759 761

Displacement, tons: 145 standard; 170 full load
Dimensions, feet (metres): 113.8 × 22 × 4.9 (34.7 × 6.7 × 1.5)
Main machinery: 3 Type M 503A diesels; 8,025 hp(m) (5.9 MW) sustained; 3 shafts
Speed, knots: 45. **Range, n miles:** 850 at 30 kt
Complement: 23

Missiles: SAM: SA-N-5 Grail (755–761); manual aiming; IR homing to 6 km (3.2 n miles) at 1.5 Mach; warhead 1.5 kg

Guns: 4 USSR 30 mm/65 (2 twin); 500 rds/min to 5 km (2.7 n miles); weight of shell 0.54 kg. 2 USSR 122 mm rocket launchers (755–761 in lieu of torpedo tubes); 20 barrels per launcher; range 9 km (5 n miles).

Depth charges: 12.

Countermeasures: ESM: Thomson-CSF DR 875, radar warning.

Radars: Surface search: Pot Drum; H/I-band.

Fire control: Drum Tilt, H/I-band (in some).

IFF: High Pole

Programmes: Five delivered from USSR in 1957 and two more in 1968. One deleted. 753 completed an extensive refit at Ismailia in 1987; 751 in 1988.

Structure: The last four have had their torpedo tubes removed to make way for multiple BM21 rocket launchers and one SA-N-5 Grail, which are not always carried. Some have Drum Tilt radars removed. 753 has also had its torpedo tubes removed but these may be replaced.

Operational: Based at Alexandria, Port Said and Mersa Matru. 751 reported non-operational



SHERSHEN 757

3/2007, Marco Ghiglino / 1166522

4 HEGU CLASS (FAST ATTACK CRAFT—MISSILE) (PTFG)

609 611 613 615

Displacement, tons: 68 standard; 79.2 full load
Dimensions, feet (metres): 88.6 × 20.7 × 4.3 (27 × 6.3 × 1.3)
Main machinery: 4 Type L12V-180 diesels; 4,800 hp(m) (3.53 MW); 4 shafts
Speed, knots: 37.5. **Range, n miles:** 400 at 30 kt
Complement: 17 (2 officers)

Missiles: SSM: 2 SY-1; active radar or passive IR homing to 40 km (22 n miles) at 0.9 Mach; warhead 513 kg

Guns: 2–23 mm (1 twin); locally constructed to fit 25 mm mounting.

Countermeasures: ESM: Litton Triton; radar intercept.

Radars: Surface search/fire control: Square Tie; I-band or Decca; I-band.

IFF: High Pole A.

Programmes: Acquired from China and commissioned in Egypt on 27 October 1984.

The Hegu is the Chinese version of the deleted Komar.

Modernisation: ESM fitted in 1995–96.

Operational: 619 and 617 are reported laid up.



HEGU 609

3/2000, J103/40



HEGU 609 and 611

3/2007, Marco Ghiglino / 1166521

8 HAINAN CLASS (FAST ATTACK CRAFT—PATROL) (PC)AL NOUR 430 AL HADI 433 AL HAKIM 436 AL WAKIL 439
AL QATAR 442 AL GABBAR 445 AL SALAM 448 AL RAFA 451

Displacement, tons: 375 standard; 392 full load
Dimensions, feet (metres): 192.8 × 23.6 × 7.2 (58.8 × 7.2 × 2.2)
Main machinery: 4 PRC/Kolomna Type 9-D-8 diesels; 4,000 hp (2.94 MW) sustained; 4 shafts
Speed, knots: 30.5
Range, n miles: 1,300 at 15 kt
Complement: 69

Guns: 4 China 57 mm/70 (2 twin); 120 rds/min to 12 km (6.5 n miles); weight of shell 6.31 kg. 4–23 mm (2 twin); locally constructed to fit the 25 mm mountings.

Torpedoes: 6–324 mm (2 triple) tubes (in two of the class). Mk 44 or MUSL Stingray.

A/S mortars: 4 RBU 1200 fixed 5-tube launchers; range 1,200 m; warhead 34 kg.

Depth charges: 2 projectors; 2 racks. 18 DCs.

Mines: Rails fitted. 12 mines.

Radars: Surface search: Pot Head or Skin Head; I-band.

Navigation: Decca, I-band

IFF: High Pole.

Sonars: Stag Ear, hull-mounted; active search and attack; high frequency.

Programmes: First pair transferred from China in October 1983, next three in February 1984 (commissioned 21 May 1984) and last three late 1984.

Modernisation: Two fitted with torpedo tubes and with Singer Librescope fire control. No sign of the remainder being similarly equipped. New sonar reported being fitted.

Operational: Based at Alexandria.



AL WAKIL

4/2007, Marco Ghiglino / 1166523

4 SHANGHAI II CLASS (FAST ATTACK CRAFT—GUN) (PB)

793 795 797 799

Displacement, tons: 113 standard; 131 full load
Dimensions, feet (metres): 127.3 × 17.7 × 5.6 (38.8 × 5.4 × 1.7)
Main machinery: 2 Type L12-180 diesels; 2,400 hp(m) (1.76 MW) (forward); 2 Type L12-180 diesels; 1,820 hp(m) (1.34 MW) (aft); 4 shafts
Speed, knots: 30. **Range, n miles:** 700 at 16.5 kt
Complement: 34

Guns: 4 China 37 mm/63 (2 twin); 180 rds/min to 8.5 km (4.6 n miles); weight of shell 1.42 kg.

2–23 mm (1 twin); locally constructed to fit the 25 mm mountings.

Mines: Rails can be fitted for 10 mines.

Countermeasures: ESM: Thomson-CSF; radar warning.

Radars: Surface search, Decca, I-band

IFF: High Pole

Programmes: Transferred from China in 1984.

Operational: Three based at Suez and one (799) at Mersa Matru. 795 refitted in 1998.



SHANGHAI 797

6/1997, J W Currie / 0012295

AMPHIBIOUS FORCES

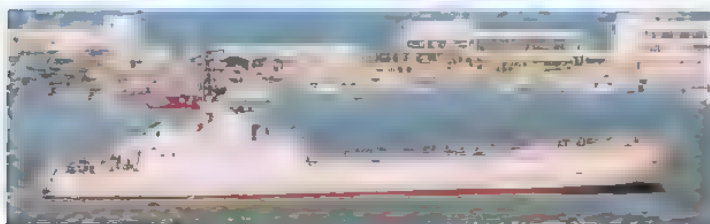
Notes: (1) Acquisition of LSTs is a high priority.
 (2) Ro-Ro ferries are chartered for amphibious exercises.
 (3) Rigid Raiders with Johnson outboards are also in service.
 (4) Three small hovercraft similar to Slingsby SAH 2200 reported to be in service.

3 POLNOCHNY A (PROJECT 770) CLASS (LSM)

301 303 305

Displacement, tons: 800 full load
 Dimensions, feet (metres): 239.5 x 27.9 x 5.8 (73 x 8.5 x 1.8)
 Main machinery: 2 Kolomna Type 40-D diesels; 4,400 hp(m) (3.2 MW) sustained; 2 shafts
 Speed, knots: 19
 Range, n miles: 1,000 at 18 kt
 Complement: 40
 Military lift: 6 tanks, 350 tons
 Guns: 2 USSR 30 mm/85 (twin); 500 rds/min to 5 km (2.7 n miles); weight of shell 0.54 kg.
 2—140 mm rocket launchers; 18 barrels to 9 km (4.9 n miles)
 Radars: Surface search: Decca; I-band.
 Fire control: Drum Tilt, H/I-band.

Comment: Built at Northern Shipyard, Gdansk and transferred from USSR 1973-74. All used for Gulf logistic support in 1990-91. SA-N-5 may be carried. Radar updated. All are active.



POLNOCHNY 303 10/2000, F Sadek / D103/42

5 SEAFOX TYPE (SWIMMER DELIVERY CRAFT) (LDW)

21 23 25 27 28

Displacement, tons: 11.3 full load
 Dimensions, feet (metres): 36.1 x 9.8 x 2.6 (11 x 3 x 0.8)
 Main machinery: 2 GM 6V-92TA diesels; 520 hp (388 kW) sustained; 2 shafts
 Speed, knots: 30
 Range, n miles: 200 at 20 kt
 Complement: 3
 Guns: 2—12.7 mm MGs. 2—7.62 mm MGs.
 Radars: Surface search: LN66; I-band.

Comment: Ordered from Unifite, Washington in 1982. GRP construction painted black. There is a strong underwater team in the Egyptian Navy which is also known to use commercial two-man underwater chariots. Based at Abu Qir. 26 and 28 are not fully operational and others of the class are in various states of repair. RIBs are also in service.



SEAFOX 1999 / 0056917

9 VYDRA CLASS (LCU)

330 332 334 336 338 340 342 344 346

Displacement, tons: 425 standard; 600 full load
 Dimensions, feet (metres): 179.7 x 25.3 x 6.6 (54.8 x 7.7 x 2)
 Main machinery: 2 Type 3-D-12 diesels, 600 hp(m) (440 kW) sustained; 2 shafts
 Speed, knots: 11
 Range, n miles: 2,500 at 10 kt
 Complement: 20
 Military lift: 200 troops, 250 tons.
 Guns: 2 or 4—37 mm/63 (1 or 2 twin) (may be fitted).
 Radars: Navigation: Decca; I-band.

Comment: Built in late 1960s, transferred from USSR 1968-69. For a period after the Israeli war of October 1973 several were fitted with rocket launchers and two 37 or 40 mm guns, some of which have now been removed. All still in service.



VYDRA 332 3/2007, Marco Ghigilino / 1166524

MINE WARFARE FORCES

2 OSPREY CLASS (MINEHUNTERS—COASTAL) (MHC)

Name	No	Builders	Launched	Commissioned
AL SIDDIQ (ex-Cardinal)	521 (ex-MHC 60)	Intermarine, Savannah	9 Mar 1996	18 Oct 1997
AL FAROUK (ex-Raven)	524 (ex-MHC 61)	Intermarine, Savannah	28 Sep 1996	5 Sep 1998

Displacement, tons: 930 full load
 Dimensions, feet (metres): 187.8 x 35.9 x 9.5 (57.2 x 11 x 2.9)
 Main machinery: 2 Isotta Fraschini ID 36 SS 8V AM diesels; 1,600 hp(m) (1.18 MW) sustained; 2 Voith-Schneider props, 3 Isotta Fraschini ID 36 diesel generators; 984 kW
 Speed, knots: 13
 Range, n miles: 1,500 at 10 kt
 Complement: 51 (5 officers)

Guns: 2—12.7 mm MGs
 Countermeasures: MCM Alliant SLQ-48 mine neutralisation system ROV (with 1,070 m cable) Degaussing DGM-4.
 Combat data systems: Unisys SYQ 13 and SYQ 109; integrated combat and machinery control system. USQ-119E(V), UHF Dama, and OTCIXS provide GCCS connectivity.
 Radars: Surface search: Raytheon SPS-64(V)9; I-band.
 Navigation: R41XX; I-band.
 Sonars: Raytheon/Thomson Sintra SQQ-32(V)3; VDS, active minehunting; high frequency.

Programmes: Original design contract for Lerici-class minehunters was awarded in August 1996 to Intermarine USA which built eight of the 12 ships of the class for the US Navy Transferred to Egypt on 7 January 2007 and recommissioned on 28 October 2007.

Structure: Construction is of monocoque GRP throughout hull, with frames eliminated. Main machinery is mounted on GRP cradles and provided with acoustic enclosures. SQQ-32 is deployed from a central well forward. Fitted with Voith cycloidal propellers which eliminate need for forward thrusters during station keeping.



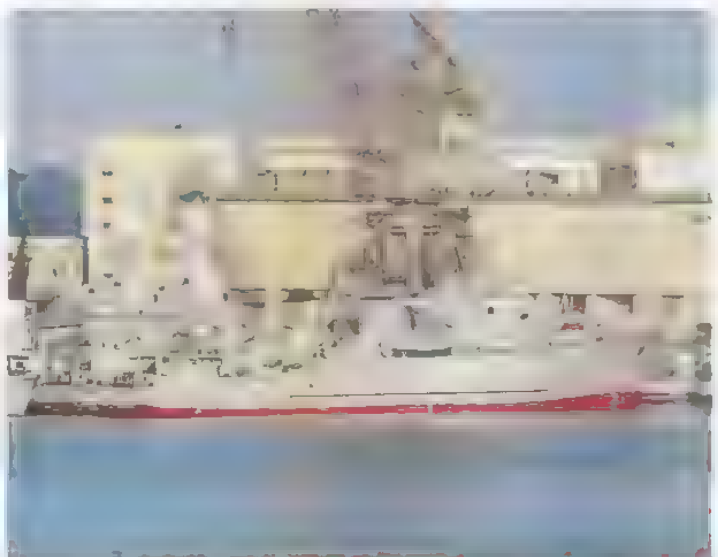
AL SIDDIQ and AL FAROUK 3/2007, Paul Daly / 1167/35

4 YURKA CLASS (MINESWEEPERS—OCEAN) (MSO)

GIZA 530 ASWAN 533 QINA 536 SOHAG 539

Displacement, tons: 540 full load
 Dimensions, feet (metres): 171.9 x 30.8 x 8.5 (52.4 x 9.4 x 2.6)
 Main machinery: 2 Type M 503 diesels; 5,350 hp(m) (3.91 MW) sustained; 2 shafts
 Speed, knots: 17
 Range, n miles: 1,500 at 12 kt
 Complement: 45
 Guns: 4 USSR 30 mm/65 (2 twin); 500 rds/min to 5 km (2.7 n miles); weight of shell 0.54 kg.
 Mines: Can ay 10.
 Radars: Navigation: Don; I-band
 Sonars: Stag Ear; hull-mounted; active search; high frequency.

Comment: Steel-hulled minesweepers transferred from the USSR in 1969. Built 1963-69. Egyptian Yurka class do not carry Drum Tilt radar and have a number of ship's-side scuttles. The plan to equip them with VDS sonar has been shelved. At least one operates an ROV



SOHAG 3/2007, Marco Ghigilino / 1166525

2 SWIFTSHIPSTYPE (ROUTE SURVEY VESSELS) (MSI)

Name	No	Builders	Commissioned
SAFAGA	RSV 1 (ex-610)	Swiftships	1 Oct 1994
ABU EL GHOSON	RSV 2 (ex-613)	Swiftships	1 Oct 1994

Displacement, tons: 165 full load
 Dimensions, feet (metres): 90 x 24.8 x 8 (27.4 x 7.6 x 2.4)
 Main machinery: 2 MTU 12V 183TA61 diesels; 928 hp(m) (682 kW); 2 shafts, bow thruster; 60 hp(m) (44 kW)
 Speed, knots: 12
 Range, n miles: 1,500 at 10 kt
 Complement: 16 (2 officers)
 Guns: 1—12.7 mm MG
 Radars, Navigation: Furuno 2020; I-band
 Sonars: EG & G side scan; active; high frequency.

Comment: Route survey vessels ordered from Swiftships in November 1990 and delivered in September 1993. Two more are planned to be built in Egyptian yards in due course. Unisys improved SYQ-12 command system. Provision for both shallow and deep towed bodies. The names have been taken from the obsolete K 8 class.



ABU EL GHOSON 3/2006, M Declerck / 1167106

3 SWIFTSHIPS TYPE (COASTAL MINEHUNTERS) (MHC)

Name	No	Builders	Launched	Commissioned
DAT ASSAWARI	542 (ex-CMH 1)	Swiftships, Morgan City	4 Oct 1993	13 July 1997
NAVARIN	545 (ex-CMH 2)	Swiftships, Morgan City	13 Nov 1993	13 July 1997
BURULLUS	548 (ex-CMH 3)	Swiftships, Morgan City	4 Dec 1993	13 July 1997

Displacement, tons: 203 full load
 Dimensions, feet (metres): 111 x 27 x 8 (33.8 x 8.2 x 2.3)
 Main machinery: 2 MTU 12V 183TE61 diesels, 1,068 hp(m) (785 kW); 2 Schottel steerable props; 1 White Gill thruster; 300 hp (224 kW)
 Speed, knots: 12.4
 Range, n miles: 2,000 at 10 kt
 Complement: 25 (5 officers)
 Guns: 2—12.7 mm MGs
 Radars: Navigation: Sperry; I-band
 Sonars: Thoray/Thomson Sintra TSM 2022; hull-mounted; active minehunting; high frequency.

Comment: MCM vessels with GRP hulls ordered from Swiftships in December 1990 with FMS funding. First one acceptance trials in June 1994 and completion in August. Fitted with a Unisys command data handling system which is an improved version of SYQ-12. GPS and line of sight navigation system. Dynamic positioning. A side scan sonar body and Gaymarine Pluto ROV can be streamed from a deck crane. Portable decompression chamber carried. Two delivered 29 November 1995 and the third in April 1996. All were finally commissioned after delays caused by problems with the minehunting equipment.



DAT ASSAWARI 3/2006, M Declerck / 1167107

3T 43 CLASS (MINESWEEPERS—OCEAN) (MSO)

DAQHLIYA 507	SINAI 513	ASSIYUT 518
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Displacement, tons: 580 full load
 Dimensions, feet (metres): 190.2 x 27.6 x 8.9 (58 x 8.4 x 2.7)
 Main machinery: 2 Kolomna Type 9-D-8 diesels; 2,000 hp(m) (1.47 MW) sustained; 2 shafts
 Speed, knots: 15
 Range, n miles: 3,000 at 10 kt
 Complement: 65
 Guns: 4—37 mm/63 (2 twin); 160 rds/min to 9 km (5 n miles); weight of shell 0.7 kg.
 8—12.7 mm (4 twin) MGs
 Mines: Can carry 20.
 Radars: Navigation: Don 2; I-band.
 Sonars: Stag Ear; hull-mounted; active search; high frequency.

Comment: Delivered in the early 1970s from the USSR. Others of the class have been sunk or used as targets or cannibalised for spares. The plan to fit them with VDS sonars and ROVs has been shelved.



DAQHLIYA 3/2000, 0103745

TRAINING SHIPS

Notes. (1) *Al Kousser* P 91 is a 1,000 ton vessel belonging to the Naval Academy. *Intishat* is a 500 ton training ship. Pennant number 180 is a USSR *Sekstan* class used as a cadet training ship. Two YSB training craft acquired from the US in 1989. A 3,300 ton training ship *Aida IV* presented by Japan in 1988 for delivery in March 1992 belongs to the Arab Maritime Transport Academy.
 (2) The campaign to transfer the Black Swan-class sloop *Tariq*, formerly *HMS Whimbrel*, to Liverpool, to become a floating memorial to the Battle of the Atlantic, faltered in 2008 due to a disagreement over price.

1 PRESIDENTIAL YACHT (YAC/AX)

Name	Builders	Commissioned
EL HORRIYA (ex-Mehroussa)	Samuda, Poplar	1865

Displacement, tons: 4,560 full load
 Dimensions, feet (metres): 479 x 42.6 x 17.4 (146 x 13 x 5.3)
 Main machinery: 3 boilers; 3 turbines; 5,500 hp (4.1 MW); 3 shafts
 Speed, knots: 16
 Complement: 160

Comment: Became a museum in 1987 but was reactivated in 1992. Used as a training ship as well as a Presidential Yacht.



EL HORRIYA 3/2007, Marco Ghigliino / 1166526

1 Z CLASS (AXT)

Name	No	Builders	Laid down	Launched	Commissioned
EL FATEH (ex-Zenith, ex-Wessex)	921	Wm Denny & Bros, Dumbarton	19 May 1942	5 June 1944	22 Dec 1944

Displacement, tons: 1,730 standard; 2,575 full load
 Dimensions, feet (metres): 362.8 x 35.7 x 16 (110.6 x 10.9 x 4.9)
 Main machinery: 2 Admiralty boilers; 2 Parsons turbines; 40,000 hp (30 MW); 2 shafts
 Speed, knots: 24
 Range, n miles: 2,800 at 20 kt
 Complement: 186
 Radars: Air/surface search: Marconi SNW 10; D-band.
 Navigation: Racal Decca 916; I-band.
 Fire control: Marconi Type 275; F-band.

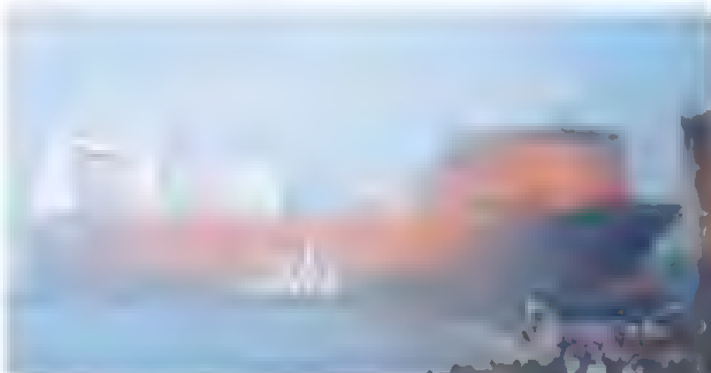
Programmes: Purchased from the UK in 1955
Operational: Used primarily for harbour training, and the intention is to keep the ship in service. Last seen at sea in 1994. The last survivor of its class, the ship may be preserved as a museum. The ship has been disarmed.



EL FATEH 3/2006, M Declerck / 1167102

AUXILIARIES

Notes: (1) There are also two survey launches *Misaha 1* and *2* with a crew of 14. Both were commissioned in 1991
 (2) A small barge *Amira Rama* was donated to the Navy in 1987 and is used as lighthouse tender
 (3) *Al Hurreya 1*, a 6,000 ton 139 m transport ship, was launched at Alexandria on 27 January 2004 and delivered on 7 April 2005. A second ship *Al Hurreya 2* was launched on 24 June 2006. This is being followed by a larger 10,000 ton 173 m vessel which is expected to be launched in 2009.



AL HURREYA 2 6/2006, F Sadek / 1040/40

7 TOPLIVO 2 CLASS (TANKERS) (AOTL/AWTL)

AYEDA 4 210	MARYUT 218	AL NIL 220	AL FURAT 224
ATABARAH 212	AKDU 214	AYEDA 3 216	

Displacement, tons: 1,029 full load
Dimensions, feet (metres): 176.2 × 31.8 × 10.5 (53.7 × 9.7 × 3.2)
Main machinery: 1 BDR 30/50-5 diesel; 600 hp(m) (441 kW); 1 shaft
Speed, knots: 10
Range, n miles: 400 at 7 kt
Complement: 16
Cargo capacity: 500 tons diesel or water (211–216)
Radars: Navigation: Spin Trough; I-band

Comment: Built in Alexandria in 1972–77 to a USSR design. Another of the class 217 is laid up.



AYEDA 4 3/2006, M Declercq / 1167105

1 LÜNEBURG CLASS (TYPE 701) (SUPPORT SHIP) (ARL)

Name	No	Builders	Commissioned
SHALADEIN (ex-Glücksburg)	230 (ex-A 1414)	Bremer Vulkan/ Flensburger Schiffbau	8 July 1968

Displacement, tons: 3,709 full load
Dimensions, feet (metres): 374.9 × 43.3 × 13.8 (114.3 × 13.2 × 4.2)
Main machinery: 2 MTU MD 16V 538 TB90 diesels; 6,000 hp(m) (4.1 MW) sustained;
 2 shafts; cp props, bow thruster
Speed, knots: 17
Range, n miles: 3,200 at 14 kt
Complement: 71 (9 officers)
Cargo capacity: 1,100 tons
Guns: 4 Bofors 40 mm/70 (2 twin).
Countermeasures: Decoys: 2 Breda 105 mm SCLAR chaff launchers.

Comment: Transferred from Germany in early 2003 to act as support ship, including missile maintenance, of Type 148 patrol craft



SHALADEIN 4/2003, Frank Findler / 0562/46

1 WESTERWALD CLASS (TYPE 760)
(AMMUNITION TRANSPORT) (AEL)

Name	No	Builders	Commissioned
HALAIB (ex-Odenwald)	231 (ex-A 1436)	Orenstein and Koppel, Lübeck	23 Mar 1967

Displacement, tons: 3,460 standard; 4,042 full load
Dimensions, feet (metres): 344.4 × 46 × 15.1 (105 × 14 × 4.6)
Main machinery: 2 MTU MD 16V 538 TB90 diesels, 6,000 hp(m) (4.1 MW) sustained;
 2 shafts; cp props, bow thruster
Speed, knots: 17. **Range, n miles:** 3,500 at 17 kt
Complement: 31
Cargo capacity: 1,080 tons ammunition
Guns: 2 Bofors 40 mm.
Radars: Navigation: Kelvin Hughes; I-band

Comment: Transferred from Germany in early 2003



HALAIB 4/2003, Frank Findler / 0567/45

2 POLUCHAT 1 CLASS (YPT)

936	937
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Displacement, tons: 100 full load
Dimensions, feet (metres): 97.1 × 19 × 4.8 (29.6 × 5.8 × 1.5)
Main machinery: 2 Type M 50 diesels; 2,200 hp(m) (1.6 MW) sustained; 2 shafts
Speed, knots: 20. **Range, n miles:** 1,500 at 10 kt
Complement: 15
Radars: Surface search: Spin Trough; I-band

Comment: Used as Torpedo Recovery Vessels. Unarmed



POLUCHAT 3/2000 / 0103779

2 NYRYAT I (PROJECT 522) CLASS (DIVING TENDERS) (YDT)

P 001	P 002
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Displacement, tons: 116 full load
Dimensions, feet (metres): 93.8 × 17.1 × 5.6 (28.6 × 5.2 × 1.7)
Main machinery: 1 diesel; 450 hp(m) (331 kW) sustained; 1 shaft
Speed, knots: 12.5
Range, n miles: 1,500 at 10 kt
Complement: 15
Radars: Surface search: Spin Trough; I-band.

Comment: Transferred in 1964.

TUGS

Notes: (1) There are also four Coast Guard harbour tugs built by Damen in 1982. Names *Khoulou*, *Khalra*, *Ramses* and *Kreir*. Two other harbour tugs were delivered in 1998. Names *Ajmi* and *Jihad*.
 (2) Two former oilfield supply vessels 113 and 115 are probably employed as tugs. They are also fitted with firefighting equipment.
 (3) A large Chinese built tug *El Alamein* is reported to be in service.



115 3/2007, Marco Ghigino / 1166572

5 OKHTENSKY CLASS (ATA)

AL MAKS 103 AL ANTAR 107 AL ISKANDARANI 111
AL AGAMI 105 AL DEKHEILA 109

Displacement, tons: 930 full load
Dimensions, feet (metres): 156.1 × 34 × 13.4 (47.6 × 10.4 × 4.1)
Main machinery: Diesel-electric, 2 BM diesel generators; 1 motor; 1,500 hp(m) (1.1 MW); 1 shaft
Speed, knots: 13
Range, n miles: 6,000 at 13 kt
Complement: 38

Comment: Two transferred from USSR in 1966, others assembled at Alexandria. Replacements are needed.



AL AGAMI 3/2007, Marco Ghigino / 1186528

COAST GUARD

Notes: (1) The Coast Guard is controlled by the Navy.
(2) There are four obsolete P 6 craft, pennant numbers 222, 246, 253 and 201
(3) There is also a minimum of four ex-USN Bollinger type harbour security craft of 3.9 tons capable of 22 kt. Twin diesel engines. Carry a 7.62 mm MG.
(4) There is an unknown number of RIBs for inshore patrols.
(5) A fast patrol craft, donated by Italy in 2007, is operated by the Ports Police for counter-smuggling and illegal immigration operations.

3 TYPE 83 CLASS (LARGE PATROL CRAFT) (WPB)

46 47 54

Displacement, tons: 85 full load
Dimensions, feet (metres): 83.7 × 21.3 × 5.6 (25.5 × 6.5 × 1.7)
Main machinery: 2 diesels; 2 shafts
Speed, knots: 24
Complement: 12
Guns: 4—23 mm (2 twin); 1 Oerlikon 20 mm.
Radars: Surface search; Furuno; I-band.

Comment: Two of this class commissioned 13 July 1997. Built locally, these craft are similar to the Swiftships 93 ft class. Three are operational.



TYPE 83 CLASS 10/1995, 0056923

6 CRESTITALIA MV 70 CLASS (COASTAL PATROL CRAFT) (WPBF)

Displacement, tons: 36 full load
Dimensions, feet (metres): 68.9 × 17.4 × 3 (21 × 5.3 × 0.9)
Main machinery: 2 MTU 12V 331TC92 diesels, 2,660 hp(m) (1.96 MW) sustained; 2 shafts
Speed, knots: 35
Range, n miles: 500 at 32 kt
Complement: 10 (1 officer)
Guns: 2 Oerlikon 30 mm A32 (twin); 1 Oerlikon 20 mm.
Radars: Surface search; Racal Decca; I-band.

Comment: Ordered 1980-GRP hulls. Naval manned but still employed on Coast Guard duties.



CRESTITALIA 70 R 1980, Crestitalia, 0505986

21 TIMSAH CLASS (LARGE PATROL CRAFT) (WPB)

01-02 04-22

Displacement, tons: 106 full load
Dimensions, feet (metres): 101.8 × 17 × 4.8 (30.5 × 5.2 × 1.5)
Main machinery: 2 MTU 8V 331TC92 diesels; 1,770 hp (1.3 MW) sustained; 2 shafts (01-06); 2 MTU 12V 331TC92 diesels; 2,660 hp(m) (1.96 MW) sustained; 2 shafts (07-19)
Speed, knots: 25
Range, n miles: 600 at 18 kt
Complement: 13
Guns: 2 Oerlikon 30 mm (twin) or 2 14.5 mm MGs.
Radars: Surface search; Racal Decca; I-band.

Comment: First three Timsah I completed December 1981, second three Timsah I December 1982 at Timsah SY, Ismailia. These all have funnels but there appear to be minor structural differences. 03 sunk in late 1993. Further six Timsah II ordered in January 1985 and completed in 1988-89 with a different type of engine and with waterline exhaust vice a funnel. Last of this batch in service in 1992, followed by ten more by 1999.



TIMSAH 17 4/2002, A Shamsa, 0528333



TIMSAH 16 7/2006, Marco Ghigino, 1164998



TIMSAH 19 4/2005, Queun/Marsan, 1151174

9 SWIFTSIPS 93 ft CLASS (LARGE PATROL CRAFT) (WPB)

35-43

Displacement, tons: 102 full load
Dimensions, feet (metres): 93.2 × 18.7 × 4.9 (28.4 × 5.7 × 1.5)
Main machinery: 2 MTU 12V 331TC92 diesels, 2,660 hp(m) (1.96 MW) sustained; 2 shafts
Speed, knots: 27
Range, n miles: 900 at 12 kt
Complement: 14 (2 officers)
Guns: 4—23 mm (2 twin); 1 Oerlikon 20 mm or 2—14.5 mm MG.
Radars: Surface search; Furuno; I-band.

Comment: Ordered November 1983. First three built in US, remainder assembled by Osman Shipyard, Ismailia. First four commissioned 16 April 1985, five more in 1986. Armament upgraded with 23 mm guns fitted forward in some of the class.



SWIFTSIPS 42 3/2006, M Declerck, 1161997

**12 SEA SPECTRE PB MK III CLASS
(COASTAL PATROL CRAFT) (WPB)**

Displacement, tons: 37 full load
Dimensions, feet (metres): 64.9 × 18 × 5.9 (19.8 × 5.5 × 1.8)
Main machinery: 3 GM 8V-71TI diesels; 1,800 hp (1.3 MW); 3 shafts
Speed, knots: 29. **Range, n miles:** 450 at 25 kt
Complement: 9 (1 officer)
Guns: 2–12.7 mm MGs.
Radars: Surface search: Raytheon; I-band.

Comment: PB Mk III type built by Peterson, Sturgeon Bay and delivered in 1980–81. Used for Customs duties.



SPECTRE 1981, Peterson Builders / 0056924

9 PETERSON TYPE (COASTAL PATROL CRAFT) (WPB)

71–79

Displacement, tons: 18 full load
Dimensions, feet (metres): 45.6 × 13 × 3 (13.9 × 4 × 0.9)
Main machinery: 2 MTU 8V 183 TE92 diesels; 1,314 hp(m) (966 kW) sustained; Hamilton 352 water-jets
Speed, knots: 34. **Range, n miles:** 200 at 30 kt
Complement: 4
Guns: 2–12.7 mm MGs.
Radars: Surface search: Raytheon; I-band.

Comment: Built by Peterson Shipbuilders, Sturgeon Bay and delivered between June and October 1994 under FMS. Replaced Bertram type and used as pilot boats.



PETERSON 72 (US colours) 6/1994, PBI / 0056925

5 NISR CLASS (LARGE PATROL CRAFT) (WPB)

THAR 701 NUR 703 NISR 713 NIMR 719 AL BAHR

Displacement, tons: 110 full load
Dimensions, feet (metres): 102 × 18 × 4.9 (31 × 5.2 × 1.5)
Main machinery: 2 Maybach diesels; 3,000 hp(m) (2.2 MW); 2 shafts
Speed, knots: 24
Complement: 15
Guns: 2 or 4–23 mm (twin). 1 BM 21 122 mm 8-barrelled rocket launcher
Radars: Surface search: Racal Decca 1230; I-band.

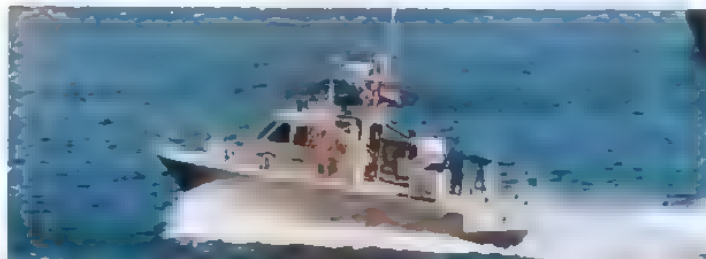
Comment: Built by Castro, Port Said on P6 hulls. First three launched in May 1983. Two more completed 1983. The rocket launcher and after 23 mm guns are interchangeable. 701 and 703 were refitted in 1998. Naval manned but employed on Coast Guard duties.

3 PETERSON TYPE (COASTAL PATROL CRAFT) (WPBF)

80–82

Displacement, tons: 20 full load
Dimensions, feet (metres): 51 × 12 × 3 (15.5 × 3.7 × 0.9)
Main machinery: 2 MTU diesels; 2,266 hp(m) (1.66 MW); Hamilton 391 water-jets
Speed, knots: 45. **Range, n miles:** 320 at 30 kt
Complement: 5
Guns: 2–12.7 mm MGs.
Radars: Surface search: Raytheon; I-band

Comment: Built by Peterson Shipbuilders, Sturgeon Bay and delivered between October and December 1996 under FMS. Aluminium construction. Used mostly as pilot boats.



PETERSON 81 3/2000 / 0103781

29 DC 35 TYPE (YFL)

Displacement, tons: 4 full load
Dimensions, feet (metres): 35.1 × 11.5 × 2.6 (10.7 × 3.5 × 0.8)
Main machinery: 2 Perkins T6-354 diesels; 390 hp (287 kW); 2 shafts
Speed, knots: 25
Complement: 4

Comment: Built by Dawncraft, Wroxham, UK, from 1977. Harbour launches. One destroyed in September 1994. About half are laid up at Port Said.



DC 35 8/1994, F Sadek / 0056927

**6 + (12) SWIFTSHIPS PROTECTOR CLASS
(LARGE PATROL CRAFT) (WPB)**

90 +95

Displacement, tons: 116 full load
Dimensions, feet (metres): 85.0 × 20.0 × 4.9 (26.1 × 6.1 × 1.5)
Main machinery: 2 Caterpillar 3512B diesels, 2 Hamilton HM651 waterjets
Speed, knots: 40
Complement: 12
Radars: Navigation: I-band.

Comment: Contract awarded 24 September 2004 to Swiftships, Morgan City, LA, for the construction of six patrol craft under the US government's Foreign Military Sales programme. The contract includes a training package. With an aluminium hull and superstructure and a high-speed RIB launching well, the craft are designed for SAR, law enforcement, and local patrol operations. Details of weapons and sensors have not been confirmed but up to a 30 mm gun with associated fire-control system may be fitted. A FLIR system may also be installed. Delivery of the first craft was made in June 2006 and completed in February 2007. A further 12 craft may be procured.



PROTECTOR 90 1/2006 / 1041657



El Salvador

FUERZA NAVAL DE EL SALVADOR

Country Overview

The Republic of El Salvador is an independent Central American State whose current constitution was established in 1983. With an area of 8,124 square miles, it has a 166 n mile coastline with the Pacific Ocean and is bounded to the north by Honduras and to the west by Guatemala. The country's capital is San Salvador while Acajutla, La Libertad and La Unión are the principal ports. El Salvador has not claimed an Exclusive Economic Zone (EEZ) but is one of a few coastal states which claims a 200 n mile territorial sea.

Senior Officer

Commander of the Navy
 Captain Walter Ricardo Rivero Alemán

Personnel

(a) 2009: 1,077 (including 160 naval infantry)
 (b) Voluntary service

Bases

Acajutla, La Libertad, El Trunfo y La Unión

Air Bases

El Tamarindo Air Station is reported to have been improved to enable the Third Air Brigade to provide air support to naval patrols. The US may donate fixed-wing aircraft and helicopters to assist in this task.

PATROL FORCES

Notes: (1) There are two high-speed RHIBs donated by Taiwan and US.
 (2) Three Boston Whaler craft were acquired in February 2007
 (3) There are plans to replace the Camcraft with similar vessels.

3 CAMCRAFT TYPE (COASTAL PATROL CRAFT) (PB)

PM 6 (ex-CG 6) PM 7 (ex-CG 7) PM 8 (ex-CG 8)

Displacement, tons: 100 full load
 Dimensions, feet (metres): 100 x 21 x 4.9 (30.5 x 6.4 x 1.5)
 Main machinery: 3 Detroit 12V-71TA diesels; 1,260 hp (939 kW) sustained; 3 shafts
 Speed, knots: 25. Range, n miles: 780 at 24 kt
 Complement: 10
 Guns: 1—20 mm Oerlikon or 1—12.7 mm MG. 2—7.62 mm MGs. 1—81 mm mortar.
 Radars: Surface search: Furuno; I-band

Comment: Aluminium hulled. Delivered 24 October, 8 November and 3 December 1975. Refitted in 1986 at Lantana Boatyard. Sometimes carry a combined 12.7 mm MG/81 mm mortar mounting in the stern. New radars fitted in 1995.



PM 7 10/2003, Julio Montes / 1166/74

1 POINT CLASS (PB)

No	Builders	Commissioned
PM 12 (ex-GC 12, ex-82358)	J Martinac, Tacoma	17 Mar 1967

Displacement, tons: 67 full load
 Dimensions, feet (metres): 83 x 17.2 x 5.8 (25.3 x 5.2 x 1.8)
 Main machinery: 2 Caterpillar diesels; 1,600 hp (1.19 MW); 2 shafts
 Speed, knots: 22. Range, n miles: 1,200 at 8 kt
 Complement: 10
 Guns: 2—12.7 mm MGs.
 Radars: Surface search: Hughes/Furuno SPS-73, I-band.

Comment: Ex-Point Stuart transferred from US Coast Guard on 27 April 2001.



PM 12 11/2001, Julio Montes / 0130481

1 SWIFTSHIPS 77 ft CLASS (COASTAL PATROL CRAFT) (PB)

PM 11 (ex-GC 11)

Displacement, tons: 48 full load
 Dimensions, feet (metres): 77.1 x 20 x 4.9 (23.5 x 6.1 x 1.5)
 Main machinery: 3 Detroit 12V-71TA diesels; 1,260 hp (939 kW) sustained; 3 shafts
 Speed, knots: 28
 Complement: 7
 Guns: 2—12.7 mm MGs. Aft MG combined with 81 mm mortar.
 Radars: Surface search: Furuno; I-band.

Comment: Aluminium hull. Delivered by Swiftships, Morgan City 6 May 1985.



PM 11 10/2003, Julio Montes / 1166/73

1 SWIFTSHIPS 65 ft CLASS (COASTAL PATROL CRAFT) (PB)

PM 10 (ex-GC 10)

Displacement, tons: 36 full load
 Dimensions, feet (metres): 65.6 x 18.3 x 5 (20 x 6 x 1.5)
 Main machinery: 2 Detroit 12V-71TA diesels; 840 hp (626 kW) sustained; 2 shafts
 Speed, knots: 23
 Range, n miles: 600 at 18 kt
 Complement: 6
 Guns: 1 Oerlikon 20 mm. 1 or 2—12.7 mm MGs. 1—81 mm mortar.
 Radars: Surface search. Furuno; I-band

Comment: Aluminium hull. Delivered by Swiftships, Morgan City 14 June 1984. Was laid up for a time in 1989–90 but became operational again in 1991. Refitted in 1996.



PM 10 6/2003, El Salvador Navy / 0568340

4 TYPE 44 CLASS (PBI)

PRM 01–04

Displacement, tons: 18 full load
 Dimensions, feet (metres): 44 x 12.8 x 3.6 (13.5 x 3.9 x 1.1)
 Main machinery: 2 Detroit 6V-38 diesels; 185 hp (136 kW); 2 shafts
 Speed, knots: 14
 Range, n miles: 215 at 10 kt
 Complement: 3

Comment: Ex-USCG craft similar to those transferred to Uruguay.



PRM 04 11/2001, Julio Montes / 0130482

6 PIRANHA CLASS (RIVER PATROL CRAFT) (PBR)

PF 01-06 (ex-LOF 021-026)

Displacement, tons: 8.2 full load
Dimensions, feet (metres): 36 × 10.1 × 1.6 (11 × 3.1 × 0.5)
Main machinery: 2 Caterpillar 3208TA diesels, 680 hp (507 kW) sustained; 2 shafts
Speed, knots: 26
Complement: 5
Guns: 2 – 12.7 mm (twin) MGs. 2 – 7.62 mm (twin) MGs.
Radars: Surface search, Furuno 3600; I-band.

Comment: Riverine craft with Kevlar hulls used by the Naval Infantry. Completed in March 1987 by Lantana Boatyard, Florida. Same type supplied to Honduras. Five craft reported operational.



PF 05 4/2005, Julio Montes / 1166722

9 PROTECTOR CLASS (RIVER PATROL CRAFT) (PBR)

PC 01-09

Displacement, tons: 9 full load
Dimensions, feet (metres): 40.4 × 13.4 × 1.4 (12.3 × 4 × 0.4)
Main machinery: 2 Caterpillar 3208TA diesels, 680 hp (507 kW) sustained; 2 shafts
Speed, knots: 28. Range, n miles: 350 at 20 kt
Complement: 4
Guns: 2 – 12.7 mm MGs. 2 – 7.62 mm MGs.
Radars: Surface search Furuno 3600; I-band.

Comment: Ordered in December 1987 from SeaArk Marine (ex-MonArk). Four delivered in December 1988 and four in February and March 1989. Seven reported operational, one in maintenance and one non-operational.



PC 03 3/2006, Julio Montes / 1166721

8 AIR PATROL BOATS (PBI)

PFR 1-8

Comment: Purchased in Miami for SAR on inland waters.



PFR 04 4/2005, Julio Montes / 1166720

2 MERCOUGAR INTERCEPT CRAFT (PBR)

PA 01 PA 02

Comment: Two remaining of five 40 ft craft delivered by Mercougar in 1988. Powered by two Ford Merlin diesels, 800 hp (448 kW) giving speeds of up to 40 kt and range of 556 km (300 n miles). Radar fitted



PA 02 5/2001, Julio Montes / 0109938

1 BALSAM CLASS (AGP)

Name	No	Builders	Commissioned
MANUEL JOSÉ ARCE (ex-Medrana)	BL 01 (ex-WLB 302)	Zenith Dredge, Duluth, MN	30 May 1943

Displacement, tons: 1,034 full load
Dimensions, feet (metres): 180 × 37 × 12 (54.9 × 11.3 × 3.8)
Main machinery: Diesel electric, 2 diesels; 1,402 hp (1 06 MW); 1 motor; 1,200 hp (895 kW); 1 shaft; bow thruster
Speed, knots: 13 Range, n miles. 8,000 at 12 kt
Complement: 53
Guns: 2 – 12.7 mm MGs.
Radars: Navigation: Raytheon SPS-64(V)1.

Comment: Transferred from the US Coast Guard on 14 June 2002. Used as a mother ship for coastal patrol craft.



ARCE 5/2003, Julio Montes / 1166719

AUXILIARIES

3 LCM 8 CLASS

BD 02 (ex-LD 02) BD 04 (ex-LD 04) BD 05 (ex-LD 05)

Displacement, tons: 45 full load
Dimensions, feet (metres): 64.7 × 14 × 5 (21.5 × 4.6 × 1.6)
Main machinery: 2 Detroit 12V 71TA diesels, 840 hp (626 kW) sustained; 2 shafts
Speed, knots: 15
Complement: 6
Guns: 2 – 12.7 mm MGs. 2 – 7.62 mm MGs.
Radars: Navigation: Furuno; I-band.

Comment: First one delivered by SeaArk Marine in January 1987, second pair in May 1996.



BD 04 6/2003, El Salvador Navy / 0568336

POLICE

Notes: Ten jet-skis are reported to have been delivered in 2002 for SAR

20 RODMAN 890 (PBR)

L-01-01-L-01-20

Displacement, tons: 3.1 full load
Dimensions, feet (metres): 29.2 × 9.8 × 3.6 (8.9 × 3 × 0.8)
Main machinery: 2 Volvo diesels; 300 hp(m) (220 kW); 2 shafts
Speed, knots: 28. Range, n miles. 150 at 25 kt
Complement: 3
Guns: 1 – 7.62 mm MG.
Radars: Surface search; I-band

Comment: Eleven craft delivered by Rodman in 1998. Operational availability is reported to be constrained by lack of spares.



RODMAN L-01-07 6/1998, Rodman / 0576109

Equatorial Guinea



Country Overview

The Republic of Equatorial Guinea became independent in 1968 as a federation of the two former Spanish provinces of Fernando Po and Rio Muni. It became a unitary state in 1973. Located in west Africa, the country has an overall area of 10,831 square miles and includes a mainland section which is bordered to the north by Cameroon and to the east and south by Gabon

It has a 160 n mile coastline with the Gulf of Guinea in which lie the islands of Bioko (formerly Fernando Po), Annobón, Corisco, Elobey Grande and Elobey Chico. The administrative capital on the mainland is Bata while Malabo, on the north coast of Bioko, is capital of the republic, largest city and principal port. Territorial waters (12 n miles) are claimed. A 200 n mile Exclusive Economic Zone (EEZ) has been claimed but the boundaries have not been agreed

Personnel

2009: 120 officers and men

Bases

Malabo, Bata.

PATROL FORCES

Notes: (1) The Lantana 68 class *Isia de Bioko* and 20 m patrol craft *Riowele* are believed to be non-operational
(2) Two Shaldag II patrol craft were delivered from Israel in August 2006. They are named *Isia de Corisco* and *Isia de Annobon*.
(3) There is a patrol craft *Estuario de Muni*. Of possible Ukrainian origin, the 75 m craft is armed with a twin 30 m AK 230 gun forward and two twin 14.5 mm aft.



ESTUARIO DE MUNI

6/2008* / 1335440

1 DAPHNE CLASS (PB)

Name	No	Builders	Commissioned
URECA (ex-Nymfen)	P 31 (ex-P 535)	Royal Dockyard, Copenhagen	4 Oct 1963

Displacement, tons: 170 full load
Dimensions, feet (metres): 121 × 20 × 6.5 (36.9 × 6.1 × 2.0)
Main machinery: 3 diesels; 3 shafts
Speed, knots: 20
Complement: 23
Guns: 2—14.5 mm
Radars: Navigation: Furuno; I-band.

Comment: Acquired in 1999.

2 ZHUK (GRIF) CLASS (PROJECT 1400M) (PB)

MIGUEL ELA EDJODJOMO LP 039 HIPOLITO MICHA LP 041

Displacement, tons: 39 full load
Dimensions, feet (metres): 78.7 × 16.4 × 3.9 (24 × 5 × 1.2)
Main machinery: 2 diesels, 2 shafts
Speed, knots: 30. **Range, n miles:** 1,100 at 15 kt
Complement: 13 (1 officer)
Guns: 2—14.5 mm (twin, fwd) MGs. 1—12.7 mm (aft) MG
Radars: Surface search: Furuno; I-band.

Comment: Reported to have been transferred from Ukraine in 2000

2 KALKAN (PROJECT 50030) M CLASS (INSHORE PATROL CRAFT) (PBR)

GASPAR OBIANG ESONO 43 FERNANDO NUARA ENGONDA 54

Displacement, tons: 8.5 full load
Dimensions, feet (metres): 38.1 × 10.8 × 2.0 (11.6 × 3.3 × 0.6)
Main machinery: 1 Type 475K diesel; 496 hp (370 kW); 1 waterjet
Speed, knots: 34
Complement: 2

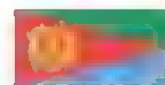
Comment: Built by Morye Feodosiya and reportedly acquired in 2001



KALKAN CLASS (Ukraine colours)

6/2003, Morye / 05/265b

Eritrea



Country Overview

A British protectorate from 1941, The State of Eritrea was federated with Ethiopia in 1952 and incorporated as a province in 1962. The following war of liberation culminated in independence in 1993. The country is situated on the southwest shore of the Red Sea with which it has a 621 n mile coastline with an area of 46,842 square miles, it is bordered to the north by Sudan, to the west by Ethiopia and to the south by Djibouti. The largest town and capital is Asmara and the principal port is Massawa. There are no claims to maritime jurisdiction

over territorial seas or Exclusive Economic Zone (EEZ)

All vessels of the former Ethiopian Navy were put up for sale at Djibouti from 16 September 1996. All were either taken over by Eritrea, sold to civilian firms or scrapped

Headquarters Appointments

Commander Eritrean Navy:
Major General Hummed Mohammed Karikare
Chief of Staff:
Brigadier General Fitsum Gebrehiwet

Personnel

2009: 1,100 including 500 conscripts

Bases

Assab, Massawa, Dehlek

PATROL FORCES

Notes: (1) There are also about 50 rigid raiding craft.
(2) The Osa II class FMB 181 is reported non-operational.

4 SUPER DVORA CLASS (FAST ATTACK CRAFT—GUN) (PTF)

P 101–104

Displacement, tons: 58 full load
Dimensions, feet (metres): 82 × 18.7 × 3 (25 × 5.7 × 0.9)
Main machinery: 2 MTU 8V 396 TE 94 diesels; 3,046 hp (2.24 MW); 2 shafts; ASD 14 surface drives
Speed, knots: 40 **Range, n miles:** 1,200 at 17 kt
Complement: 10 (1 officer)
Guns: 2—23 mm (twin), 2—12 mm MGs.
Depth charges: 1 rail
Weapons control: Optronic sight
Radars: Surface search: Raytheon; I-band.

Comment: Built by Israel Aircraft Industries and delivered from July 1993 to a modified Super Dvora design. The original order may have been for six of the class. All are based at Massawa and all are active



SUPER DVORA P 104

6/2000, Eritrean Navy / 0103787

5 BATTALION 17 (PBF)

P 084-088

Displacement, tons: 35.5 full load
Dimensions, feet (metres): 55.9 × 17 × 5.2 (17.05 × 5.2 × 1.6)
Main machinery: 2 MTU 12V 183TE 92 diesels
Speed, knots: 35.2
Range, n miles: 680 at 30 kt
Complement: 9
Guns: 2 – 14.5 mm MGs (1 twin).
Radars: Surface search: Raytheon; I-band.

Comment: Australian design craft built by Harena Boat Yard at Assab, Eritrea. Five craft delivered in 2000 with possible further orders since then.



P 086

8/2000, Eritrean Navy / 0103788

3 SWIFTSHIPS 105 ft CLASS (LARGE PATROL CRAFT) (PB)

P 151-153

Displacement, tons: 118 full load
Dimensions, feet (metres): 105 × 23.6 × 6.5 (32 × 7.2 × 2)
Main machinery: 2 MTU MD 16V 538 TB90 diesels; 6,000 hp(m) (4.41 MW) sustained; 2 shafts
Speed, knots: 30. **Range, n miles:** 1,200 at 18 kt
Complement: 21
Guns: 4 Emerlec 30 mm (2 twin) (P 151); 600 rds/min to 6 km (3.3 n miles); weight of shell 0.35 kg.
 4 – 23 mm/60 (2 twin) (P 152/153). 2 – 12.7 mm (twin).
Radars: Surface search: Decca RM 916; I-band.

Comment: Six ordered in 1976 of which four were delivered in April 1977 before the cessation of US arms sales to Ethiopia. Built by Swiftships, Louisiana. One deserted to Somalia and served in that Navy for a time. Based at Massawa and in reasonable condition. All are active.



P 153

1/1998 0017825

AMPHIBIOUS FORCES

Notes: (1) Two obsolete ex-USSR T4 LCU's (LST-63 and 64) are in harbour service at Massawa.

(2) The passenger vessel *Harat* arrived at Massawa on 10 February 2006. The 118 m vessel has a helicopter landing deck and accommodation for 2,800. Inspected by the commander of the navy on arrival, the ship may have a military role.

1 CHAMO CLASS (LST)

DENDEN 301

Displacement, tons: 884 full load
Dimensions, feet (metres): 197.5 × 39.3 × 4.7 (60.2 × 12 × 1.44)
Main machinery: 2 MTU 6V 396TB 63; 1,350 hp(m) (1 MW); 2 shafts
Speed, knots: 10
Complement: 23
Guns: 2 – 23 mm (1 twin); 2 – 12.7 mm MGs.

Comment: German built former Ethiopian commercial LST taken over by Eritrea in 1997 and subsequently transferred to the Navy. Reported operational

1 ASHDOD CLASS (LST)

P 63 (ex-302)

Displacement, tons: 400 standard; 730 full load
Dimensions, feet (metres): 205.5 × 32.8 × 5.8 (62.7 × 10 × 1.8)
Main machinery: 3 MWM diesels; 1,900 hp(m) (1.4 MW); 3 shafts
Speed, knots: 10.5
Complement: 20
Guns: 2 – 23 mm (1 twin). 2 – 12.7 mm MGs.

Comment: Former Ethiopian commercial LST acquired from Israel in 1993, taken over by Eritrea in 1997 and subsequently transferred to the Navy. Reported operational.



P 63 (Israel pennant number)

1995, Eritrean Navy / 0103789



Estonia

EESTI MEREVÄGI

Country Overview

The Republic of Estonia regained independence in 1991 after 51 years as a Soviet republic. Situated in northeastern Europe, the country includes more than 1,500 islands, the largest of which are Saaremaa and Hiiumaa. With an area of 17,462 square miles it has borders to the east with Russia and to the south with Latvia. It has a 750 n mile coastline with the Baltic Sea and Gulf of Finland. Tallinn is the capital, largest city and principal port. Territorial seas (12 n miles) are claimed but while it has claimed a 200 n mile Exclusive

Economic Zone (EEZ), its limits have not been fully defined by boundary agreements.

The Navy was founded in 1918 and re-established on 22 April 1994. The Border Guard comes under the Ministry of Internal Affairs and is responsible for SAR and Pollution Prevention.

Headquarters Appointments

Commander of the Navy and Chief of Staff:
 Captain Igor Schveda

Personnel

(a) 2009: 644 (70 officers)
 (b) 8-11 months' national service
 (c) Border Guard: 300

Bases

Major: Miinisadam (Tallinn)
 Minor: Kopli (Tallinn) (Border Guard)

FRIGATES

1 MODIFIED HVIDBJØRNER CLASS (FFLH/AGFH/AGE)

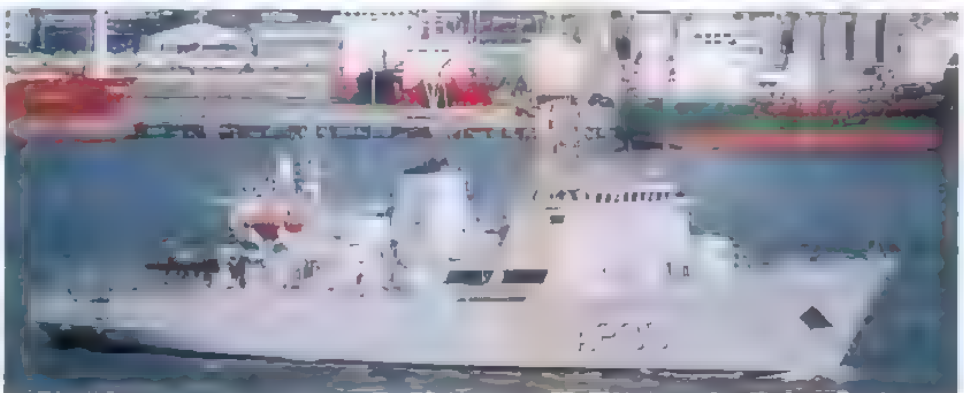
Name	No	Builders	Laid down	Launched	Commissioned
ADMIRAL PITKA (ex-Beskytteren)	A 230 (ex-F 340)	Aalborg Vaerft	11 Dec 1974	29 May 1975	27 Feb 1976

Displacement, tons: 1,970 full load
Dimensions, feet (metres): 245 × 40 × 17.4 (74.7 × 12.2 × 5.3)
Main machinery: 3 MAN/Burmeister & Wain Alpha diesels; 7,440 hp(m) (5.47 MW); 1 shaft; cp prop
Speed, knots: 18. **Range, n miles:** 4,500 at 16 kt on 2 engines, 8,000 at 13 kt on 1 engine
Complement: 43 (9 officers)
Guns: 1 USN 3 in (76 mm)/50, Mk 22.
Countermeasures: ESM; Rascal Cutlass; radar warning.
Radars: Navigation: 2 Litton Decca E; I-band.
Helicopters: Platform for 1 Lynx type.

Programmes: Transferred by gift from Denmark in July 2000 and formally recommissioned on 21 November 2000

Structure: Strengthened for ice operations.

Operational: Flagship of the Estonian Navy, its primary role is as a Command and Support ship and its secondary role is as a research ship. The vessel was refitted prior to being transferred. Modifications included the replacement of the military radars with Litton Marine radars, and the removal of PMS 26 sonar



ADMIRAL PITKA

5/2007, Per Körnefeldt / 1170107

MINE WARFARE FORCES

2 FRAUENLOB (TYPE 394) CLASS (MSI)

Name	No	Builders	Commissioned
OLEV (ex-Diana)	M 415 (ex-M 2664)	Krogerwerft, Rendsburg	21 Sep 1967
VAINDLO (ex-Undine)	M 416 (ex-M 2662)	Krogerwerft, Rendsburg	20 Mar 1967

Displacement, tons: 246 full load
Dimensions, feet (metres): 124.6 x 26.9 x 6.6 (38 x 8.2 x 2)
Main machinery: 2 MTU MB 12V 493 TY70 diesels; 2,200 hp(m) (1.62 MW) sustained; 2 shafts
Speed, knots: 14. **Range, n miles:** 400 at 12 kt
Complement: 23 (5 officers)
Guns: 1 Bofors 40 mm/70
Mines: Laying capability.
Radars: Navigation: Atlas Elektronik, I-band.

Comment: Olev transferred in June 1997 and Vaindlo, which replaced Kalev, on 8 October 2002 having paid off from the German Navy in 1995. Capable of influence and mechanical minesweeping.



VAINDLO 9/2005, Guy Toremans / 1129987



OLEV 6/2000, Fidler & Winter / 0183792

3 SANDOWN CLASS (MINEHUNTERS) (MHC)

Name	No	Builders	Launched	Commissioned
ADMIRAL COWAN (ex-Sandown)	M 313 (ex-M 101)	Vosper Thornycroft, Woolston	16 Apr 1968	9 June 1989
SAKALA (ex-Inverness)	M 314 (ex-M 102)	Vosper Thornycroft, Woolston	27 Feb 1990	24 Jan 1991
UGANDI (ex-Bridport)	M 315 (ex-M 106)	Vosper Thornycroft, Woolston	20 July 1992	6 Nov 1993

Displacement, tons: 450 standard; 484 full load
Dimensions, feet (metres): 172.2 x 34.4 x 7.5 (52.5 x 10.5 x 2.3)
Main machinery: 2 Paxman-Valenta 6RP200E/M diesels; 1,523 hp (1.14 MW) sustained, Vorth-Schneider propulsion; 2 Schottel bow thrusters
Speed, knots: 13 diesels, 6.5 electric drive. **Range, n miles:** 2,500 at 12 kt
Complement: 34 (5 officers) plus 6 spare berths

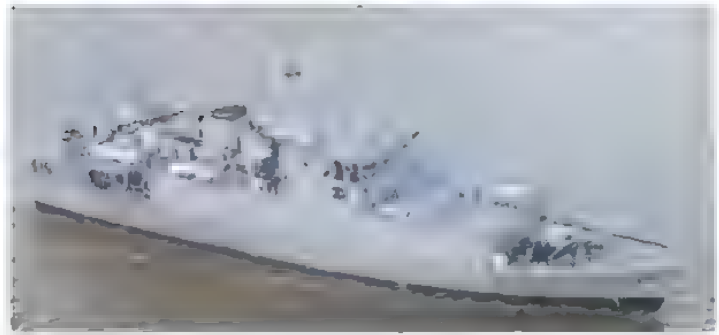
Guns: 1 DES/MSI DS 308 30 mm/75; 650 rds/min to 10 km (5.4 n miles); anti-surface; 3 km (1.8 n miles) anti-aircraft, weight of shell 0.36 kg. Dillon Aero M 134 7.62 mm Minigun; 6 barrels; 3,000 rds/min.
Countermeasures: MCM: Seafox C expendable mine-disposal system.
Combat data systems: BAE Insyte Nautis 3.
Radars: Navigation: Kelvin Hughes Type 1007; I-band
Sonars: Marconi Type 2093; VDS; VLF-VHF multifunction with 5 arrays; mine search and classification.

Programmes: Single-role minehunter originally designed for deep water operations and built by Vosper Thornycroft for the UK Royal Navy. All three ships withdrawn from RN service following force-level reductions announced in 2004. Preliminary agreement for the regeneration and transfer of the three ships made between the UK and Estonian governments in late 2005. Following a letter of intent on 11 April 2006, a final agreement was signed on 14 September 2006. Admiral Cowan handed over on 26 April 2007 and Sakala on 28 January 2008. Ugandi was handed over in January 2009 and is to undertake navigation and training roles.

Modernisation: The modernisation package is expected to upgrade the two operational ships to the similar equipment standards as those in service in the RN. Principal components include Sonar Type 2093, Seafox C submersibles, Drumgrange Precise Fixing System and Nautis 3 combat data system. Armament options include 30 mm guns and M 134 Minigun CIWS.

Structure: GRP hull. Combines vectored thrust units with bow thrusters and remote-control submersibles. The sonar is deployed from a wolf in the hull.

Operational: The ships are expected to replace the two Landau class MHC.



ADMIRAL COWAN 11/2008*, Michael Nitz / 1335716

AUXILIARIES

1 MAAGEN CLASS (YDT)

Name	No	Builders	Commissioned
AHTI (ex-Mallemukken)	A 431 (ex-Y 385)	Helsingor Dockyard	19 May 1960

Displacement, tons: 190 full load
Dimensions, feet (metres): 88.6 x 23.8 x 9.5 (27 x 7.2 x 2.9)
Main machinery: 1 diesel; 385 hp(m) (283 kW); 1 shaft
Speed, knots: 10
Complement: 11
Guns: 2—12.7 mm MGs.
Radars: Surface search: Pechora; I-band.
Navigation: Skanter 009, I-band.
Sonars: Sidescan.

Comment: Handed over at Tallinn on 29 March 1994, having decommissioned from the Danish Navy in 1992. Serves as a diving tender and for route surveillance.



AHTI 6/2003, Hartmut Ehlers / 0561497

1 LINDORMEN CLASS (COASTAL MINELAYER) (MLC)

Name	No	Builders	Launched	Commissioned
TASUJA (ex-Lindormen)	A 432 (ex-N 43)	Svendborg Værft	7 June 1977	16 Feb 1978

Displacement, tons: 570 full load
Dimensions, feet (metres): 146 x 29.5 x 8.0 (44.5 x 9.0 x 2.6)
Main machinery: 2 Frichs diesels; 1,600 hp (1.2 MW); 2 shafts
Speed, knots: 14
Complement: 27 (4 officers)
Guns: 2—12.7 mm MGs.
Radars: Navigation: I-band.

Comment: Former Danish minelayer handed over on 12 April 2006. Ex-Lossen was also procured as a civilian training ship for the Estonian Maritime Academy.



TASUJA 6/2006, Frank Fidler / 1305005

BORDER GUARD (EESTI PIIRIVALVE)

Notes: (1) *Director General:* Colonel Harry Hein
 (2) The letters PV are visible on the national flag which is defaced with green and yellow markings
 (3) Three vessels are used for anti-pollution duties. *Triin* (PVL-200) (ex-*Bester*) and *Reet* (PVL-201) (ex-*EVA-200*) are both 34 m vessels which entered Border Guard service in May 2001. *Kati* (PVL-202) (ex-*KBV-003*) is a 40 m vessel transferred from Sweden in May 2002.
 (4) PVL-110 is a Slavynka class LCM acquired in 1997 and used as a harbour utility craft.
 (5) *Tiir* (PVL-104) is an ex-Russian Serna class 26 m LCM used as a utility craft.
 (6) The Border Guard Aviation Group was formed in February 1993 and includes two L-410 maritime patrol aircraft and two Mi-8 helicopters



REET 6/2003, Hartmut Ehlers / 0561495



PVL-110 6/2003, Hartmut Ehlers / 0561495



L-410 7/2004, Paul Jackson / 0589739

1 BALSAM CLASS (AGF)

Name	No	Builders	Commissioned
VALVAS (ex- <i>Bittersweet</i>)	PVL 109 (ex-WLB 389)	Duluth Shipyard, Minnesota	11 May 1944

Displacement, tons: 1,034 full load
Dimensions, feet (metres): 180 x 37 x 12 (54.9 x 11.3 x 3.8)
Main machinery: Diesel electric; 2 diesels; 1,402 hp (1.06 MW); 1 motor; 1,200 hp (895 kW); 1 shaft, bow thruster
Speed, knots: 13
Range, n miles: 8,000 at 12 kt
Complement: 53
Guns: 2 – 25 mm/L80 (1 twin), 2 – 12.7 mm MGs.
Radars: Navigation: Raytheon SPS 64(V)1.

Comment: Transferred from the US Coast Guard and recommissioned as a Border Guard Headquarters ship on 5 September 1997.



VALVAS 6/2003, Hartmut Ehlers / 0561497

1 SILMÄ CLASS (LARGE PATROL CRAFT) (PBO)

Name	No	Builders	Commissioned
KOU (ex- <i>Silmä</i>)	PPVL 107	Laivateollisuus, Turku	19 Aug 1963

Displacement, tons: 530 full load
Dimensions, feet (metres): 158.5 x 27.2 x 14.1 (48.3 x 8.3 x 4.3)
Main machinery: 1 Warkspoor diesel; 1,800 hp(m) (1.32 MW); 1 shaft
Speed, knots: 15
Complement: 10
Guns: 2 – 25 mm/80 (twin)
Radars: Surface search: I-band.
Sonars: Simrad SS105, active scanning; 14 kHz

Comment: Transferred from Finland Frontier Guard in January 1995.



KOU 4/2007, E & M Laursen / 1305004

1 VIIMA CLASS (COASTAL PATROL CRAFT) (PB)

Name	No	Builders	Commissioned
MARU (ex- <i>Viima</i>)	PVL 106	Laivateollisuus, Turku	12 Oct 1964

Displacement, tons: 134 full load
Dimensions, feet (metres): 117.1 x 21.7 x 7.5 (35.7 x 6.6 x 2.3)
Main machinery: 3 MTU MB diesels; 4,050 hp(m) (2.98 MW); 3 shafts, cp props
Speed, knots: 23
Complement: 9
Guns: 2 – 25 mm/L 80 (1 twin), 2 – 14.5 mm MGs (twin), 1 – 7.62 mm MG.
Radars: Surface search: I-band.

Comment: Acquired from Finland Frontier Guard in January 1995.



MARU 6/2003, Hartmut Ehlers / 0589736

1 PIKKER CLASS (COASTAL PATROL CRAFT) (PB)

Name	No	Builders	Launched	Commissioned
PIKKER	PVL 103	Tahmi	23 Dec 1995	Apr 1996

Displacement, tons: 90 full load
Dimensions, feet (metres): 91.9 x 19 x 4.9 (28.0 x 5.8 x 1.5)
Main machinery: 2 12YH 18/20 diesels; 2,700 hp(m) (1.98 MW) sustained; 2 shafts
Speed, knots: 23
Complement: 5
Guns: 1 – 14.5 mm MG
Radars: Surface search: Kelvin Hughes nucleus; I-band.

Comment: Steel hull and superstructure. Carries a RIB with a hydraulic launch crane aft.



PIKKER 6/2003, Hartmut Ehlers / 0561494

1 VAPPER CLASS (COASTAL PATROL CRAFT) (PB)

Name	No	Builders	Commissioned
VAPPER	PVL 111	Baltic Ship Repairers, Tallinn	1 June 2000

Displacement, tons: 117 full load
 Dimensions, feet (metres): 103 x 19.7 x 5.9 (31.4 x 6.0 x 1.8)
 Main machinery: 2 Deutz TBD 620 V12 diesels; 4,087 hp(m) (3.1 MW); 2 shafts
 Speed, knots: 27
 Complement: 7
 Guns: 2 25 mm (1 twin), 1—14.5 mm.
 Radars. Navigation. Furuno; I-band.

Comment: Launched in April 2000. Steel hull and aluminium superstructure. Carries one R.B. for SAR and inspection.



VAPPER 8/2000 / 0114351

1 STORM CLASS (PB)

Name	No	Builders	Launched
TORM (ex-Arg)	PVL 105 (ex-P968)	Bergens Mek, Verksteder	24 May 1966

Displacement, tons: 100 standard; 135 full load
 Dimensions, feet (metres): 120 x 20 x 5 (36.5 x 6.1 x 1.5)
 Main machinery: 2 MTU MB 16V 538 TB90 diesels; 6,000 hp(m) (4.41 MW) sustained; 2 shafts
 Speed, knots: 32
 Range, n miles: 800 at 25 kt
 Complement: 8
 Guns: 2—25 mm/80 (twin), 2—14.5 mm MGs (twin).
 Radars. Surface search: Racal Decca TM 1226; I-band.

Comment: Built in 1966 and paid off from the Norwegian Navy in 1991. Transferred 16 December 1994 stripped of all weapons and associated sensors. Rearmed in 1995 with light guns. No further transfers are expected.



TORM 6/1999, Estonian Border Guard / 0056948

3 KBV 236 CLASS (PB)

PVK 001 (ex-KBV 257)	PVK 002 (ex-KBV 259)	PVK 003 (ex-KBV 246)
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Displacement, tons: 17 full load
 Dimensions, feet (metres): 63 x 13.1 x 4.3 (19.2 x 4 x 1.3)
 Main machinery: 2 Volvo Penta TAMD120A diesels; 700 hp(m) (515 kW); 2 shafts
 Speed, knots: 22
 Complement: 5
 Guns: 1—7.62 mm MG.

Comment: Transferred on 4 April 1992, 20 October 1993 and 6 December 1993. Former Swedish Coast Guard vessel built in 1970. Similar craft to Latvia and Lithuania.



PVK 003 8/1995, Erki Holm / 0056949

11 INSHORE PATROL CRAFT (PBI)

PVK 006	PVK 008	PVK 010-013	PVK 016-017	PVK 020-021	PVK 025
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Comment: PVK 010 is a 15 m patrol craft built in 1997, PVK 011 was commissioned in 1999, PVK 017 (ex-EVA 203) is a 44 ton MFV type of vessel built in Finland in 1963. PVK 018 (ex-EVA 204) is a 22 kt craft built in Finland in 1993 and PVK 008 and 013 are 13.7 ton icebreaking launches acquired from Finland and based on Lake Peipus. There is also a Jet Combi 10 power boat based on Lake Peipus. Further craft under 12 m have numbers PVK 004, 006, 012, 016, 020-021. PVK 025 is an ex-Swedish craft (KBV 275) acquired in January 1997.



PVK 010 6/2002, Baltic Ship Repairers / 0526817

1 GRIFFON 2000 TDX MK II (HOVERCRAFT) (UCAC)

PVH 1

Displacement, tons: 6.8 full load
 Dimensions, feet (metres): 36.1 x 15.1 (11 x 4.6)
 Main machinery: 1 Deutz BF8L 513 diesel; 320 hp (293 kW) sustained
 Speed, knots: 33
 Range, n miles: 300 at 25 kt
 Complement: 2
 Military lift: 16 troops or 2 tons
 Guns: 1—7.62 mm MG

Comment: Similar to craft supplied to Finland. Acquired in 1999.

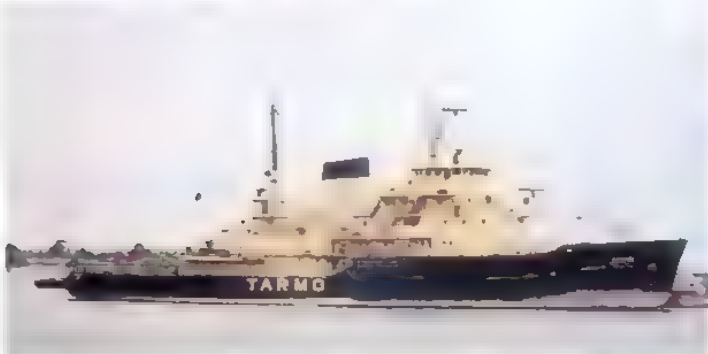


PVH 1 9/1999, Nick Hall / 0103794

MARITIME ADMINISTRATION (EESTI VEETEDE AMET (EVA))

Notes: The Maritime Administration (EVA) was re-established in 1990 and is responsible for hydrographic work, aids to navigation, ice-breaking and control of shipping. The main base is at Tallin. Ships are painted with a blue hull and white superstructure and are as follows

Tarmo, icebreaker built in 1963 and acquired from Finland in 1992. Fleet flagship.
 EVA 010, port control launch built in Finland in 1991
 EVA 017, port control launch built in Finland in 1995
 EVA 019, port control launch built in Estonia in 1997
 EVA 300 (ex-*Tormilind*), hydrographic ship built in Russia in 1983
 EVA 303 (ex-*Kaater*), buoy ship built in Poland in 1988
 EVA 305, hydrographic launch built in Russia in 1979
 EVA 308 (ex-GS-108-93), buoy ship built in Poland in 1968
 EVA 309 (ex-BGK-117-93), buoy ship built in Russia in 1967
 EVA 316 (ex-*Lonne*), buoy ship built in Finland in 1980
 EVA 317-318, buoy ships built in Finland in 1994
 EVA 319, buoy ship built in Finland in 1996
 EVA 320, hydrographic ship built in Finland in 1997
 EVA 321, buoy ship built in Estonia in 1999
 EVA 322, launch built in Finland in 1997
 EVA 323, launch built in Finland in 1994
 EVA 324, workboat built in Japan in 1996
 EVA 325, hydrographic ship built in Finland in 2002



TARMO

6/2003, Hartmut Ehlers / 0561491



EVA-318

6/2003, Hartmut Ehlers / 0569737



EVA-308

6/2003, Hartmut Ehlers / 0569738



Country Overview

The Falkland Islands are a self-governing British dependency administered by a Governor and a legislative council. Situated in the south Atlantic Ocean 323 n miles northeast of Cape Horn, approximately 200 islands are

Falkland Islands

divided into two main groups on the east and west by the narrow Falkland Sound. The two largest islands are West Falkland Island (2,090 square miles) and East Falkland Island (2,610 square miles) on which the capital, largest town and principal port, Stanley, is situated. Territorial waters (12 n miles) are claimed as is a 200 n mile fishery zone.

Maritime Aircraft

There are two Pilatus Britten-Norman Defender unarmed maritime surveillance aircraft.

PATROL FORCES

Notes: (1) The ex-Northern Lighthouse Board vessel *Pharos*, renamed *Pharos SG* has been on charter since November 2006, to the Government of South Georgia and the South Sandwich Islands as a fishery patrol and logistics support vessel. The Falkland Islands government continues to provide the fishery officer and support facilities.
 (2) The Fisheries Patrol Vessel *Dorada* was temporarily replaced by *Protegat* in May 2008. A permanent replacement is expected to enter service in 2009.

1 FISHERY PATROL SHIP (PSO)

PROTEGAT (ex-*Sumiyoshi Maru 35*, ex-*Chokyo Moru 35*)

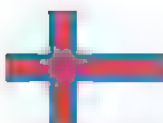
Measurement, tons: 1,174 grt
Dimensions, feet (metres): 230.2 × 34.8 × 18.4 (70.17 × 10.6 × 5.6)
Main machinery: 1 Niigata NHP30AH diesel; 1,800 hp (1.3 MW); 1 shaft; 1 Kamome bow thruster; 200 hp (150 kW)
Speed, knots: 13.5
Range, n miles: 19,000 at 10 kt
Complement: 16 plus accommodation for 5 augmentees
Guns: 1–20 mm Oerlikon (to be fitted if charter extended)
Radars: Surface search/navigation: 1 JRC JMA 527; 1 Furuno FR 2135; 1 Furuno FR 1525; E/F/I bands.

Comment: Former fishing vessel built by Miho Zosenko KK-Shimizu in 1987. Converted for fishery protection duties and first chartered in May 2008. The current charter will expire in January 2014. Steel construction with bulbous bow.



PROTEGAT

6/2008*, Falkland Island Fisheries 1335206



Country Overview

The Faroe Islands are a self-governing island group that is an integral part of Denmark which retains control of foreign relations. Located in the North Atlantic Ocean, about midway between the Shetland Islands and Iceland, there are 18 islands, of which the most important are Østerø, Suderø, Sandø, Vagø, Borðø and Strømø, on which the capital and principal port, Tórshavn, is situated. Territorial waters (12 n miles) are claimed. A 200 n mile fishery zone

Faroe Islands

has also been claimed although the limits have only been partly defined by boundary agreements.

The Coast Guard and Fisheries come under the Landsstyri which is the islands' local government. Vessels work closely with the Danish Navy.

Headquarters Appointments

Head of Coast Guard:
 Captain Elmar Hojgaard

Personnel

2009: 60

Bases

Tórshavn (Isle of Streymoy)

COAST GUARD

Notes: There is also an inshore patrol vessel *Spogsvin*.

1 PATROL SHIP (PBO)

TJALDRID

Displacement, tons: 650 full load
 Dimensions, feet (metres): 146 × 33.1 × 10.5 (44.5 × 10.1 × 3.2)
 Main machinery: 2 MWM diesels, 2,400 hp (m) (1.76 MW); 2 shafts
 Speed, knots: 14.5
 Complement: 18 plus 4 divers
 Guns: 1 Oerlikon 20 mm can be carried
 Radars: Surface search: Raytheon TM/TCPA; I-band.

Comment: Originally a commercial tug built in 1976 by Svolvær, Verksted and acquired by the local government in 1987. The old 57 mm gun has been replaced. A decompression chamber can be carried.



TJALDRID 12/1999, Faroes Coast Guard / 0080652

1 PATROL SHIP (PSO)

BRIMIL

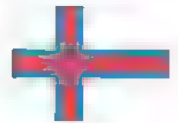
Displacement, tons: 2,000 full load
 Dimensions, feet (metres): 208.71 × 41.3 × 14.1 (63.6 × 12.6 × 4.3)
 Main machinery: 2 Bergen diesels; 5,452 hp (4.06 MW)
 Speed, knots: 17
 Complement: 12 with accommodation for 30 including 3 divers
 Radars: Surface search: 2 Furuno.

Comment: Built for Faroese government as a patrol vessel by Myklebust Mek. Verksted, Norway. Entered service in April 2001.



BRIMIL 7/2008*, Marco Ghiglino / 1353022

Fiji



Country Overview

A former British colony, the Republic of Fiji gained independence in 1970. Part of Melanesia, it is situated in the south Pacific Ocean some 972 n miles north of New Zealand and comprises more than 300 islands and islets, 100 of which are inhabited. The largest and most important of these are Viti Levu and Vanua Levu, which together contain more than 85 per cent of the total land area. To the southeast lie Taveuni, Kandavu, Koro and the Lau group while to the northwest lie Rotuma and the Yasawa group. The capital, largest town and principal port is Suva. An archipelagic state, territorial seas (12 n miles) are claimed.

An Exclusive Economic Zone (EEZ) (200 n miles) is also claimed but limits have yet to be fully defined by boundary agreements.

Headquarters Appointments

Commander, Navy:
 To be announced

Personnel

2009: 300

Bases

RFNS Viti, at Togalevu (Training).
 RFNS Stanley Brown.
 Operation base at Walu Bay, Suva.
 Forward base at Lautoka.

Prefix to Ships' Names

RFNS (Republic of Fiji naval ship)

PATROL FORCES

3 PACIFIC CLASS (LARGE PATROL CRAFT) (PB)

Name	No	Builders	Commissioned
KULA	201	Transfield Shipbuilding	28 May 1994
KIKAU	202	Transfield Shipbuilding	27 May 1995
KIRO	203	Transfield Shipbuilding	14 Oct 1995

Displacement, tons: 162 full load
 Dimensions, feet (metres): 103.3 × 26.6 × 6.9 (31.5 × 8.1 × 2.1)
 Main machinery: 2 Caterpillar 3516TA diesels; 2,820 hp (2.09 MW) sustained; 2 shafts
 Speed, knots: 20. Range, n miles: 2,500 at 12 kt
 Complement: 17 (4 officers)
 Guns: 1—20 mm Oerlikon. 2—12.7 mm MGs.
 Radars: Surface search: Furuno; I-band

Comment: Ordered in December 1992. These are hulls 17, 19 and 20 of the class offered by the Australian government under Defence Co-operation Programme. *Kikau* underwent a half-life refit at Gladstone in 2001 followed by *Kula* and *Kiro* in 2002. Following the decision by the Australian government to extend the Pacific Patrol Boat project until 2025, life extension refits will be required for *Kikau* in 2011 and for *Kula* and *Kiro* in 2012.



KIRO 8/1998, van Ginderen Collection / 0017831

2 VAI (DABUR) CLASS (COASTAL PATROL CRAFT) (PB)

SAKU 303 SAQA 304

Displacement, tons: 39 full load
 Dimensions, feet (metres): 64.9 × 18 × 5.8 (19.8 × 5.5 × 1.8)
 Main machinery: 4 GM 12V-71TA diesels; 1,680 hp (1.25 MW) sustained; 2 shafts
 Speed, knots: 19
 Range, n miles: 450 at 13 kt
 Complement: 9 (2 officers)
 Guns: 2—20 mm Oerlikon. 2—12.7 mm MGs.
 Radars: Surface search: Racal Decca Super 101 Mk 3; I-band.

Comment: Built in mid-1970s by Israel Aircraft Industries and transferred from Israel 22 November 1991. ASW equipment is not fitted. Reported as being no longer required by the Navy and may be used by other government departments.



SAQA 6/1995 / 0056954

2 COASTAL PATROL CRAFT (PB)

Name	No	Builders	Recommissioned
LEVUKA	101	Beaux's Bay Craft, Louisiana	22 Oct 1987
LAUTOKA	102	Beaux's Bay Craft, Louisiana	28 Oct 1987

Displacement, tons: 97 full load
Dimensions, feet (metres): 110 × 24 × 5 (33.8 × 7.4 × 1.5)
Main machinery: 4 GM 12V-71TA diesels; 1,680 hp (1.25 MW) sustained; 4 shafts
Speed, knots: 12
Complement: 12 (2 officers)
Guns: 1—12.7 mm MG
Radars: Surface search: Racal Decca; I-band

Comment: Built in 1979–80 as oil rig support craft. Purchased in September 1987. All aluminium construction

LAUTOKA
8/1996, Fiji Navy
0058953



Finland

SUOMEN MERIVOIMAT

Country Overview

The Republic of Finland is situated in northern Europe. Nearly one third of the country lies north of the Arctic Circle. With an area of 130,559 square miles, which includes some 60,000 lakes, it has borders to the north with Norway and to the east with Russia. It has a 675 n mile coastline with the Baltic Sea and Gulf of Finland. The Åhvenanmaa archipelago (Åland Islands), consisting of some 6,500 islands, lies southwest of the mainland. Helsinki is the capital, largest city and principal port. Territorial Seas and a Fishing Zone, both of 12 n miles, have been claimed but not an EEZ.

Headquarters Appointments

Commander-in-Chief Finnish Navy:
 Vice Admiral Hans Holström
Chief of Staff FNHQ:
 Captain Veli-Jukka Pennala

Diplomatic Representation

Defence Attaché in London:
 Captain K Varsio

Personnel

(a) 2009: 2,200 regulars
 (b) 3,650 conscripts (6–12 months' national service)

Fleet Organisation

Naval Headquarters: Turku
 Gulf of Finland Naval Command; main base Uppinniemi, Helsinki
 Archipelago Sea Naval Command; main base at Pansio, near Turku.
 Kotka Coastal Command at Kotka.
 Uusimaa Jaeger Brigade at Dragsvik.
 Not all ships are fully manned all the time but all are rotated on a regular basis.

Coast Defence

Coastal Artillery and naval infantry troops. RBS 15 truck-mounted quadruple SSM launchers. 155 mm, 130 mm and 100 mm fixed and mobile guns.

Frontier Guard

All Frontier Guard vessels come under the Ministry of the Interior. The ships have dark green hulls with a thick red diagonal stripe superimposed by a thin white stripe. Superstructure is painted grey. Personnel numbers: 600.

DELETIONS

Patrol Forces

2007 *Oulu, Kotka* (both to Croatia)

PENNANT LIST

Patrol Forces

50	Kiisla	05	Uusimaa	133	Havouri	751	Lohi
51	Kurki	21-26	Kuha 21-26	176	Kala 6	752	Lohm
70	Rauma	521-527	Kiiskki 1-7	232	Hauki	771	Kampela 1
71	Reaho	777	Porkkala	235	Hirsala	772	Kampela 2
72	Porvoo	875	Pyhäranta	237	Hila	792	Traskö
73	Naantali	876	Pansio	238	Haruna	799	Hylje
80	Hamina			241	Askeri	826	Isku
81	Tornio	Auxiliaries		334	Hankoniemi	830	Högsåra
82	Henko	56	Kajava	511	Jymy	831	Kallanpää
83	Pori	57	Lokki	512	Raju	836	Houtskär
		92	Putsaari	531	Syöksy	874	Kala 4
		96	Pikkala	541	Vinha	877	Kampela 3
		98	Mursu	722	Vaslahti	878	Velas
		99	Kustaanmiekka	723	Vändö	894	Aiskär
		121	Vahakari	730	Haukipää	899	Halli
				731	Hakuni	993	Torsö
				739	Hästö		

PATROL FORCES

2 KIISLA CLASS (COASTAL PATROL CRAFT) (PB)

Name	No	Builders	Commissioned
KIISLA	50	Holmning, Rauma	25 May 1987
KURKI	51	Holmning, Rauma	Nov 1990

Displacement, tons: 270 full load
Dimensions, feet (metres): 158.5 × 28.9 × 7.2 (48.3 × 8.8 × 2.2)
Main machinery: 2 MTU 16V 538TB93 diesels; 7,510 hp(m) (5.9 MW) sustained; 2 Kamewa 90 waterjets
Speed, knots: 25
Complement: 10
Guns: 2 USSR 23 mm/60 (twin) or 1 Madsen 20 mm.
Weapons control: Radamec 2100 optronic director.
Sonars: Simrad SS304 hull-mounted and VDS; active search; high frequency

Comment: First ordered on 23 November 1984 and second on 22 November 1988. Plans for two further craft were cancelled. The design allows for rapid conversion to attack craft, ASW craft, minesweeper or minehunter. A central telescopic crane over the engine room casing is used to launch a 5.7 m rigid inflatable sea boat. A fire monitor is mounted in the bows. The Kamewa steerable water-jets extend the overall hull length by 2 m. Transferred from the Frontier Guard in 2004.



KIISLA

6/2004, Finnish Navy / 0587710

4 RAUMA CLASS (FAST ATTACK CRAFT—MISSILE) (PTGM)

Name	No	Builders	Commissioned
RAUMA	70	Hollming, Rauma	18 Oct 1990
RAAHE	71	Hollming, Rauma	20 Aug 1991
PORVOO	72	Finnyards, Rauma	27 Apr 1992
NAANTALI	73	Finnyards, Rauma	23 June 1992

Displacement, tons: 215 standard; 248 full load
Dimensions, feet (metres): 157.5 x 26.2 x 4.5 (48 x 8 x 1.5)
Main machinery: 2 MTU 16V 538 TB93 diesels; 7,510 hp(m) (5.52 MW) sustained; 2 Riva Calzoni IRC 115 water-jets
Speed, knots: 30
Complement: 19 (5 officers)

Missiles: SSM: 6 Saab RBS 15SF (could embark 8); active radar homing to 150 km (80 n miles) at 0.8 Mach; warhead 200 kg.
SAM: 1 sextuple launcher; Matra Mistral; IR homing to 4 km (2.2 n miles); warhead 3 kg
Guns: 1 Bofors 40 mm/70; 300 rds/min to 12 km (6.6 n miles); weight of shell 0.96 kg
 6—103 mm rails for rocket illuminants. 2—12.7 mm MGs.
 2 Sako 23 mm/87 (twin); can be fitted instead of Mistral launcher.
A/S mortars: 4 Saab Elma LLS-920 9-tubed launchers; range 300 m; warhead 4.2 kg shaped charge.
Depth charges: 1 rail
Countermeasures: Decoys: Philax chaff and IR flares.
ESM/ECM: Thales SIEWIS
Weapons control: Bofors Electronic 9LV Mk 3 optronic director with TV camera; infra-red and laser telemetry
Radars: Surface search: 9GA 208; I-band
Fire control: Bofors Electronic 9LV 225; J-band
Navigation: Raytheon ARPA, I-band.
Sonars: Simrad Subsea Toadfish sonar; search and attack; active high frequency.
 Finnyards Sonac/PTA towed array; low frequency.

Programmes: Ordered 27 August 1987.

Structure: Developed from Helsinki class. Hull and superstructure of light alloy. SAM and 23 mm guns are interchangeable within the same Sako barbette which has replaced the ZU mounting.

Operational. Primary function is the anti-ship role but there is some ASW capability. Mine rails can be fitted in place of the missile launchers. Towed array cable is 78 m with 24 hydrophones and can be used at speeds between 3 and 12 kt.



NAANTALI 10/2007, Michael Nitz / 1170110

4 HAMINA CLASS (FAST ATTACK CRAFT—MISSILE) (PTGM)

Name	No	Builders	Commissioned
HAMINA	80 (ex-74)	Aker Finnyards, Rauma	24 Aug 1998
TORNIO	81	Aker Finnyards, Rauma	12 May 2003
HANKO	82	Aker Finnyards, Rauma	22 June 2005
PORI	83	Aker Finnyards, Rauma	18 June 2006

Displacement, tons: 270 full load
Dimensions, feet (metres): 164 x 26.2 x 6.2 (50.8 x 8.3 x 2)
Main machinery: 2 MTU 16V 538 TB93 diesels; 7,510 hp(m) (5.52 MW) sustained; 2 Kamewa 90SII waterjets
Speed, knots: 32
Range, n miles: 500 at 30 kt
Complement: 29 (5 officers)

Missiles: SSM: 4 Saab RBS 15SF; active radar homing to 100 km (54 n miles) at 0.8 Mach; warhead 200 kg.
SAM: Denel Umkhonto 8 cell VLS; inertial guidance with mid-course guidance and IR homing to 12 km (6.5 n miles) at 2.4 Mach; warhead 23 kg.
Guns: Bofors 57 mm/L 70 Mk 3; 220 rds/min to 17 km (9.2 n miles); weight of shell 2.6 kg
 2—12.7 mm MGs.
Depth charges: 1 rail
Mines: 1 rail for 10 mines.
Countermeasures: Decoys: 2 Rheinmetall MASS-2L; decoy launchers.
ESM/ECM: Thales SIEWIS; radar intercept
Combat data systems: EADS Advanced Naval Combat System (ANCS SQ 2000).
Weapons control: Saab Ceros electro-optic director. Sagem EOMS IR scanner.
Radars: Air/surface search: EADSTRS-3D; G-band
Fire control: SAAB Ceros 200; J-band
Navigation: Furuno; I-band.
Sonars: Simrad Subsea Toadfish sonar; search and attack; active high frequency.
 Finnyards Sonac/PTA towed array; low frequency.

Programmes: First ordered on 31 December 1996, second in February 2000, third on 3 December 2003 and a fourth on 15 February 2005 for delivery in 2006.

Structure: A continuation of the Rauma design with aluminium hull, composite superstructure and RAM coating. Signature reduction is aided by RAM coatings on the superstructure, submerged engine exhausts, upper deck pro-wotting, resilient mountings for all machinery, waterjet propulsion and conductive sealings on doors and hatches to prevent electromagnetic leakage.

Operational: Umkhonto missile fired from Hanko on 26 May 2006. The squadron is based at Upinniemi and became operational in 2008.



TORNIO 10/2007, Frank Findler / 1305907



TORNIO 10/2007, Michael Nitz / 1170109

MINE WARFARE FORCES**0 + 3 MCMV 2010 CLASS (MINEHUNTERS) (MHSC)**

Name	Builders	Laid down	Launched	Commissioned
—	Intermarine, Sarzana	July 2007	2009	2010
—	Intermarine, Sarzana	Mar 2008	2009	2011
—	Aker Finnyards, Rauma	2008	2011	2012

Displacement, tons: 697 full load
Dimensions, feet (metres): 172.1 x 32.5 x 10.2 (52.5 x 9.9 x 3.1)
Main machinery: 2 MTU 8V 396 TE74K diesels (for transit); 2,680 hp (2 MW); 2 motors (for minehunting); 2 Voith Schneider cycloidal propellers
Speed, knots: 13 diesel
Range, n miles: 1,500 at 12 kt
Complement: 36 (6 officers)

Guns: 1 Bofors 40 mm/70
Countermeasures: MCM: Atlas Sea Fox C MIDS
Combat data systems: Atlas Integrated mine countermeasure system (IMCMS).
Radars: Navigation: I-band
Sonars: Atlas Elektronik SQS-12M hull-mounted; LF/HF/VHF minehunting sonar; Double Eagle Mk 3 dual-frequency UDS

Programmes: Contract signed with Intermarine SPA on 23 November 2006 for the construction of three MCMVs. The first two ships are to be built at Sarzana; the third ship is to be built by Intermarine and completed at Aker Shipyards, Rauma. The contract includes training and logistic support. The principal components of the minehunting combat system are: a command system, a hull-mounted sonar and self-propelled variable depth sonar (installed in Saab Double Eagle Mk III ROV), a Mine Identification and Disposal System (MIDS) based on the Atlas Sea Fox; both Hydroid Remus and Kongsberg Hugin 1000 AUVs are used for seabed survey and reconnaissance.

Structure: Monocoque GRP construction. The design is similar to the Gaeta class built for the Italian and Australian navies. A new superstructure accommodates the command-and-control suite in the forward-central superstructure and mine-detection and hunting housing and recovery equipment in the central and stern sections.

Operational. The three vessels are expected to become operational by 2014.



MCMV 2010 7/2008, INTERMARINE / 1794517

2 HÄMEENMAA CLASS (MINELAYERS) (ML)

Name	No	Builders	Laid down	Launched	Commissioned
HÄMEENMAA	02	Finnyards, Rauma	2 Apr 1991	11 Nov 1991	15 Apr 1992
UUSIMAA	05	Finnyards, Rauma	12 Nov 1991	June 1992	2 Dec 1992

Displacement, tons: 1,450 full load
Dimensions, feet (metres): 255.2 oa; 228.3 wl × 38.1 × 10.5 (778, 89.6 × 11.6 × 3.2)
Main machinery: 2 Wärtsilä 16V22 diesels; 6,300 hp(m) (4.64 MW) sustained; 2 Kamewa cp props; bow thruster; 247 hp(m) (184 kW)
Speed, knots: 20
Complement: 66

Missiles: SAM Denel Umkhonto 8 cell VLS; inertial guidance with mid-course guidance and IR homing to 12 km (6.6 n miles) at 2.4 Mach; warhead 23 kg.
Guns: 1 Bofors 57 mm/70 Mk 1; 220 rds/min to 17 km (9.2 n miles); weight of shell 2.6 kg. 2—40 mm grenade launchers, 2—12.7 mm MGs.
A/S mortars: 2 RBU 1200 fixed 5-tubed launchers; range 1,200 m; warhead 34 kg.
Depth charges: 2 racks for 8 DCs
Mines: 4 rails for 200 contact (S 43-55, 541, 558) or influence (Seamine 2004 and PM 90) mines
Countermeasures: Decoys: 2 Rheinmetall MASS-2L; decoy launchers.
ESM/ECM: Thales SIEW
Combat data systems: EADS ANCS 2000
Weapons control: Saab Ceros electro-optic director. Sagem EOMS IR scanner
Radars: Air/surface search: EADS TRS-3D; G-band
Surface search and Navigation: 3 Furuno 2827/2837S, E/F/I-bands.
Sonars: Simrad; hull-mounted; active mine detection; high frequency.

Helicopters: Platform for 1 light.

Programmes: First one ordered 29 December 1989 after the original order in July from Wärtsilä had been cancelled. Second ordered 13 February 1991.

Modernisation: A contract for the mid-life upgrade of both vessels was awarded to EADS Defence and Security Division in April 2006. Modernisation, undertaken by Aker Shipyards, included EADS ANCS 2000 combat data system, EADS TRS 3D radar, Sagem EOMS and Umkhonto point defence missile system. Hämeenmaa completed upgrade on 13 April 2007 and Uusimaa in September 2007. Both vessels became fully operational in 2008.

Structure: Steel hull and alloy superstructure. Ice strengthened (Ice class 1A) and capable of breaking up to 40 mm ice. During the modernisation period (2006-07), a new fixed bow, stabilisers, two new masts and a new combat information system were added. The flight deck can operate light helicopters.

Operational: Dual role as a transport and support ship.



UUSIMAA

6/2008, M Declercq / 1335718

1 MINELAYER (ML)

Name	No	Builders	Laid down	Launched	Commissioned
POHJANMAA	01	Wärtsilä, Helsinki	4 May 1978	28 Aug 1978	8 June 1979

Displacement, tons: 1,000 standard; 1,100 full load
Dimensions, feet (metres): 255.8 × 37.7 × 9.8 (78.2 × 11.6 × 3)
Main machinery: 2 Wärtsilä Vasa 16V22 diesels; 6,300 hp(m) (4.64 MW) sustained; 2 shafts; cp props, bow thruster
Speed, knots: 19
Range, n miles: 3,500 at 15 kt
Complement: 90

Missiles: SAM: 2 sextuple launchers; Matra Mistral, IR homing to 4 km (2.2 n miles); warhead 3 kg.
Guns: 1 Bofors 57 mm/70, 200 rds/min to 17 km (9.3 n miles); weight of shell 2.4 kg. 6—103 mm launchers for illuminants fitted to the mounting.
 2 Bofors 40 mm/70; 300 rds/min to 12 km (6.6 n miles); weight of shell 0.96 kg.
 4 Sako 23 mm/87 (2 twin). 2—12.7 mm MGs
A/S mortars: 2 RBU 1200 fixed 5-tubed launchers; range 1,200 m; warhead 34 kg
Depth charges: 2 rails.
Mines: 120 including UK Stonefish
Countermeasures: Decoys: Philax chaff and IR flare launcher
ESM: Argo, radar intercept
Radars: Air search: Signaal DA05; E/F-band.
Surface search: Philips 9GR 600; I-band.
Fire control: Philips 9LV 220; J-band.
Navigation: I-band
Sonars: Simrad; hull-mounted; active search and attack; high frequency.
Bottom classification, search, high frequency.

Programmes: Design completed 1976. Ordered late 1977

Modernisation: In 1992 the forward 23 mm guns were replaced by 12.7 mm MGs. Major refit in 1996-98 to replace the main gun, improve air defences and minelaying capability. The SAM mounting is interchangeable with 23 mm guns.

Operational: Also serves as training ship. Carries 70 trainees accommodated in Portakabins on the mine deck. Helicopter area on quarterdeck but no hangar.



POHJANMAA

5/2008, Michael Nitz / 1335717

3 PANSIO CLASS (MINELAYERS—LCUTYPE) (MLI)

Name	No	Builders	Commissioned
PANSIO	876 (ex-576)	Otkiluoto Shipyard	25 Sep 1991
PYHÄRANTA	875 (ex-575, ex-475)	Otkiluoto Shipyard	26 May 1992
PORKKALA	777	Otkiluoto Shipyard	29 Oct 1992

Displacement, tons: 450 standard
Dimensions, feet (metres): 144.3 oa; 128.6 wl × 32.8 × 6.6 (44; 39.2 × 10 × 2)
Main machinery: 2 MTU 12V 183 TE62 diesels; 1,500 hp(m) (1.1 MW); 2 shafts; bow thruster
Speed, knots: 10
Complement: 12
Guns: 2 ZU 23 mm/87 (twin). 1—12.7 mm MG
Mines: 50
Radars: Navigation: Raytheon ARPA; I-band.

Comment: Ordered in May 1990. Used for inshore minelaying and transport with a capacity of 100 tons. Ice strengthened with ramps in bow and stern. Has a 15 ton crane fitted aft.



PYHÄRANTA

4/2007, Guy Toremans / 1170108

6 KUHA CLASS (MINESWEEPERS—INSHORE) (MSI)

Name	No	Builders	Commissioned
KUHA 21	21	Laivateollisuus, Turku	1974-75
KUHA 22	22	Laivateollisuus, Turku	1974-75
KUHA 23	23	Laivateollisuus, Turku	1974-75
KUHA 24	24	Laivateollisuus, Turku	1974-75
KUHA 25	25	Laivateollisuus, Turku	1974-75
KUHA 26	26	Laivateollisuus, Turku	1974-75

Displacement, tons: 90 full load
Dimensions, feet (metres): 87.2 wl; 104 oa × 22.7 × 6.6 (26.6; 31.7 × 6.9 × 2)
Main machinery: 2 Cummins MT-380M diesels; 800 hp(m) (448 kW); 1 shaft; cp prop; active rudder
Speed, knots: 12
Complement: 15 (3 officers)
Guns: 2 ZU 23 mm/60 (twin). 1—12.7 mm MG.
Radars: Navigation: Decca; I-band
Sonars: Reson Seabat 6012 mine avoidance; active high frequency.

Comment: All ordered 1972. First one completed 28 June 1974, and last on 13 November 1975. Fitted for magnetic, acoustic and pressure-mine clearance. Hulls are of GRP. May carry a Pluto ROV. Four of the class were lengthened in 1997/98 and remaining two by 2000 to take a new minesweeping control system, and new magnetic and acoustic sweeps. New sonars installed. Armament not fitted in all of the class.



KUHA 21

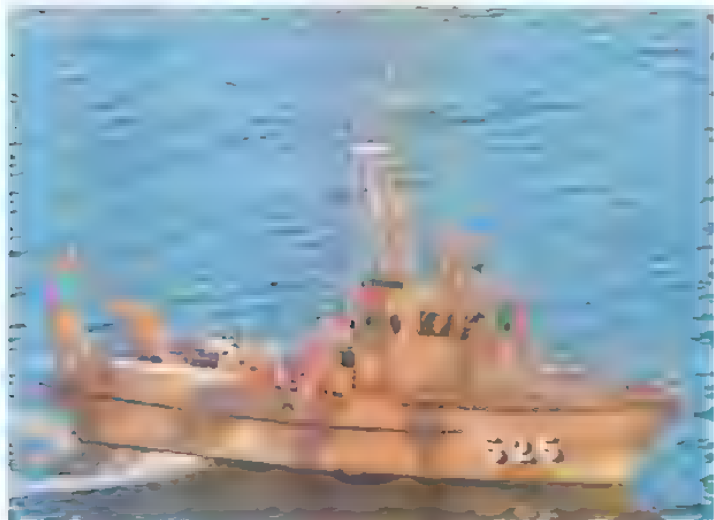
6/2001, Finnish Navy / 0114724

7 KIISKI CLASS (MINESWEEPERS—INSHORE) (MSI)

Name	No	Builders	Commissioned
KIISKI 1	521	Fiskars, Turku	1983-84
KIISKI 2	522	Fiskars, Turku	1983-84
KIISKI 3	523	Fiskars, Turku	1983-84
KIISKI 4	524	Fiskars, Turku	1983-84
KIISKI 5	525	Fiskars, Turku	1983-84
KIISKI 6	526	Fiskars, Turku	1983-84
KIISKI 7	527	Fiskars, Turku	1983-84

Displacement, tons: 20 full load
 Dimensions, feet (metres): 49.9 x 13.4 x 3.3 (15.2 x 4.1 x 1.2)
 Main machinery: 2 Valmet 611 CSMP diesels; 340 hp(m) (250 kW); 2 Hamilton water-jets
 Speed, knots: 11
 Range, n miles: 260 at 11 kt
 Complement: 4

Comment: Ordered January 1983. All completed by 24 May 1984. GRP hull. Built to be used with Kuha class for unmanned teleguided sweeping, but this was not successful and they are now used for manned magnetic and acoustic sweeping operations with crew of four



KIISKI 5 6/2001, Finnish Navy / 011475

LAND-BASED MARITIME AIRCRAFT

Numbers/Type: 2 Agusta AB 412 Griffon
 Operational speed: 122 kt (226 km/h)
 Service ceiling: 17,000 ft (5,180 m)
 Range: 354 n miles (656 km)
 Role/Weapon systems: Operated by Coast Guard/Frontier force for patrol and SAR. Sensors: Radar and FLIR. Weapons: Unarmed at present but mountings for machine guns.



AB 412 6/2005, Finnish Navy / 1133422

Numbers/Type: 3 Eurocopter AS 332L1 Super Puma
 Operational speed: 130 kt (240 km/h)
 Service ceiling: 15,090 ft (4,600 m)
 Range: 672 n miles (1,245 km)
 Role/Weapon systems: Coastal patrol, surveillance and SAR helicopters. Sensors: Surveillance radar, FLIR, tactical navigation systems and SAR equipment. Weapons: Unarmed



AS 332 6/2005, Finnish Navy / 1133423

Numbers/Type: 2 Agusta AB 206B JetRanger.
 Operational speed: 116 kt (215 km/h)
 Service ceiling: 13,500 ft (4,120 m)
 Range: 364 n miles (674 km)
 Role/Weapon systems: Coastal patrol and inshore surveillance helicopters. Sensors: Visual means only. FLIR may be fitted in due course. Weapons: Unarmed



AB 206 (Swedish colours) 6/2000, Andreas Karlsson, Swedish Defence Image / 0106563

Numbers/Type: 2 Dornier Do 228-212.
 Operational speed: 223 kt (413 km/h)
 Service ceiling: 29,600 ft (9,020 m)
 Range: 939 n miles (1,740 km)
 Role/Weapon systems: Maritime surveillance, SAR and pollution control. Acquired in 1995. Sensors: GEC-Marconi Seaspray radar; Terma Side scan radar; FLIR/TV, SLAR and IR/UV scanner. Weapons: Unarmed.



DORNIER 228 (German colours) 8/2002, Frank Findler / 0528878

TRAINING SHIPS

2 LOKKI CLASS (AX)

Name	No	Builders	Commissioned
LOKKI	57	Valmet/Lavateollisuus	28 Aug 1986
KAJAVA	56	Valmet/Lavateollisuus	3 Oct 1981

Displacement, tons: 58 (Lokki); 64
 Dimensions, feet (metres): 87.9 x 18 x 6.2 (26.8 x 5.5 x 1.9)
 87.9 x 17.1 x 8.5 (26.8 x 5.2 x 2.1) (Lokki)
 Main machinery: 2 MTU 8V 396 TB82 diesels; 1,740 hp(m) (1.28 MW), sustained (Lokki)
 2 MTU 8V 396 TB84 diesels; 2,100 hp(m) (1.54 MW) sustained; 2 shafts
 Speed, knots: 25
 Complement: 6
 Guns: 2 ZU 23 mm/60 can be carried
 Sonars: Simrad SS 242, hull-mounted; active search; high frequency.

Comment: Transferred from the Frontier Guard to the Navy in 1999 and used as training vessels. Built in light metal alloy. Lokki has a V-shaped hull. A third of class to Lithuania in 1997 and a fourth to Latvia in 2001.



LOKKI 6/2001, Finnish Navy / 0114723

3 FABIAN WREDE CLASS (AX)

Name	No	Builders	Commissioned
FABIAN WREDE	690	UKI Workboat, Usikaupunki	15 Aug 2006
WILHELM CARPELAN	691	UKI Workboat, Usikaupunki	14 June 2007
AXEL VON FERSEN	692	UKI Workboat, Usikaupunki	30 June 2008

Displacement, tons: 65 full load
 Dimensions, feet (metres): 64.9 × 19.0 × 6.2 (19.8 × 5.8 × 1.9)
 Main machinery: 1 Caterpillar C 18 diesel; 670 hp (500 kW); 1 shaft
 Speed, knots: 12
 Complement: 2 plus 8 trainees
 Radars: Navigation: I-band.

Comment: Naval Academy training ships.



FABIAN WREDE

6/2008* / 1335719



KAMPELA 2 (old number)

6/2000, Finnish Navy / 0103800

2 KALA CLASS (LCU TRANSPORTS) (LCU/AKSL)

KALA 4 874 KALA 6 176

Displacement, tons: 60 light; 200 full load
 Dimensions, feet (metres): 88.6 × 26.2 × 6 (27 × 8 × 1.8)
 Main machinery: 2 Valmet diesels; 360 hp(m) (265 kW); 2 shafts
 Speed, knots: 8
 Complement: 10
 Guns: 2 Oerlikon 20 mm (not in all)
 Mines: 34.
 Radars: Navigation: Decca 1226; I-band

Comment: Completed between 1956 and 4 December 1959 (Kala 6). Can be used as coastal transports, amphibious craft, minelayers or for shore support. Armament can be changed to suit role.



KALA 6

6/2001, Finnish Navy / 0114729

AUXILIARIES

5 VALAS CLASS (GP TRANSPORTS) (AKSL)

VALAS 879 MURSU 98 VAHAKARI 121 VAARLAHTI 722 VÄNÖ 723

Displacement, tons: 285 full load
 Dimensions, feet (metres): 100.4 × 26.5 × 10.4 (30.6 × 8.1 × 3.2)
 Main machinery: 1 Wärtsilä Vasa 8V22 diesel, 1,576 hp(m) (1.16 MW) sustained; 1 shaft
 Speed, knots: 12
 Complement: 11
 Military lift: 35 tons or 150 troops
 Guns: 2 – 23 mm/60 (twin), 1 – 12.7 mm MG.
 Mines: 28 can be carried
 Radars: Navigation: Decca 1226; I-band

Comment: Completed 1979–80. Mursu acts as a diving tender. Funnel is offset to starboard. Can be used as minelayers or transport/cargo carriers and are capable of breaking thin ice.



VALAS (old number)

7/1996, van Ginderen Collection / 0069878

3 KAMPELA CLASS (LCU TRANSPORTS) (LCU/AKSL)

Name	No	Builders	Commissioned
KAMPELA 1	771	Enso Gutzeit	29 July 1976
KAMPELA 2	772	Enso Gutzeit	21 Oct 1976
KAMPELA 3	877	Finnmekano	23 Oct 1979

Displacement, tons: 90 light; 260 full load
 Dimensions, feet (metres): 106.6 × 26.2 × 4.9 (32.5 × 8 × 1.5)
 Main machinery: 2 Scania diesels; 460 hp(m) (338 kW); 2 shafts
 Speed, knots: 9
 Complement: 10
 Guns: 2 or 4 ZU 23 mm/60 (1 or 2 twin)
 Mines: About 20 can be carried.

Comment: Can be used as amphibious craft, transports, minelayers or for shore support. Armament can be changed to suit role.



HOUTSKÄR (old number)

8/1997, Finnish Navy / 0587703

6 HAUKI CLASS (TRANSPORTS) (AKSL)

HAVOURI 133 HIRSALA 235 HAKUNI 731
HAUKI 232 HANKONIEMI 334 HOUTSKÄR 836

Displacement, tons: 45 full load
 Dimensions, feet (metres): 47.6 × 15.1 × 7.2 (14.5 × 4.6 × 2.2)
 Main machinery: 2 Valmet 611 CSM diesels, 586 hp(m) (431 kW); 1 shaft
 Speed, knots: 12
 Complement: 4
 Cargo capacity: 6 tons or 40 passengers
 Radars: Navigation: I-band

Comment: Completed 1979. Ice strengthened; two serve isolated island defences. Four converted in 1988 as tenders to the Marine War College, but from 1990 back in service as light transports.

4 HILA CLASS (TRANSPORTS) (AKSL)

HILA 237 HARUNA 238 HÄSTÖ 739 HÖGSÄRA 830

Displacement, tons: 50 full load
 Dimensions, feet (metres): 49.2 × 13.1 × 5.9 (15 × 4 × 1.8)
 Main machinery: 2 diesels; 416 hp(m) (306 kW); 2 shafts
 Speed, knots: 12
 Complement: 4

Comment: Ordered from Kotkan Telakka in August 1990. Second pair completed in 1994. Ice strengthened.



HILA 6/2000, Finnish Navy / 0103801

1 TRIALS SHIP (MLI)

Name	No	Builders	Launched	Commissioned
ISKU	826 (ex-829, ex-16)	Roposaaron Konepaja	4 Dec 1969	1970

Displacement, tons: 180 full load
 Dimensions, feet (metres): 108.5 × 28.5 × 5.9 (33 × 8.7 × 1.8)
 Main machinery: 4 Type M 50 diesels; 4,400 hp(m) (3.3 MW) sustained; 4 shafts
 Speed, knots: 18
 Complement: 25
 Radars: Navigation: Raytheon ARPA, I-band.

Comment: Formerly a missile experimental craft, now used for various equipment trials. Modernised in 1989–90 by Uusikaupunki Shipyard and lengthened by 7 m. Can quickly be converted to a minelayer.



ISKU 6/2000, Finnish Navy / 0103798

2 LOHI CLASS (LCU TRANSPORTS) (LCU)

LOHI 751 (ex-351) LOHM 752

Displacement, tons: 38 full load
 Dimensions, feet (metres): 65.6 × 19.7 × 3 (20 × 6 × 0.9)
 Main machinery: 2 WMB diesels; 1,200 hp(m) (882 kW); 2 water-jets
 Speed, knots: 20
 Range, n miles: 240 at 20 kt
 Complement: 4
 Guns: 2 ZU 23 mm/60 (twin), 1—14.5 mm MG.

Comment: Commissioned September 1984. Used as troop carriers and for light cargo. Guns not always carried.



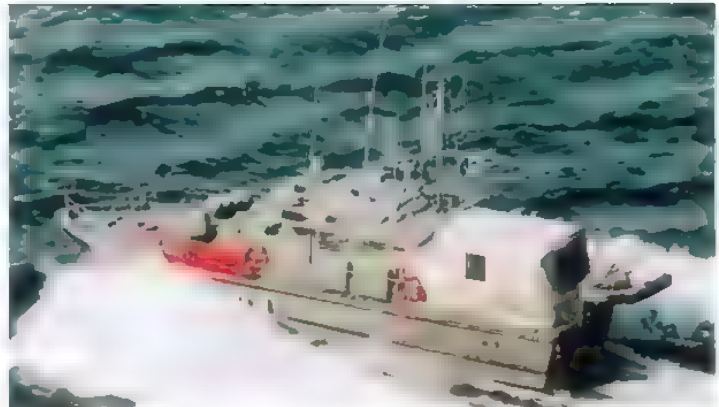
LOHI (old number) 6/2000, Finnish Navy / 0103802

1 TRANSPORT AND COMMAND LAUNCH (YFB)

ASKERI 241

Displacement, tons: 25 full load
 Dimensions, feet (metres): 52.6 × 14.5 × 4.5 (16 × 4.4 × 1.4)
 Main machinery: 2 Volvo Penta diesels; 1,100 hp(m) (808 kW); 2 shafts
 Speed, knots: 22
 Complement: 6
 Radars: Surface search, I-band
 Navigation: Raytheon; I-band

Comment: Completed in 1992. Closely resembles Spanish PVC II class.



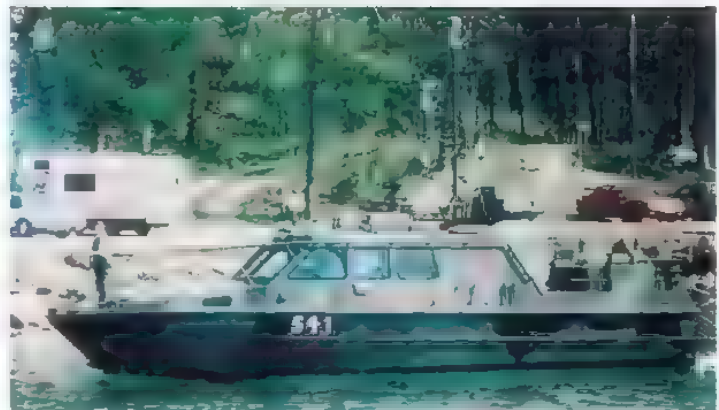
COMMAND LAUNCH 6/2000, Finnish Navy / 0103804

7 VIHURI CLASS (COMMAND LAUNCHES) (YFB)

JYMY 511	SYÖKSY 531	TRÄSKÖ 792	ALSKÄR 894
RAJU 512	VINHA 541	TORSÖ 993	

Displacement, tons: 13 full load
 Dimensions, feet (metres): 42.7 × 13.1 × 3 (13 × 4 × 0.9)
 Main machinery: 2 diesels; 772 hp(m) (567 kW); 2 water-jets
 Speed, knots: 30
 Complement: 6
 Radars: Surface search, I-band

Comment: First of class *Vihuri* delivered in 1988, the next five in 1991 and the last pair in 1993. *Träskö*, *Torsö* and *Alskär* act as fast transports. The remainder are command launches for Navy squadrons. *Vihuri* was destroyed by fire in late 1991.



VINHA 6/1993, van Ginderen Collection / 0069883

30 MERIUISKO CLASS (LCP)

U 201-211 U 301-312 U 400 series

Displacement, tons: 10 full load
 Dimensions, feet (metres): 36 × 11.5 × 1.6 (11 × 3.5 × 0.5)
 Main machinery: 2 Volvo TAMD70E diesels; 418 hp(m) (307 kW) sustained; 2 Hamilton waterjets
 Speed, knots: 38; 30 full load
 Complement: 3
 Military lift: 25 troops or 2.5 tons equipment
 Radars: Navigation (U 401 series): I-band

Comment: First batch of 11 completed by Alumina Varvet from 1983 to 1986. A further four ordered in 1989. Constructed of light alloy. Fitted with small bow ramp. Two of the class equipped with cable handling system for boom defence work. Batch one has smaller cabins.



U 304 6/2000, Finnish Army / 0103805

36 JURMO CLASS (LCP)

U 601 636

Displacement, tons: 10 full load
 Dimensions, feet (metres): 46.9 × 12.1 × 2.5 (14.3 × 3.7 × 0.75)
 Main machinery: 2 Caterpillar diesels; 2 FF-jet 375 waterjets
 Speed, knots: 30+
 Complement: 2
 Military lift: 21 troops with equipment or 2.5 tons cargo
 Guns: 2 – 12.7 mm MGs.
 Redars: Navigation. I-band.

Comment: Developed from Merusko class for troop carrying role. Prototype built by Alutech Ltd and delivered in 1999. Delivered by 2005. Cargo hatch of composite material to provide armoured protection. Trials with the German AFS *Berlin* were carried out in July 2007. Trials of the Kongsberg Sea Protector 12.7 mm remotely controlled gun conducted in U 634 in 2008.



U 603

8/2002, E & M Laurson / 0534066

23 RAIDING CRAFT (LCVP)

G 100 series

Displacement, tons: 3 full load
 Dimensions, feet (metres): 26.2 × 6.9 × 1 (8 × 2.1 × 0.3)
 Main machinery: 1 Yanmar 4LHA-STE diesel, 240 hp (179 kW); 1 RR FF-jet 240 waterjet
 Speed, knots: 30
 Complement: 1
 Military lift: 9 troops with equipment

Comment: First batch of 23 units ordered in February 2001. Based on Swedish Gruppbat and built by Alutech Ltd. Delivered late 2001.



RAIDING CRAFT

6/2001, Finnish Navy / 0114721

1 CABLE SHIP (ANL)

PUTSAARI 92

Displacement, tons: 430 full load
 Dimensions, feet (metres): 149.5 × 28.6 × 8.2 (45.6 × 8.7 × 2.5)
 Main machinery: 1 Wärtsilä diesel; 510 hp(m) (375 kW); 1 shaft; active rudder; bow thruster
 Speed, knots: 10
 Complement: 20

Comment: Built by Rauma-Repola, Rauma, launched on 15 December 1965 and commissioned in 1966. Modernised by Wärtsilä in 1987. Fitted with two 10 ton cable winches. Strengthened for ice operations.



PUTSAARI

6/2001, Finnish Navy / 0114720

1 SUPPORT CRAFT (YFB)

PIKKALA (ex-Fenno) 96

Displacement, tons: 66 full load
 Dimensions, feet (metres): 75.5 × 14.4 × 6.6 (23 × 4.4 × 2)
 Main machinery: 1 Valmet diesel; 177 hp(m) (130 kW); 1 shaft
 Speed, knots: 10
 Complement: 5

Comment: Used for utility and transport roles at Helsinki. Commissioned in June 1946 at Turku.



PIKKALA

6/2000, Finnish Navy / 0103806

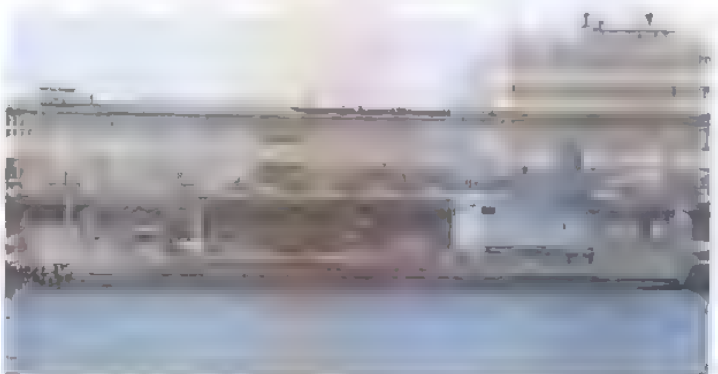
2 POLLUTION CONTROL VESSELS (YPC)

HYLJE 799

HALLI 899

Displacement, tons: 1,600 (Hylje); 1,600 (Halli) full load
 Dimensions, feet (metres): 164; 198.5 (Halli) × 41 × 9.8 (50; 60.5 × 12.5 × 3)
 Main machinery: 2 Saab diesels; 680 hp(m) (500 kW); 2 shafts; active rudders; bow thruster (Hylje)
 2 Wärtsilä diesels; 2,650 hp(m) (19.47 MW); 2 shafts; active rudders (Halli)
 Speed, knots: 7 (Hylje); 13 (Halli)

Comment: Painted grey. Strengthened for ice. Owned by Ministry of Environment, civilian-manned but operated by Navy from Turku. *Hylje* commissioned 3 June 1981, *Halli* in January 1987. Capacity is about 550 m³ (Hylje) and 1,400 m³ (Halli) of contaminated seawater. The ships have slightly different superstructure lines aft.



HYLJE

10/2006, J Cizlak / 1164956

TUGS

2 HARBOUR TUGS (YTM)

HAUKIPÄÄ 730

KALLANPÄÄ 831

Displacement, tons: 38 full load
 Dimensions, feet (metres): 45.9 × 16.4 × 7.5 (14 × 5 × 2.3)
 Main machinery: 2 diesels; 360 hp(m) (265 kW); 2 shafts
 Speed, knots: 9
 Complement: 2

Comment: Delivered by Teijon Telakka Oy in December 1985. Similar to Hauki class. Also used as utility craft.



HAUKIPÄÄ (old number)

6/2000, Finnish Navy / 0103813

FRONTIER GUARD

1 IMPROVED TURSAS CLASS
(OFFSHORE PATROL VESSEL) (WPBO)

MERIKARHU

Displacement, tons: 1,100 full load
Dimensions, feet (metres): 189.6 × 36.1 × 15.1 (57.8 × 11 × 4.6)
Main machinery: 2 Wärtsilä Vasa 8R26 diesels; 3,808 hp(m) (2.8 MW) sustained; 1 shaft; cp prop; bow and stern thrusters
Speed, knots: 15 **Range, n miles:** 2,000 at 15 kt
Complement: 30
Guns: 2—23 mm/87 (twin) can be carried.
Radars: Surface search. Navigation.

Comment: Ordered 17 June 1993 from Finnyards, and completed 28 October 1994. Capable of 5 kt in 50 cm of ice. Used as an all-weather patrol ship in the Baltic, capable of Command, SAR, tug work with 30 ton bollard pull, and environmental pollution cleaning up. Carries an RIB launched from a hydraulic crane.



MERIKARHU 6/2005, Finnish Navy / 1133421

2 TURSAS CLASS (OFFSHORE PATROL VESSELS) (WPBO)

TURSAS UISKO

Displacement, tons: 1,250 full load
Dimensions, feet (metres): 201.6 × 33.5 × 15.9 (61.45 × 10.2 × 4.85)
Main machinery: Diesel electric; 2 Rolls-Royce azimuth thrusters; 4,360 hp (3.2 MW)
Speed, knots: 14
Complement: 32
Guns: 2 Sako 23 mm/60 (twin).
Sonars: Simrad SS105; active scanning; 14 kHz.

Comment: First ordered from Rauma-Repola on 21 December 1984, launched 31 January 1986 and delivered 6 June 1986. Second ordered 20 March 1986, launched 19 June 1986 and delivered 27 January 1987. Both ships underwent conversion at Uusikaupunki Workboat Ltd 2004–06. The ships were lengthened by 12 m and modified to conduct anti-pollution operations.



UISKO (before conversion) 6/2005, Finnish Navy / 1133420

3 TELKKÄ CLASS (WPBO)

TELKKÄ TAVI TIIRA

Displacement, tons: 400 full load
Dimensions, feet (metres): 160.8 × 24.6 × 11.8 (49 × 7.5 × 3.6)
Main machinery: 2 diesels; 6,120 hp(m) (4.5 MW); 2 shafts
Speed, knots: 20
Complement: 17
Guns: 1—20 mm
Sonars: Sonac PTA; towed array; low frequency.

Comment: *Telkkä* entered service in July 1999, *Tavi* in 2003 and *Tiira* on 27 May 2004



TAVI 6/2005, Finnish Navy / 1133419

4 SLINGSBY SAH 2200 (HOVERCRAFT) (UCAC)

Displacement, tons: 5.5 full load
Dimensions, feet (metres): 34.8 × 13.8 (10.6 × 4.2)
Main machinery: 1 Cummins 6CTA-8-3M-1 diesel; 300 hp (224 kW)
Speed, knots: 40
Range, n miles: 400 at 30 kt
Complement: 2
Military lift: 2.2 tons or 12 troops
Guns: 1—12.7 mm MG
Radars: Navigation: Raytheon R41; I-band.

Comment: First one acquired from Slingsby Amphibious Hovercraft Company in March 1993. Three more ordered in February 1998 and delivered in late 1999.



SLINGSBY 2200 6/1993, Slingsby / 0069892

3 GRIFFON 2000 TDX(M) (HOVERCRAFT) (UCAC)

Displacement, tons: 6.8 full load
Dimensions, feet (metres): 36.1 × 15.1 (11 × 4.6)
Main machinery: 1 Deutz BF8L513 diesel; 320 hp (239 kW) sustained
Speed, knots: 33
Range, n miles: 300 at 25 kt
Complement: 2
Military lift: 16 troops or 2 tons
Guns: 1—7.62 mm MG
Radars: Navigation. I-band.

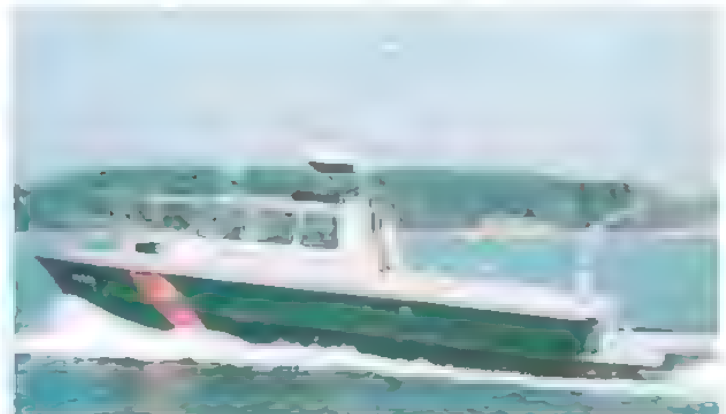
Comment: First two acquired from Griffon, UK and commissioned 1 December 1994; third one bought in June 1995. Can be embarked in an LCU. Speed indicated is at Sea State 3 with a full load. Similar to those in service with the UK Navy.



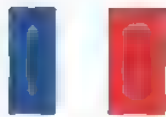
GRIFFON 2000 6/1994, P Falstead / 0060653

39 INSHORE PATROL CRAFT AND TENDERS (PB)

Class	Total	Tonnage	Speed	Commissioned
RV-37	7	20	12	1978–85
RV-150	10	25	12	1992–96
RV-113	14	10	28	1984–90



RV-113 class 6/1993 / 0069894



France

MARINE NATIONALE

Country Overview

The French Republic, which includes the island of Corsica, is situated in western Europe. With an area of 210,026 square miles, the mainland is bordered to the north by Belgium, Luxembourg and Germany, to the south-east by Switzerland and Italy and to the south-west by Spain. It has a 1,852 n mile coastline with the Atlantic Ocean, Mediterranean Sea, North Sea and English Channel. Overseas departments are French Guiana, Martinique, Guadeloupe and Réunion. Dependencies include St Pierre and Miquelon, Mayotte, New Caledonia, French Polynesia, the French Southern and Antarctic Territories, and Wallis and Futuna Islands. The capital and largest city is Paris while the principal ports are Marseilles, Le Havre, Dunkirk, St Nazaire and Rouen. Strasbourg is a port on the Rhine. Territorial seas (12 n miles) are claimed. An EEZ (200 n miles) has also been claimed but not all the large number of boundaries have been defined by agreements.

Headquarters Appointments

Chief of the Naval Staff:
Amiral Pierre-François Forissier
Inspector General of the Armies:
Amiral Christian Penillard
Director of Personnel:
Vice-Amiral Benoît Chomel de Jamieau
Major General of the Navy:
Vice-Amiral d'Escadre Alain Launay
Inspector General of the Navy:
Commissaire Général Jean Fillon

Senior Appointments

C-in-C Atlantic Theatre (CECLANT):
Vice-Amiral d'Escadre Anne-François de Bourdoncle de Saint Salvy
C-in-C Mediterranean Theatre (CECMED):
Vice-Amiral d'Escadre Jean Tandonnet
Flag Officer, French Forces Polynesia (ALPACI):
Contre-Amiral Jean-Louis Vichot
Flag Officer, Naval Forces Indian Ocean (ALINDIEN):
Vice-Amiral Gérard Valin
Flag Officer, Antilles:
Contre-Amiral Philippe Arnould
Flag Officer, Cherbourg:
Vice-Amiral Philippe Périsset
Flag Officer, Submarines (ALFOST):
Vice-Amiral d'Escadre Jean François Baud
Flag Officer, Naval Action Force (ALFAN):
Vice-Amiral d'Escadre Bertrand Ambriot
Deputy Flag Officer, Naval Action Force (TOULON):
Contre-Amiral Alain Hinden
Deputy Flag Officer, Naval Action Force (BREST):
Contre-Amiral Pierre Labonne
Flag Officer Naval Aviation (ALAVIA):
Vice-Amiral Olivier de Rostolan
Flag Officer Lorient and Commandant Mannes (Alfusca):
Contre-Amiral Marin Gillier

Notes: (1) In addition to the following squadrons, there are three other squadrons operating with mixed Air Force and Navy crews on behalf of both services
• Helicopter Squadron EH-1/67 "Pyrénées", based at Cazaux AFB, for the combat SAR (CSAR) role, operating eight specialised Aerospatiale SA-330 Puma helicopters and four Eurocopter EC 725 R2 Cougar Mk 2 Plus Resco delivered in 2005-06. These helicopters regularly embark on *Charles de Gaulle*.

Embarked Squadrons

Base/Squadron No	Aircraft	Task
Lann Bihoué/4F	E-2C Hawkeye	AEW
Landivisiau/11F	Super Etendard	Assault, Recce
Landivisiau/12F	Rafale M	Air Defence
Landivisiau/17F	Super Etendard	Assault, Recce
Hyères/31F	Lynx	ASW
Lanvéoc-Poulmic/34F	Lynx	ASW
Hyères/36F	Panther	Surveillance

Diplomatic Representation

Defence Attaché in London:
Vice-Amiral Yann Tainguy
Naval Attaché in London:
Capitaine de Vaisseau Henri-François Piot
Naval Attaché in Washington:
Capitaine de Vaisseau Bruno Demeocq
Defence and Naval Attaché in Riyadh:
Capitaine de Vaisseau Bruno Thorne
Head of French Military Delegation to the European Union:
to be announced
Head of French Military Mission to HQ SACT:
Contre-Amiral Christian Canova
Head of French Military Mission to Joint Force Command Naples:
to be announced
Naval Attaché in Washington:
Capitaine de Vaisseau Philippe Atquier

Personnel

(a) 2009 38,713 (4,508 officers)
(b) 2009: civilians in direct support: 7,368

Bases

Brest: Main Atlantic base. SSBN base
Toulon: Mediterranean Command base
Cherbourg: Channel base
Bayonne: Landes firing range
Small bases at Papeete (Tahiti), Fort-de-France (Martinique), Nouméa (New Caledonia), Degrad-des-Cannes (French Guiana), Port-des-Garets (La Réunion), Dekar-Cap Vert (Senegal) and Abu Dhabi

Shipyards (Naval)

All former naval shipbuilding facilities are privatised and are operated by DCNS. Main facilities are at: Cherbourg. Submarines and Fast Attack Craft (private shipyard)
Brest: Major warships and refitting
Lorient: Destroyers and Frigates, MCMVs, Patrol Craft
Toulon: Major refits.

Dates

Armement pour essais: After launching when the ship is sufficiently advanced to allow a crew to live on board, and the commanding officer has joined. From this date the ship hoists the French flag and is ready to undertake her first harbour trials.
Armement définitif: On this date the ship has received her full complement and is able to undergo sea trials.
Clôture d'armement: Trials are completed and the ship is now able to undertake her first endurance cruise.
Croisière de longue durée et traversée de longue durée: The endurance cruise follows the *clôture d'armement*

Fleet Air Arm Bases

• Army special operations helicopter flight EOS 3 based at Pau, equipped with Aerospatiale AS 532 Cougar helicopters to be replaced from 2006 by eight new Eurocopter EC 725 R2 Cougar Mk 2 Plus HUS. Roles include counter-terrorism and they can embark on *Charles de Gaulle*, LSDs and eventually on La Fayette and Florée-class frigates
• Training Squadron EAT-319, based at Avord AFB, with Embraer 121 Xingu light transport (some coming from the Navy) for pilot basic training.

and lasts until the ship is accepted with all systems fully operational.

Admission au service actif: Commissioning date

Reserve

A ship in 'Reserve Normale' has no complement but is available at short notice. 'Reserve Speciale' means that a refit will be required before the ship can go to sea again. 'Condemnation' is the state before being broken up or sold, at this stage a Q number is allocated.

Prefix to Ships' Names

FS is used in NATO communications but is not official

Strength of the Fleet

Type	Active (Reserve)	Building (Projected)
Submarines (SSBN)	3	1
Submarines (SSN)	8	(8)
Aircraft Carriers	1	(1)
Helicopter Carrier	1	—
Destroyers	12	2
Frigates	19 (1)	2 (9)
Public Service Force	8	—
Patrol Craft	10	—
LPH/LSDs	4	—
LST/LCT	9	—
LCMs	17	—
Route Survey Vessels	3	—
Minehunters	13	—
Diving Tenders	6	—
Survey/Research Ships	7	2
Tankers (AOR)	4	—
Maintenance Ships	2	(2)
Supply Tenders	7	—
Transports	8	—
Training Ships	16	—

DELETIONS

Submarines	Destroyers
2008 <i>L'Inflexible</i>	2007 <i>Duquesne</i>
Patrol Forces	Amphibious Forces
2008 <i>Stenia, Camelia, Bellis</i>	2006 <i>Ouragan</i>
2008 <i>Epée</i>	2007 <i>Orage</i>
Auxiliaries	Tugs
2006 <i>Isard, La Parséverante, Poséidon, Faune</i>	2007 <i>Martinet</i>
2007 <i>Néaïde</i>	
2008 <i>Bougainville, D'Entrecasteaux, Rari</i>	
2009 <i>Loire, Jules Verne</i>	

Support Squadrons

Base/Squadron No	Aircraft	Task
Hyères/CEPA/10S	Various	Research, trials
Lanvéoc-Poulmic/22S	Alouette III	Training, Support
(detachments on ships)	Atlantic Region	
Lanvéoc-Poulmic/32F	Super Frelon	Transport, SAR
(detachment at Hyères)		
Hyères/35F	Dauphin 2	Surveillance, SAR,
(detachments at various locations and ships)	Alouette III	Carrier-borne SAR
Landivisiau/57S	Falcon 10 MER	Support, Training

Maritime Patrol Squadrons

Base/Squadron No	Aircraft	Task
Nîmes-Garons/21F	Atlantique Mk 2	MP
Lann Bihoué/23F	Atlantique Mk 2	MP
Lann Bihoué/24F	Falcon 50M/Xingu	Surveillance, SAR
Faa (Papeete)/25F	Gardian	Surveillance, SAR
(detachment at Tontouta, New Caledonia)	Nord 262E/Xingu	Surveillance, SAR, Flying School, liaison
Nîmes-Garons/28F		

Training Squadrons

Base/Squadron No	Aircraft	Task
Lanvéoc-Poulmic/EIP/50S	MS 880 Rallye/CAP 10	Initial Flying School, Recreational

Approximate Fleet Dispositions 1 May 2009

	Channel	Atlantic	Mediterranean	Indian Ocean*	Pacific	Antilles & Guiana
Carriers	FAN	1 (hel)	1	—	—	—
SSBN	FOST	3	—	—	—	—
SSN	FOST	—	6	—	—	—
DDG/DDH	FAN	6	5	—	—	—
FFG	FAN	5	10	2	—	1
MCMV (incl tenders)	FAN	14	5	—	—	—
Patrol Forces**	FAN/GM	4	2	5	4	4
LPH/LSD	FAN	—	4	—	—	—
LST/LCT	FAN	1	2	2	2	1
AOR	FAN	—	3	1	—	—

FAN = Force d'Action Navale (HQ at Toulon). All surface ships based at Toulon, Brest or overseas.
FOST = Force Océanique Stratégique (HQ at Brest). SSBNs based at l'Île Longue near Brest. All SSNs based at Toulon.
GM = Gendarmerie Maritime

*Plus one or two DDG/DDH/FFG regularly deployed from Toulon

**Patrol forces include vessels manned by the Navy and major craft from the Gendarmerie Maritime

6 RUBIS AMÉTHYSTE CLASS (SSN/SNA)

Name	No	Builders	Laid down	Launched	Commissioned
RUBIS	S 601	Cherbourg Naval Dockyard	11 Dec 1976	7 July 1979	23 Feb 1983
SAPHIR	S 602	Cherbourg Naval Dockyard	1 Sep 1979	1 Sep 1981	6 July 1984
CASABIANCA	S 603	Cherbourg Naval Dockyard	19 Sep 1981	22 Dec 1984	21 Apr 1987
ÉMERAUDE	S 604	Cherbourg Naval Dockyard	4 Mar 1983	12 Apr 1986	15 Sep 1988
AMÉTHYSTE	S 605	Cherbourg Naval Dockyard	31 Oct 1984	14 May 1988	3 Mar 1992
PERLE	S 606	Cherbourg Naval Dockyard	27 Mar 1987	22 Sep 1990	7 July 1993

Displacement, tons: 2,410 surfaced, 2,670 dived

Dimensions, feet (metres): 241.5 x 24.9 x 21
(73.5 x 7.6 x 6.4)

Main machinery: Nuclear; turbo-electric; 1 PWR CAS 48, 48 MW; 2 turbo-alternators; 1 motor; 9,500 hp(m) (7 MW); SEMT-Pielstick/Juermont Schneider 8 PA4 V 185 SM diesel-electric auxiliary propulsion; 450 kW; 1 emergency motor; 1 pump jet propulsor

Speed, knots: 25

Complement: 68 (8 officers) (2 crews)

Missiles: SSM. Aerospatiale SM 39 Exocet; launched from 21 in (533 mm) torpedo tubes; inertial cruise, active radar homing to 50 km (27 n miles) at 0.9 Mach; warhead 165 kg.

Torpedoes: 4—21 in (533 mm) tubes. ECAN F17 Mod 2; wire-guided; active/passive homing to 20 km (10.8 n miles) at 40 kt; warhead 250 kg; depth 600 m (1,970 ft). Total of 14 torpedoes and missiles carried in a mixed load.

Mines: Up to 32 FG 29 in lieu of torpedoes.

Countermeasures. ESM Thomson-CSF ARUR 13/DR 3000U, intercept.

Combat data systems: TIT (Traitement des Informations Tactiques) data system (to be replaced by TITLAT); OPSMER command support system; Syracuse 2 SATCOM. Link 11 (receive only).

Weapons control: LAT (Lancement des Armes Tactiques) system (to be combined with TIT as TITLAT).

Radars: Navigation: 1 Thomson-CSF DRUA-33A; I-band; 1 Kelvin Hughes 1007, I-band.

Sonars: Thomson Sintra DMUX 20 multifunction; passive search; low frequency.

DSUV 62C; towed passive array; very low frequency.

DSUV 22 (Saphir); listening suite.

DUUG 7A sonar intercept.

Programmes: The programme was terminated early by defence economies with the seventh of class *Turquoise* and eighth of class *Diamant* being cancelled.

Modernisation: Between 1989 and 1995 the first four of this class converted under operation Amethyste (AMÉlioration



RUBIS

8/2008*, B Prézélin / 1335766

Tactique HYdrodynamique Silence Transmission Ecoute) to bring them to the same standard of ASW (included new sonars) efficiency as *Amethyste* and *Perle* rather than that required for the original anti-surface ship role. Two F17 torpedoes can be guided simultaneously against separate targets. *Saphir* recommissioned 1 July 1991, *Rubis* in February 1993; *Casabianca* in June 1994 and *Émeraude* in March 1996. A new radar added on a telescopic mast. A modernisation programme began in 2004. Upgrades include improvements to the tactical system (TITLAT programme) installation of a pump jet propulsor and a new ESM suite. The installation of new reactor cores in two boats, to extend life, is under consideration.

Structure: Diving depth, greater than 300 m (984 ft). There has been a marked reduction in the size of the reactor compared with the *L'Inflexible* class. On completion of

the modernisation programme, all six of the class are virtually identical.

Operational: All operational SSNs are assigned to Escadrille des Sous-Marins nucléaires d'attaque (ESNA) based at Toulon but frequently deploy to the Atlantic or overseas. Endurance rated at 45 days, limited by amount of food carried. *Rubis* had an underwater collision on 30 March 2007. Repairs at Brest were completed in July 2008. *Émeraude* had a bad steam leak on 30 March 1994 which caused casualties amongst the crew. *Saphir* undertook a refit/refuel in September 2000 following reactor problems. The submarine returned to service in late 2001. Modernisation refits completed for *Amethyste* (January 2006). *Saphir* was refitted 2006–07. Service life of all boats extended to 35 years. To be replaced by the Suffren class from 2017.



AMETHYSTE

8/2008*, B Prézélin / 1335766



CASABIANCA

2/2008*, B Prézélin / 1335764



RUBIS

8/2006, B Prézelin / 1353708



AMETHYST

11/2006, Maritime Photographic / 1353707



CASABIANCA

9/2007, B Prézelin / 1305653

Strategic Missile Submarines

3 + 1 LETRIOMPHANT CLASS (SSBN/SNLE-NG)

Name	No	Builders	Laid down	Launched	Commissioned
LE TRIOMPHANT	S 616	DCN, Cherbourg	9 June 1989	13 July 1993	21 Mar 1997
LE TÉMÉRAIRE	S 617	DCN, Cherbourg	18 Dec 1993	8 Aug 1997	23 Dec 1999
LE VIGILANT	S 618	DCN, Cherbourg	1997	12 Apr 2003	26 Nov 2004
LE TERRIBLE	S 619	DCN, Cherbourg	Nov 2002	21 Mar 2008	July 2010

Displacement, tons: 12,640 surfaced; 14,335 dived
Dimensions, feet (metres): 453 x 41; 55.8 (aft planes) x 41 (138 x 12.5; 17 x 12.5)

Main machinery: Nuclear; turbo-electric; 1 PWR Type K15 (enlarged CAS 48); 150 MW; 2 turbo-alternators; 1 motor; 41,500 hp (m) (30.5 MW); diesel-electric auxiliary propulsion; 2 SEMT-Pielstick 8 PA4 V 200 SM diesels, 300 kW; 1 emergency motor; 1 shaft; pump jet propulsor

Speed, knots: 25 dived

Complement: 111 (15 officers) (2 crews)

Missiles: SLBM: 16 Aerospatiale M45/TN 75; 3-stage solid fuel rockets; inertial guidance to 6,000 km (3,240 n miles); thermonuclear warhead with 6 MRV each of 100 KT. To be replaced by M51.1/TN 75 which has a planned range of 9,000 km (4,860 n miles) and 6 MRVs (to be fitted first in S 619 in 2010) and from 2015 by M51.2 (to be fitted first in S 618) with the new TNO (Tête Nucléaire Oceanique) warhead

SSM: Aerospatiale SM 39 Exocet; launched from 21 in (533 mm) torpedo tubes; inertial cruise; active radar homing to 50 km (27 n miles) at 0.9 Mach; warhead 165 kg.

Torpedoes: 4–21 in (533 mm) tubes, ECAN L5 Mod 3, dual purpose; active/passive homing to 9.5 km (5.1 n miles) at 35 kt; warhead 150 kg; depth to 550 m (1,800 ft); total of 18 torpedoes and SSM carried in a mixed load

Countermeasures: ESM: Thomson-CSF ARUR 13/DR 3000U; intercept.

Weapons control: SAD (Système d'Armes de Dissuasion) strategic data system (for SLBMs) SAD M51 will be fitted in S 619; SAT (Système d'Armes Tactique) tactical data system and DLA 4A weapon control system (for SSM and torpedoes) SYCOBS to be fitted in S 619

Raders: Search; Dassault, I-band.

Sonars: Thomson Sintra DMUX 80 'multifunction' passive bow and flank arrays (S 616-618). Thales UMS 300 (S 619) comprising bow, flank and towed arrays. DUUX 5; passive ranging and intercept; low frequency. DSUV 61 (S 616-618), towed array; very low frequency.

Programmes: *Le Triomphant* ordered 10 March 1986. *Le Téméraire* ordered 18 October 1989. *Le Vigilant* ordered 27 May 1993. *Le Terrible* ordered 28 July 2000. Class of six originally planned, but reduced to four



LE VIGILANT

7/2008*, B Prézélin / 1335768

after the end of the Cold War *Sous-marins Nucléaires Lanceurs d'Engins-Nouvelle Génération* (SNLE-NG).

Modernisation: Development of the M5 missile discontinued in favour of the less expensive M51 which is planned to equip S 619 (M 51.1) in 2010 and the first three submarines between 2010 and 2015. *Le Vigilant* first to be fitted 2010–11. Three batches of M 51 missiles ordered by 2008. Warhead TN O on (M 51.2) is to replace TN 75 (on M 51.1) by 2015.

Structure: Built of HLES 100 steel capable of withstanding pressures of more than 100 kg/mm². Diving depth 500 m (1,640 ft). Height from keel to top of fin is 21.3 m (69.9 ft). Plans to lengthen the hull in later ships of the class have been shelved

Operational: First sea cruise of *Le Triomphant* 16 July to 22 August 1995. First submerged M45 launch on

14 February 1995, second on 19 September 1996. *Le Triomphant* completed 30 month refit in April 2005 and conducted test launch of M45 missile on 2 February 2005. *Le Triomphant* is to undergo her second refit, including conversion to fire the M 51 missile, in 2012. *Le Téméraire* official trials started April 1998, first submerged M 45 launch 4 May 1999. *Le Téméraire* completed 22-month refit in October 2007. *Le Vigilant* is to be refitted, including M 51 conversion, in 2010 following the commissioning of *Le Terrible*. The first underwater test launch of the M 51.1 missile is to be conducted from *Le Terrible* in 2009, following ten land-based tests the first of which was made on 9 November 2008. An underwater launch from a submerged caisson was conducted on 13 November 2008. All submarines based at Ile Longue, Brest.



LE TRIOMPHANT

5/2008*, B Prézélin / 1335767



LE TÉMÉRAIRE

6/2002, French Navy / 0529140

AIRCRAFT CARRIERS

0 + (1) FUTURE AIRCRAFT CARRIER CLASS (CV)

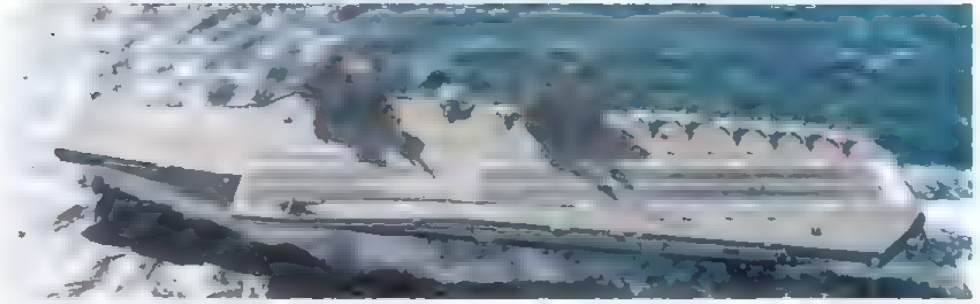
Name	No	Builders	Laid down	Launched	Commissioned
-	-	Aker Shipyards, St Nazaire	2013	2015	2018

Displacement, tons: 70,000 full load
Dimensions, feet (metres): 928.5 × 127.8 × 37.7
 (283.0 × 39.0 × 11.5)
Flight deck, feet (metres): 928.5 × 256.9 (283.0 × 78.0)
Main machinery: Integrated Full Electric Propulsion; 2 Rolls Royce MT 30 gas turbine alternators; 4 electric motors
Speed, knots: 26
Range, n miles: 10,000 at 25 kt
Complement: 900 approx plus 620 aircrew plus further 100

Missiles: SAM: ASTER 15.
Guns: To be announced
Countermeasures: To be announced
Combat data systems: Link 11, Link 16, Link 22 and JSAT datalinks; Syracuse 3 SATCOM
Electro-optic systems: To be announced.
Radars: Air search: To be announced
 Surface search: To be announced
 Navigation: To be announced.
 Fire control: To be announced
 Tacan: To be announced.

Fixed-wing aircraft: Up to 40. A typical mix might include 32 Rafale M, three E-2C Hawkeye and 5 NH-90 helicopters.
Helicopters: Up to five NH 90.

Programmes: A second aircraft carrier (PA2) was planned under the 2003-08 Defence Programming Law but, according to the 2009-14 Defence Programming Law,



PA 2

8/2006, MO-PA2 / 1167147

a decision to proceed with construction is not expected until 2011-2012. It was announced on 13 February 2004 that the ship was to be built in co-operation with the UK carrier programme and DCN and Thales established a joint venture company, MO PA2 to manage the project at industry level. Studies in 2005 concluded that the British CVF design could be adapted and a contract for a preliminary definition study, based on CVF, was awarded to MO PA2 on 12 December 2005. Chantiers de l'Atlantique and EADS also took part in the work. Formal agreement to share design costs reached between

French and UK governments on 24 January 2006 and an MoU was signed on 6 March 2006. The construction timetable is speculative.

Structure: The CVF-FR, has been adapted from the UK CVF design. The main differences between UK CVF and CVF-FR are the requirement to install two 90 m C-13 steam catapults and a four-wire arrestor system, the installation of national combat and data and weapons systems and facilities for the storage of nuclear weapons. A potential requirement to incorporate nuclear propulsion is also being studied.



PA 2

8/2006, MO-PA2 / 1167148



PA 2

8/2006, MO-PA2 / 1167146

1 CHARLES DE GAULLE CLASS (CVNM/PAN)

Name	No	Builders	Laid down	Launched	Commissioned
CHARLES DE GAULLE	R 91	DCN, Brest	14 Apr 1989	7 May 1994	18 May 2001

Displacement, tons: 37,085 standard; 42,500 full load
Dimensions, feet (metres): 857.7 oa; 780.8 wl x 211.3 oa;
 103.3 wl x 30.9 (261.5; 238 x 64.4; 31.5 x 9.4)
Flight deck, feet (metres): 857.7 x 211.3 (261.5 x 64.4)
Main machinery: Nuclear; 2 PWR Type K15, 300 MW; 2 GEC
 Alsthom turbines; 83,000 hp(m) (81 MW) sustained;
 2 shafts
Speed, knots: 27
Complement: 1,256 ship's company (94 officers) plus 610
 aircrew plus 42 flag staff (accommodation for 1,950)
 (plus temporary 800 menmes)

Missiles: SAM: EUROSAM SAAM/F system with 4 (2 port,
 2 starboard) DCN Sylver A43 octuple VLS launchers ●;
 MBDA ASTER 15; inertial guidance and mid-course update;
 active radar homing at 3 Mach to 30 km (16.2 n miles);
 warhead 13 kg, 32 weapons.
 2 Matra Sadral PDMS sextuple launchers ●; Mistral; IR
 homing to 4 km (2.2 n miles); warhead 3 kg; anti-sea-skimmer;
 able to engage targets down to 10 ft above sea level.

Guns: 4 Giat 20F2 20 mm; 720 rds/min to 8 km (4.3 n miles);
 weight of shell, 0.25 kg
Countermeasures: Decoys: 4 CSEE Sagale AMBL-2A
 10-barrelled trainable launchers ●; medium range; chaff to
 8 km (4.3 n miles); IR flares to 3 km (1.6 n miles). Dassault
 LAD offboard decoys. SLAT torpedo decoys from 2006.

ESM: Thomson-CSF ARBR 21; intercept. 1 DIBV 2A Vampir
 MB; (IRST) ●
ECM: 2 ARBB 33B ●, jammers.

Combat data systems: SENIT 8; Links 11, 14 and 16.
 Syracuse 3 and FLEETSATCOM ●. AIDCOMER and
 MCCIS command support systems.

Electro-optic systems: 2 DIBC 2A (Sagem VIGY-105)
 optronic directors.

Radars: Air search: Thomson-CSF DRBJ 11B ●; 3D; E/F-
 band; range 366 km (200 n miles) for aircraft.
 Thales DRBV 26D Jupiter ●; D-band; range 183 km
 (100 n miles) for 2 m² target.

Air/surface search: Thomson-CSF DRBV 15C Sea Tiger
 Mk 2 ●; E/F-band; range 110 km (60 n miles) for 2 m²
 target

Navigation: 2 Racal 1229 (DRBN 34A) ● I-band
Fire control: Thomson-CSF Arabel 3D ●; I/J-band (for
 SAAM); range 70 km (38 n miles) for 2 m² target
Tacan: NRBP 20A ●

Sonars: SLAT torpedo attack warning.
Fixed-wing aircraft: 20 Super Étendard, 2 E-2C Hawkeye.
 12 Rafale F2 and F3

Helicopters: 2 AS 565 Panther or 2 AS 322 Cougar (AF) or
 2 Super Frelon plus 2 Dauphin SAR.

Programmes: On 23 September 1980 the Defence Council
 decided to build two nuclear-propelled carriers to
 replace *Clemenceau* in 1996 and *Foch* some years later.
 First of class ordered 4 February 1986, first metal cut
 24 November 1987. Hull floated for technical trials on
 19 December 1992, and back in dock on 8 January 1993.
 A 19.8 m (65 ft) long one-twelfth scale model was used
 for hydrodynamic trials. Building programme delayed
 three years due to defence budget cuts.

Modernisation: From October 1999 to March 2000
 modifications included additional radiation shielding,
 and lengthening of angled flight deck by 4.4 m. A 43
 launchers to be replaced by A 50 (for ASTER 15 and
 ASTER 30) in due course. During her IPER 2007-08,
 she was fitted with new propellers, Syracuse 3 Satcom,
 and modifications to operate Rafale F2 and F3. The next
 IPER is planned 2016-17.



CHARLES DE GAULLE

6/2005, Per Körnefeldt / 1153174



CHARLES DE GAULLE

6/2005, B Sullivan / 1153175

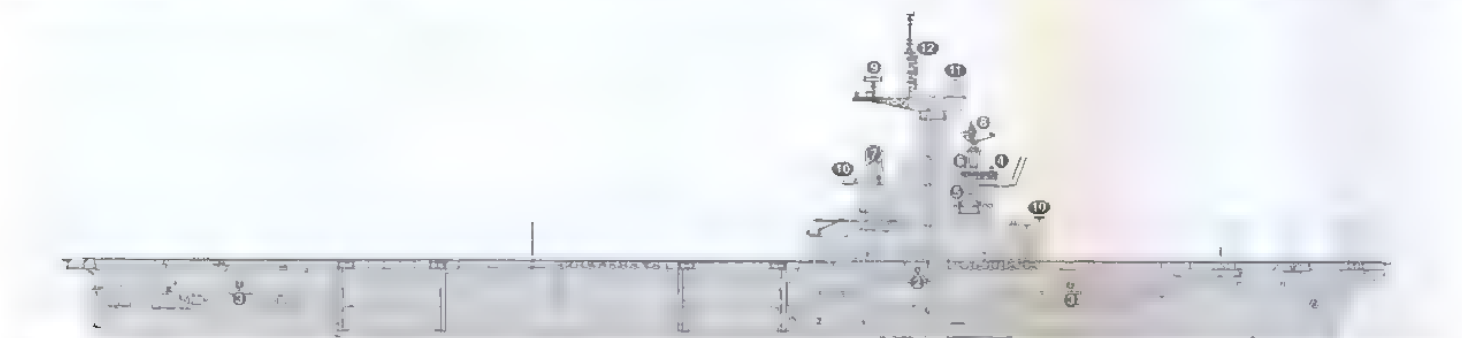
Structure: Two lifts 62.3 x 41 ft (19 x 12.5 m) of 36 tons
 capacity. Hangar for 20-25 aircraft; dimensions
 454.4 x 96.5 x 20 ft (138.5 x 29.4 x 6.1 m). Angled deck
 8.5° and 655.7 ft (200 m) overall length. Catapults: 2 USN
 Type C13-3; length 246 ft (75 m) for Super Étendards
 and up to 23 tonne aircraft. Enhanced weight capability
 of flight deck to allow operation of AEW aircraft. Island
 placed well forward so that both lifts can be protected
 from the weather. CSEE Dallas (Deck Approach and
 Landing Laser System) fitted, later to be replaced by
 MLS system. Active fin stabilisers. Bunkerage of 3,000
 cum of avgas and 1,500 cum diesel.

Operational: Seven years continuous steaming at
 26 kt available before refueling (same steaming as
Le Triomphant). Both reactors self sustaining by 10 June
 1998. Sea trials started 26 January 1999 and continued
 until 9 November 2000 when a large section of the port
 propeller was lost while steaming at high speed. Trials
 resumed on 26 March 2001 with spare propellers from
 decommissioned *Clemenceau*. A 15-month refuel/refit
 (IPER) at Toulon was completed in November 2008.
 Based at Toulon.



CHARLES DE GAULLE

(Scale 1 : 1,500), Ian Sturton / 0104438



CHARLES DE GAULLE

(Scale 1 : 1,500), Ian Sturton / 0069903



CHARLES DE GAULLE

3/2006 / 1167143



CHARLES DE GAULLE

4/2006, Guy Toremans / 1167142



CHARLES DE GAULLE

10/2006, H M Steele / 1040771

HELICOPTER CARRIERS

1 JEANNE D'ARC CLASS (CVHG)

Name	No	Builders	Laid down	Launched	Commissioned
JEANNE D'ARC (ex-La Résolue)	R 97	Brest Naval Dockyard	7 July 1960	30 Sep 1961	16 July 1964

Displacement, tons: 10,575 standard; 13,270 full load
Dimensions, feet (metres): 597.1 × 78.7 hull × 24.6 (182 × 24 × 7.5)
Flight deck, feet (metres): 203.4 × 68.9 (62 × 21)
Main machinery: 4 boilers; 640 psi (45 kg/cm²); 840°F (450°C); 2 Ratcau-Bretagne turbines; 40,000 hp(m) (29.4 MW); 2 shafts
Speed, knots: 26.5
Range, n miles: 6,500 at 16 kt
Complement: 506 (33 officers) plus 13 instructors and 150 cadets

Missiles: SSM: 8 Aerospatiale MM 38 Exocet (2 triple) ●, inertial cruise; active radar homing to 42 km (23 n miles) at 0.9 Mach; warhead 165 kg; sea-skimmer.
Guns: 2 DCN 3.9 in (100 mm)/55 Mod 53 CADAM automatic ●; 60 rds/min to 17 km (9 n miles) anti-surface; 8 km (4.4 n miles) anti-aircraft; weight of shell 13.5 kg, 4–12.7 mm MGs.

Countermeasures: Decoys: 2 CSEE/VSEL Syllex 8-barrelled trainable launchers for chaff (may not be fitted), 1 AN/SQJ-25A Nixie torpedo decoy.
ESM: Thomson-CSF ARBR 16/ARBX 10; Intercept.
Combat data systems: ACOM/OPSMER command support system; Link 11 (receive only); SATCOM, INMARSAT
Weapons control: 2 CT Analogical; 2 Sagem DMAe optical sights SATCOM ●.

Radars: Air search: Thomson-CSF DRBV 22D ●; D-band; range 366 km (200 n miles).
 Air/surface search, DRBV 51 ●; G-band.
 Navigation 2 DRBN 34A (Racal-Decca); I-band.
 Fire control: 2 (+1 unused) Thomson-CSF DRBC 32A; I band

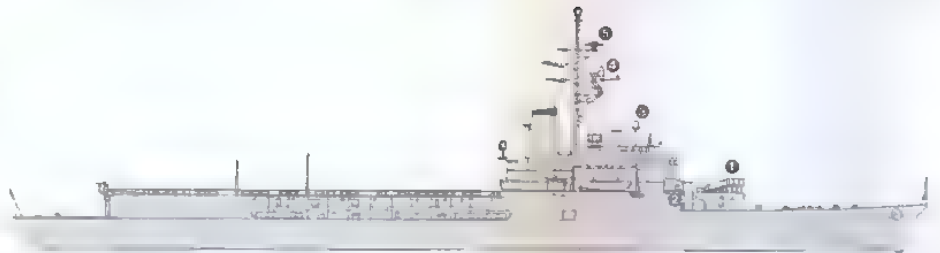
Tacan, SRN 6.
Sonars: Thomson Sintra DUBV 24C; hull-mounted; active search; medium frequency; 5 kHz.

Helicopters: 2 Pumas and 2 Gazelles from the Army and 3 Navy Alouette III for annual training cruises. Up to 8 Super Frelon or 10 mixed heavy/light aircraft in war time.

Modernisation: Refits during 1989–90 extended ship life by about 20 years. SENIT 2 combat data system was to have been fitted but this was cancelled as a cost-saving measure. Extensive propulsion machinery repairs were conducted 1997–98. Two 100 mm guns were removed from quarterdeck in 2000. A life-extension refit was undertaken in 2006. A new SATCOM radome was installed in a radome aft of the funnel.

Structure: Flight deck lift has a capacity of 12 tons. Some of the hanger space is used to accommodate officers under training. The ship is almost entirely air conditioned. Carries two LCVPs. Topmast can be removed for passing under bridges or other obstructions.

Operational: Based at Brest and used for training officer cadets. After rapid modification, she could be used as a commando ship, helicopter carrier or troop transport



JEANNE D'ARC

(Scale 1 : 1,500), Ian Sturton / 116/436



JEANNE D'ARC

11/2007, B Prézelin / 1305055

with commando equipment and a battalion of 700 men. Flagship of the Training Squadron for an Autumn/Spring cruise with Summer refit. Army helicopters Super Puma/Cougar and Gazelle are embarked during training cruises. Service life has been extended to at

least 2010. She is not likely to be replaced in her training role by a new or chartered ship and, in future, a training squadron, based on an LHD/BPC, may occasionally be constituted



JEANNE D'ARC

5/2008*, Camil Busquets / Vilanova / 1335776

DESTROYERS

1 + 1 FORBIN (HORIZON) CLASS (DDGGM)

Name	No	Builders	Laid down	Launched	Commissioned
FORBIN	D 620	DCN, Lorient	16 Jan 2004	10 Mar 2005	June 2009
CHEVALIER PAUL	D 621	DCN, Lorient	13 Jan 2005	12 July 2006	Dec 2009

Displacement, tons: 5,700 standard; 7,050 full load
Dimensions, feet (metres): 501.6 oa; 464.9 wl x 66.6 x 26.2 (152.9; 141.7 x 20.3 x 8.0)
Main machinery: CODOG: 2 Fiat/GE LM 2500 gas turbines; 63,030 hp (47 MW); 2 SEMT-Pielstick 12PA 6STC; 11,700 hp(m) (9.4MW); 2 shafts; cp props, bow thruster (550 kW)
Speed, knots: 31 (18 on diesels)
Range, n miles: 7,000 at 18 kt
Complement: 195 (27 officers)

Missiles: SSM: 8 MBDA Exocet MM 40 Block 3; inertial cruise; active radar homing to 180 km (97 n miles) at 0.9 Mach; warhead 165 kg; sea-skimmer.
SAM: EUROPAAMS PAAMS with DCN Sylver A50 VLS for Acrospatiale Matra Aster 15 (16 missiles) and Aster 30 (32 missiles); 48 cells (six octuple launcher modules); inertial guidance, mid-course update and active homing; range (Aster 15) 30 km (16.2 n miles) at 3 Mach; (Aster 30) 100 km (54 n miles) at 4.5 Mach
 1 MBDA Tetra quadruple launcher (fitted for but not with) for Mistral SR SAMs, IR homing to 6 km; warhead 3 kg; anti-sea-skimmer; able to engage targets down to 10 ft above sea level

Guns: 2 OTO Melara 76 mm/62 Super Rapid; 120 rds/min to 16 km (8.7 n miles); weight of shell 6 kg. 2 Giat 20F2 20 mm; 720 rds/min to 2 km.
Torpedoes: 2 EURTORP TLS 324 mm fixed launchers. Up to 24 Eurotorp Mu 90 Impact torpedoes; active/passive homing to 25 km (13.5 n miles) at 29 kt or 12 km (6.5 n miles) at 50 kt; warhead 32 kg.

Countermeasures: SIGEN EW suite comprising 2 EADS NGDS multifunction decoy launchers, radar warning equipment, a high-power jammer and an ESM/ECM support aid SLAT torpedo defence system.

Combat data systems: EUROSYSNAV; 2 Link 11 (Link 22 in the future) and Link 16; OPSMER or SIC 21 follow-on command support system; Syracuse 3 SATCOM

Electro-optic systems: Sagem Vampir optronic director
Radars: Air/surface search: Thales/Marconi DRBV 27 (S 1850M) Astral; D-band.
 Surveillance/fire control: Alenia Marconi EMPAR; G-band; multifunction
 Surface search: 2 SPN 753 I-band
 Fire control: Alenia Marconi NA 25; J-band.

Sonars: Thales TUS-WASS 4110CL, hull-mounted; active search and attack; medium frequency.

Helicopters: 1 NH1 NH90



FORBIN

(Scale 1 : 1,200), Ian Sturton / 16743/



FORBIN

6/2007, B Prézelin / 130505/

Programmes: Classified as 'Frigates de défense aérienne' (FDA). Initially a three-nation project with Italy and UK. Joint project office established in 1993. After UK withdraw in April 1999, an agreement was signed on 7 September 1999 between France and Italy to continue. Following a French/Italian MoU on 22 September 2000 to build four destroyers, the French government ordered two ships to be built by DCN Lorient and delivered in December 2006 and April 2008. They are planned to replace *Suffren* and *Duquesne*. Plans to build a second

pair of ships, to replace *Cassard* and *Jean Bart*, have been shelved in favour of two AAW variants of the FREMM design.

Structure: Details given are subject to change. Space available for two additional missile launcher modules, possibly with Sylver A70 VLS.

Operational: Sea trials for *Forbin* started in July 2006 and for *Chevalier Paul* on 15 October 2007. Commissioning has been delayed by integration of the combat management system and PAAMS. Both based at Toulon.



CHEVALIER PAUL

6/2008, B Prézelin / 1335763



FORBIN

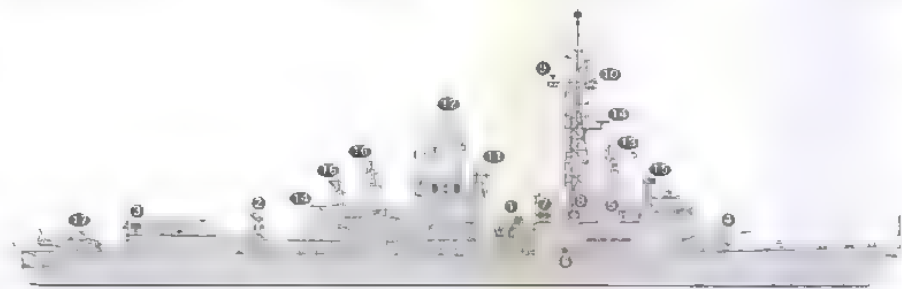
6/2008, Cor Van Nierkerken / 1335175

2 CASSARD CLASS (TYPE F 70 (A/A)) (DDGHM)

Name	No	Builders	Laid down	Launched	Commissioned
CASSARD	D 614	Lorient Naval Dockyard	3 Sep 1982	6 Feb 1985	28 July 1988
JEAN BART	D 615	Lorient Naval Dockyard	12 Mar 1986	19 Mar 1988	21 Sep 1991

Displacement, tons: 4,230 standard; 5,000 full load
 Dimensions, feet (metres): 455.9 x 45.9 x 21.3 (sonar)
 (139 x 14.0 x 6.5)
 Main machinery: 4 SEMT-Pielstick 18 PA6V 280 BTC diesels,
 43,200 hp(m) (31.75 MW) sustained; 2 shafts
 Speed, knots: 29.5
 Range, n miles: 8,000 at 17 kt.
 Complement: 250 (25 officers) accommodation for 253

Missiles: SSM: 8 (4 carried in peacetime) Aerospatiale
 MM 40 Exocet Block 2 ●; inertial cruise; active radar
 homing to 70 km (40 n miles) at 0.9 Mach; warhead
 165 kg; sea-skimmer.
 SAM: 40 GDC Pomona Standard SM-1MR Block VI; semi-
 active radar homing to 38 km (20.5 n miles) at 2 Mach;
 height envelope 45-18,288 m (150-60,000 ft). Mk 13 Mod 5
 launchers ● taken from T 47 (DDG) ships
 2 Matra Sadral PDMS sextuple launchers ●; 39 Mistral;
 IR homing to 4 km (2.2 n miles); warhead 3 kg; anti-sea-
 skimmer; able to engage targets down to 10 ft above sea
 level.
 Guns: 1 DCN/Creusot-Loire 3.9 in (100 mm)/55 Mod 68
 CADAM automatic ●; 78 rds/min to 17 km (9 n miles)
 anti-surface; 8 km (4.4 n miles) anti-aircraft; weight of
 shell 13.5 kg.
 2 Giat 20F2 20 mm ●; 720 rds/min to 2 km (1.1 n miles).
 4-12.7 mm MGs.
 Torpedoes: 2 fixed launchers model KD 59E ●. 10 ECAN L5
 Mod 4; anti-submarine; active/passive homing to 9.5 km
 (5.1 n miles) at 35 kt; warhead 150 kg; depth to 550 m
 (1,800 ft).
 Countermeasures: Decoys: 2 CSEE AMBL 1B Dageis ● and
 2 AMBL 2A (D 614) or 2B (D 615) Sageis 10-barrelled
 trainable launchers ●; fires a combination of chaff and IR
 flares. Dassault LAD offboard decoys.
 ESM: Thomson-CSF ARBR 17B (DR 4000) ●; radar intercept.
 DIBV 1A Vampire ●; IR detector (integrated with search
 radar for active/passive tracking in all weathers). ARBG-1A
 (Saigon) comms intercept at masthead.



CASSARD

(Scale 1 : 1,200), Ian Sturton / 0569909

ECM: 2 Dassault Electronique ARBB 33; jammers; H-, I- and
 J-bands.
 Torpedo defence: SLQ-25A Nixie
 Combat data systems: SENIT 0/8; Links 11, 14 and 16.
 Syracuse 2 SATCOM ●. OPSMER command support
 system
 Electro-optic systems: DCN CTMS optronic/radar system
 with DIBC 1A Piranha II IR/TV tracker; CSEE Najir optronic
 secondary director.
 Radars: Air search: Thomson-CSF DRBJ 11B ●; 3D;
 E/F-band; range 366 km (200 n miles)
 Air/surface search Thomson-CSF DRBV 26C ●; D-band
 Navigation 2 Racal DRBN 34A, I-band (1 for close-range
 helicopter control ●)
 Fire control: Thomson-CSF DRBC 33A ●; I-band (for guns).
 2 Raytheon SPG-51C ●; G/I-band (for missiles).
 Sonars: Thomson Sintra DUBA 25A (13 kHz) (D 614); DUBA
 24C (5 kHz) (D 615); hull-mounted; active search and
 attack; medium frequency.
 Helicopters: 1 AS 565SA Panther ●

Programmes: The building programme was considerably
 slowed down by finance problems and doubts about
 the increasingly obsolescent Standard SM 1 missile
 system and was curtailed at two units. Re-rated F 70
 (ex-C 70) on 6 June 1988, officially 'frégates anti-aériennes
 (FAA)'.
 Modernisation: DRBJ 15 radar initially fitted in Cassard but
 this was replaced in 1992 by DRBJ 11. Panther has replaced
 Lynx helicopter. Cassard refitted 2000-2001. Upgrade
 included hull strengthening, fitting of new propellers
 and SENIT 08 combat direction system (SENIT 8
 core augmented by SENIT 8 data-link processing
 component (for Link 16 and data forwarding). Jean Bart
 similarly refitted October 2002 to September 2003. Plans
 to fit ASTER 30 have been abandoned.
 Structure: Samaha 210 helicopter handling system.
 Operational: Helicopter used for third party targeting for
 the SSM. Both ships are based at Toulon. Service lives:
 Cassard, 2018; Jean Bart, 2021. To be replaced by FRED A
 (AAW variants of FREMM) rather than by a second batch
 of Forbin class.



CASSARD

1/2007, B Prézélin / 1305056



CASSARD

2/2008, B Prézélin / 1335761

4 GEORGES LEYGUES CLASS (TYPE F 70 (ASW)) (DDGHM)

Name	No	Builders	Laid down	Launched	Commissioned
GEORGES LEYGUES	D 640	Brest Naval Dockyard	18 Sep 1974	17 Dec 1976	10 Dec 1979
DUPLEIX	D 641	Brest Naval Dockyard	17 Oct 1975	2 Dec 1978	13 June 1981
MONTCALM	D 642	Brest Naval Dockyard	5 Dec 1975	31 May 1980	28 May 1982
JEAN DE VIENNE	D 643	Brest Naval Dockyard	26 Oct 1979	17 Nov 1981	25 May 1984

Displacement, tons: 3,880 standard; 4,830 full load
 Dimensions, feet (metres): 455.9 x 45.9 x 19.35
 (139 x 14 x 5.9)

Main machinery: CODOG; 2 RR Olympus TM3B gas turbines; 52,000 hp (38.2 MW) sustained; 2 SEMT-Pielstick 16 PA6 V280 diesels; 11,200 hp(m) (8.3 MW) sustained; 2 shafts; LIPS cp props

Speed, knots: 30; 20 on diesels

Range, n miles: 8,000 at 15 kt on diesels, 2,500 at 28 kt

Complement: 235 (22 officers) (D 641-643), 183 (18 officers) plus 36 cadets (D 640)

Missiles: SSM 4 MBDA Exocet MM 38 (D 640 and D 641) or 8 Exocet MM 40 (D 642 and D 643) ●; inertial cruise, active radar homing to 42 km (23 n miles) (MM 38) or 70 km (40 n miles) (MM 40) at 0.9 Mach; warhead 165 kg, sea-skimmer. 4 additional Exocet MM 40 missiles can be carried as a warload (D 642 and D 643)

SAM Thomson-CSF Crotale Naval EDIR octuple launcher ●; command line of sight guidance; radar/IR homing to 13 km (7 n miles) at 2.4 Mach; warhead 14 kg; 26 missiles. 2 Matra Sadral sextuple launchers (D 641-643) or 2 MBDA Simbad twin launchers (D 640) for Mistral SR SAMs, IR homing to 6 km (3.2 n miles); warhead 3 kg

Guns: 1 DCN/Creusot-Loire 3.9 in (100 mm)/55 Mod 68 CADAM automatic ●; dual purpose; 78 rds/min to 17 km (9 n miles) anti-surfaces; 8 km (4.4 n miles) anti-aircraft; weight of shell 13.5 kg. 2 Breda/Mauser 30 mm (D 641-643) ●. 800 rds/min to 3 km; weight of shell 0.37 kg. 2 (D 641-643) or 4 (D 640) M2HB 12.7 mm MGs.

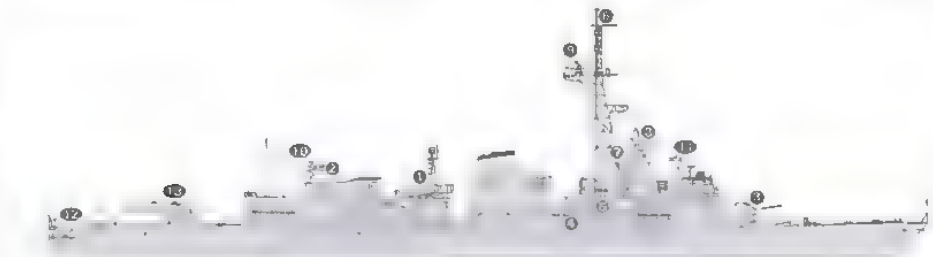
Torpedoes: 2 DCN KD-59E fixed tubes for 533 mm (21 in) DCN LS Mod 4 torpedoes; active/passive homing to 7 km (3.8 n miles); 8 to 10 torpedoes. Honeywell Mk 46 mod 2 or EuroTorp MU 90 Impact lightweight torpedoes for helicopters (D 641-643)

Countermeasures: Decoys: CSEE/VSEL Syllex (D 640); two 8-barrel trainable launchers. EADS AMBL-1C (Dagale Mk 2) (D 641-643) ●; 2 10-barrel trainable launchers; chaff and IR flares. 4 AMBL-3A (Replica) (D 641-643), offboard decoys.

ESM: Thomson-CSF ARBR-10X and ARBR-168 (DR 2000) or (D 643) ARBR-17 (DR 4000) ● radar intercept; Sagem DIBV-2A (Vampir MB) IRST (D 641-643)

ECM Dassault Electronique ARBB-32B (D 640) or Thales ARBB-36A (D 641-643) jammer. Torpedo defence: AN/SLQ-25A Nixie (2 towed decoys); Prairie-Masker noise suppression system.

Combat data systems: DCN SENT 4 CDS and (D 641-643) STDAV/SENT 8-01 added for anti-air/anti-missile defence; Link 11. ACOM/Opmsm command support system. Syracuse ● and Inmarsat satcomms



DUPLEIX (Scale 1 : 1,200), Ian Sturton / 0581/95

Electro-optic systems: Thomson-CSF CTH (Vega) radar/optronic FCS and CSEE DM-Ab (Panda) optical director for 100 mm guns; 2 Sagem DIBC-2A (VIGY 105) optronic FCSs for 30 mm guns (D 641-643)

Radars: Air search: Thomson-CSF DRBV 26A (Jupiter) ●; D-band.

Air/surface search: Thomson-CSF DRBV-51C (D 640); G-band; Thales DRBV-15A or -16B (Sea Tiger) ● (D 641-643); E/F-band.

Navigation: 1 DRBN-34A (RM 1290) (D 641) or Kelvin Hughes DRBN 37 (KH 1007 Nucleus) (D 640, D 642, D 643); I-band; one for helo control

Fire control Thomson-CSF Castor 2J ● for Crotale Naval SAM; J-band. Thomson-CSF DRBC-32E ● (Castor 2B) for gun FCS; I band

Sonars: Thomson-Sintra DUBV-23D (D 641) bow mounted, active search and attack, 5 kHz. 1 UMS 4110 CL (D 640, D 642, D 643).

Thomson-Sintra DUBV-43B (D 640-642) or -43C (D 643) VDS ●; active search and attack; 5 kHz; paired with DUBV-23D; tows at up to 24 kt down to 300 m (985 ft) for DUBV-43B or 700 m (2,300 ft) for -43C

TUS DSBV-62C (D 641) (Lamproie) passive linear towed array with URDT-1A torpedo warning equipment (D 641-643); very low frequency.

Helicopters: 2 Westland WG 13 Lynx Mk 4 (FN) ● (D 641-643); one normally carried in peacetime; 1 Aerospatiale Alouette III (D 640).

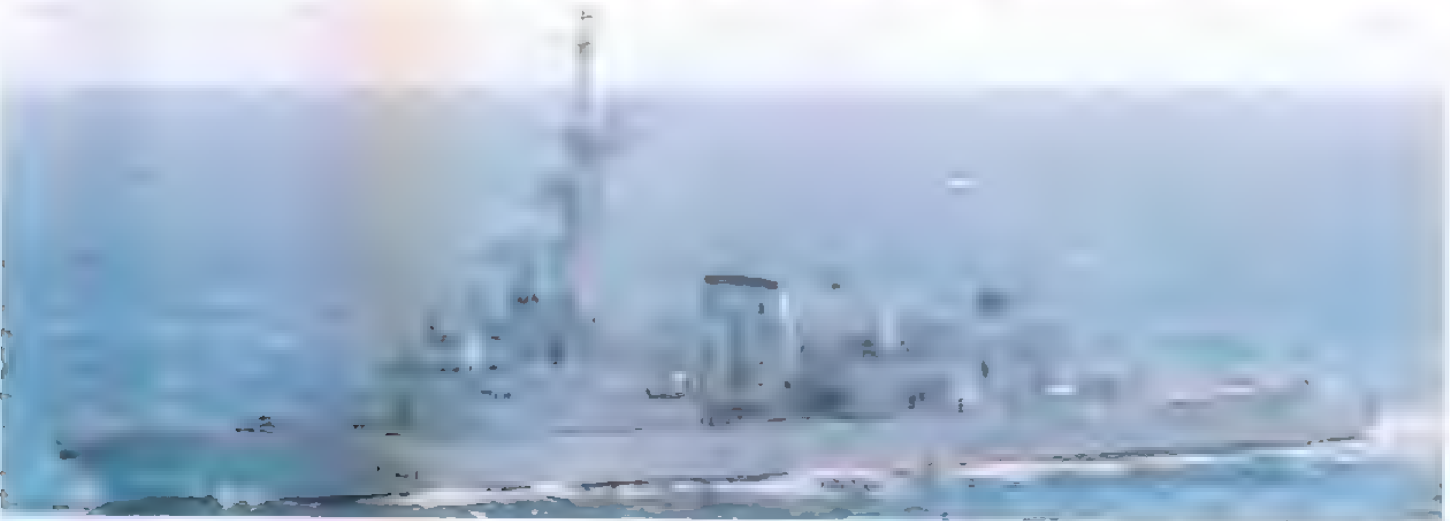
Programmes: Design of a new ASW escort vessel approved in December 1971 under the designation of 'Corvette anti-sous-marine type 1970 (C 70)'. Re-rated 'Frégate

anti-sous-marintype 1970 (FASM70 or F70)' on 6 June 1988. First four ships on the 1970-75 Defence Programming Law. To be replaced by FREMM/ASM 2012-13.

Modernisation: Ships of this class, except Georges Leygues, have received regular upgrades. Most important was the Opération programmée amélioration autodéfense antimissiles (OP3A, air defence upgrade programme) completed in March 1996 for Jean de Vienne, April 1999 for Dupleix and April 2000 for Montcalm; large command structure fitted above the bridge, SENT 8-01 CDS package added to current CDS to command and control air-defence weapons and systems, 2 MBDA Sadral SAM launchers and 2 OTO Melara/Mauser 30 mm gun mounts (controlled by Sagem VIGY 105 optronic directors) added; new ESM suite, new ECM equipment and Replicas offboard decoys. Plans to fit MBDA Mias ASW missiles have been shelved. Due to her new role (see below), Georges Leygues has had only limited upgrades and will not be modernised further. All four ships modified (or being modified) to receive female crew.

Structure: Hull and main deck have been strengthened to cope with fatigue problems; to restore seaworthiness, 235 tonnes of ballast have been embarked and two fuel tanks turned into water-ballasts; completed 2002-03 on all four ships. DCN SPHEX helicopter handling system.

Operational. From June 1999 Georges Leygues has been assigned to a training role as a tender to Jeanne d'Arc; accommodation for 36 cadets and classrooms (partially in the helicopter hangar); based at Brest. Exocet not routinely carried by Georges Leygues. The three other ships are based at Toulon. Endurance 45 days. Service lives: Georges Leygues 2017; Dupleix 2015; Montcalm 2016 and Jean de Vienne 2018. Camcopter S-100 UAV recovered to Montcalm on 10 October 2008.



DUPLEIX 2/2008, B Prézélin / 1335762



JEAN DE VIENNE 6/2008, B Prézélin / 1335759

3 MODIFIED GEORGES LEYGUES CLASS (TYPE F 70 (ASW)) (DDGHM)

Name	No	Builders	Laid down	Launched	Commissioned
PRIMAUGUET	D 644	Brest Naval Dockyard	17 Nov 1981	17 Mar 1984	5 Nov 1986
LA MOTTE-PICQUET	D 645	Brest Naval Dockyard/Lorient	12 Feb 1982	6 Feb 1985	18 Feb 1988
LATOUCHE-TRÉVILLE	D 646	Brest Naval Dockyard/Lorient	15 Feb 1984	19 Mar 1988	16 July 1990

Displacement, tons: 4,010 standard; 4,910 full load
Dimensions, feet (metres): 455.9 x 49.2 x 18.7
(139 x 15.0 x 5.7)

Main machinery: CODOG; 2 RR Olympus TM3B gas turbines; 52,000 hp (38.2 MW) sustained; 2 SEMT-Protekt 16 PA6 V280 diesels; 11,200 hp(m) (8.3 MW) sustained; 2 shafts, LIPS cp props

Speed, knots: 30; 21 on diesels

Range, n miles: 8,000 at 15 kt on diesels; 2,500 at 28 kt

Complement: 233 (21 officers)

Missiles: SSM: 8 MBDA Exocet MM 40 (only 4 in peacetime) ●; inertial cruise and active radar homing to 72 km (39 n miles) at 0.93 Mach; warhead 165 kg.

SAM: Thomson-CSF Crotale Naval EDIR system ●; octuple launcher; radar/IR command to line-of-sight to 13 km (7 n miles) at 2.4 Mach; warhead 14 kg; total of 26 V5S missiles carried

2 MBDA Simbad twin launchers for Mistral SR SAMs; IR homing to 6 km (3.2 n miles); warhead 3 kg

Guns: 1 DCN 100 mm/55 (3.9 in/55) Modèle 68 CADAM automatic ●; dual purpose; 78 rds/min to 17 km (9 n miles) anti-surface; 6 km (3.2 n miles) anti-aircraft; weight of shell 13.5 kg.

2 Gat 20F2 20 mm ●; 720 rds/min to 2 km; 4—12.7 mm MGs.

Torpedoes: Two 324 mm EuroTorp B515/1H/F fixed torpedo tubes for EuroTorp MU 90 Impact lightweight ASW torpedoes; active/passive homing to 25 km (13.5 n miles) at 28 kt or 12 km (6.5 n miles) at 60 kt; warhead 32 kg of TATB explosive (shaped charge); depth to 1,000 m; same torpedoes for the helicopters.

Countermeasures: EADS AMBL-1C (Dagala Mk 2); two 10-barrel trainable launchers ●; chaff and IR flares Four AMBL-3A (Roptica) (D 645); offboard decoys.

ESM: Thales ARBR-17 ● (DR 4000) radar intercept; ARBG-1A (Sargon) comms intercept; Sagom DIBV-2A (Vampir MB) IRST.

ECM: Thales ARBV 36A jammer

Torpedo defence: AN/SLO-25A Nixie (two torpedo decoys), Prairie-Masker noise suppression system.

Combat data systems: DCN SENT 4 CDS; Link 11 (Link 22 in due course). ACOM/Opmer command support system; Syva ASW decision aid. Syracuse ● and Inmarsat satcomms.

Electro-optic systems: DCN CTMS radar/optronic FCS (with DRBC-33A radar, DIBC-1A Pirana IR tracker, TV tracker) and CSEE DM Ab (Panda) optical director for 100 mm gun Alcatel DLT-L5 for torpedoes.

Radars: Air/surface search: Thomson-CSF DRBV-15A (D 645) or -15B (Sea Tiger) (D 644, D 646) ●; E/F-band.

Navigation: 2 DRBN 34A (D 646); 2 DRBN 37 (D 644, D 645); I-band.

Fire control: Thomson CSF Castor 2J ● for Crotale Naval SAM, J-band.

Thomson-CSF DRBC-33A (Castor 2C) ● for gun FCS; I-band

Sonars: Thomson-Sintra DUBV-24C bow-mounted; active search and attack; 5 kHz Thomson-Sintra DUBV-43CVDS ●; active search and attack, 5 kHz; paired with DUBV-24C; tows up to 24 kt down to 700 m (2,300 ft).

TUS DSBV-61B passive linear towed array with URDT-1A torpedo warning equipment; very low frequency. PAF sonobuoy data processing system.



LA MOTTE-PICQUET

(Scale 1 : 1,200, Ian Sturton / 05R1/95)



LA MOTTE-PICQUET

5/2008*, B Prézelin / 1335760

Helicopters: 2 Westland WG 13 Lynx Mk 4 (FN) ● (one normally carried in peacetime).

Programmes: 'Frégates anti-sous-marines type 1970' (FASM 70 or F 70). Authorised on the 1975-80 Defence Programming Law. Fourth unit cancelled before construction had started. *La Motte Picquet* and *Latouche-Tréville* started building at Brest and towed to Lorient for outfitting. To be replaced by FREMM/ASM in the late 2010s.

Modernisation: The ships have been upgraded by the OP3A (Operation programmée amélioration autodefense antimissiles) air defence upgrade programme, limited to the upgrade of sensors and ESM equipment and the installation of two MBDA Simbad twin launchers for Mistral SR SAMs; completed 1997-99. In 2004-06,

further modernisation include the replacement of the two KD-59E launchers for 533 mm (21 in) L 5 torpedoes by two 324 mm B 515 fixed tubes for EuroTorp MU 90 Impact lightweight torpedoes. Plans to fit MBDA Milas ASW missiles have been shelved. All vessels modified to receive female crew. Might receive the LFTASS (ATBF 2) very low frequency towed active sonar.

Structure: Bridge raised one deck as compared to first four ships of the class. Hull and main deck have been strengthened to cope with fatigue problems, to restore seaworthiness, 235 tonnes of ballast have been embarked and two fuel tanks turned into water-ballasts; completed 2002-03 on all ships. DCN SPHEX helicopter handling system.

Operational. All based at Brest. Service lives: 2021-23.



LATOUCHE-TRÉVILLE

2/2008*, France / 1335758

2 TOURVILLE CLASS (TYPE F 67) (DDGHM)

Name	No	Builders	Laid down	Launched	Commissioned
TOURVILLE	D 610	Lorient Naval Dockyard	16 Mar 1970	13 May 1972	21 June 1974
DE GRASSE	D 612	Lorient Naval Dockyard	25 July 1972	30 Nov 1974	1 Oct 1977

Displacement, tons: 4,650 standard; 6,100 full load
Dimensions, feet (metres): 501.6 x 51.8 x 21.6
 (152.8 x 15.8 x 6.6)
Main machinery: 4 boilers, 640 psi (45 kg/cm²); 840 °F (450 °C);
 2 Rateau turbines; 58,000 hp(m) (43 MW); 2 shafts
Speed, knots: 31
Range, n miles: 4,500 at 18 kt
Complement: 298 (24 officers)

Missiles: SSM- 6 Aerospatiale MM 38 Exocet ●; inertial cruise; active radar homing to 42 km (23 n miles) at 0.9 Mach; warhead 185 kg; sea-skimmer.
SAM Thomson-CSF Crotale Naval EDIR octuple launcher ●; command line of sight guidance; radar/IR homing to 13 km (7 n miles) at 2.4 Mach; warhead 14 kg, 26 missiles

Guns: 2 DCN/Creusot-Loire 3.9 in (100 mm)/55 Mod 68 CADAM automatic ●; dual purpose; 78 rds/min to 17 km (9 n miles) anti-surface; 8 km (4.4 n miles) anti-aircraft; weight of shell 13.5 kg
 2 Oerlikon Mk 10 20 mm ●
 4-12.7 mm MGS.

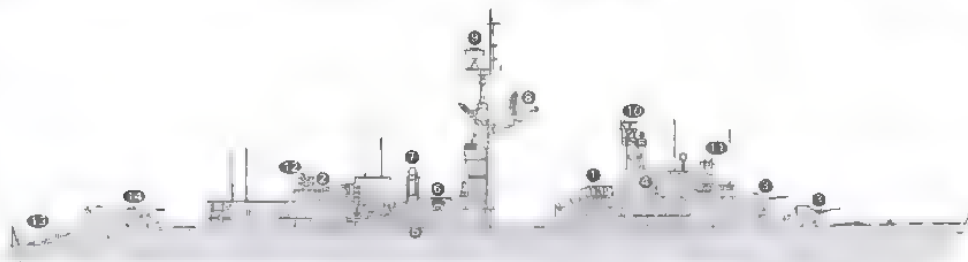
Torpedoes: 2 DCN KD-59E 533 mm fixed launchers ●; for DCN L5; anti-submarine; active/passive homing to 9.5 km (5.1 n miles) at 36 kt; warhead 150 kg; depth to 550 m (1,800 ft). Honeywell Mk 46 or Eurotop Mu 90 impact torpedoes for helicopters.

Countermeasures: Decoys: 2 CSEE/VSEL Syllex 8-barrelled trainable launcher (to be replaced by 2 Dageis systems) ●; chaff to 1 km in centroid and distraction patterns.

RESM: ARBR 16; radar intercept
CESM: Thomson-CSF Aitesse (D 610); comms intercept
ECM: ARBB 32B; jammer.

Torpedo defence: Prairie Masker noise suppression system.

Combat data systems: SENIT 3 action data automation; Links 11 and 14. Syracuse 2 SATCOM ●. OPSMER command support system. Inmarsat and Syracuse SATCOM.



TOURVILLE

(Scale 1 : 1,200), Ian Sturton / 0569912

Electro-optic systems: SENIT 3 radar/TV tracker (possibly SAT Murène in due course). 2 Sagem DMAa optical directors.

Radars: Air search: Thomson-CSF DRBV 26A ●; D-band; range 182 km (100 n miles) for 2 m² target.
 Air/surface search: Thomson-CSF DRBV 51B ●; G-band; range 29 km (16 n miles).

Navigation: 2 DRBN 34 ●; (Racal Decca Type 1226); I-band (1 for helicopter control).

Fire control: Thomson-CSF DRBC 32D (Castor 2B) ●; I-band. Crotale ●; J-band (for SAM).

Sonars: Thomson Sintra DUBV 23D; bow-mounted; active search and attack; medium frequency.
 Thomson Sintra DSBX 1A (ATBF) VDS (SLASM) (D 610) ●; active 1 kHz transmitter and 5 kHz transceiver in same 10 tonne towed body
 Thomson Sintra DSBV 62C, passive linear towed array; very low frequency.

Helicopters: 2 Westland Lynx Mk 4 ●

Programmes: Originally rated as corvettes but reclassified as 'frégates anti-sous-marins (FASM)' on 8 July 1971 and given D pennant numbers.

Modernisation: Major communications and combat data systems updates. The SLASM ASW combat suite installed in *Tourville* from March 1994 to April 1995, *De Grasse* from May 1995 to September 1996. This included new signal processing for the bow sonar, plus LF and MF towed active sonar with separate towed passive array including torpedo warning. Acoustic processor for helo borne sonobuoys. Milas ASW missile cancelled. Passive towed arrays fitted in 1990. Malafon removed from *Tourville* in 1994 and *De Grasse* in 1996. *De Grasse* refitted at Brest in 2003

Structure: Hulls have been strengthened with side support beams.

Operational: Assigned to ALFAN Brest. Helicopters are now used primarily in the ASW role with sonar or sonobuoy dispenser, and ASW weapons. Service lives: *Tourville* 2012, *De Grasse* 2014. To be replaced by first two FREMM



TOURVILLE

9/2005, H M Steele / 1153156



TOURVILLE

3/2007, Paul Daly / 1170116

FRIGATES

5 LA FAYETTE CLASS (FFGHM)

Name	No	Builders	Laid down	Launched	Commissioned
LA FAYETTE	F 710	DCN, Lorient	15 Dec 1990	13 June 1992	23 Mar 1996
SURCOUF	F 711	DCN, Lorient	3 July 1992	3 July 1993	7 Feb 1997
COURBET	F 712	DCN, Lorient	15 Sep 1993	12 Mar 1994	1 Apr 1997
ACONIT (ex-Jauréguiberry)	F 713	DCN, Lorient	1 Aug 1996	8 June 1997	3 June 1999
GUÉPRATTE	F 714	DCN, Lorient	1 Oct 1998	3 Mar 1999	27 Oct 2001

Displacement, tons: 3,300 standard; 3,750 full load
Dimensions, feet (metres): 407.5 oa; 377.3 pp × 50.5 × 19.0 (screws) (124.2; 115 × 15.4 × 5.8)
Main machinery: CODAD; 4 SEMT-Pielstick 12 PA6 V 280 STC diesels; 21,107 hp(m) (15.52 MW) sustained; 2 shafts; LIPS cp props; bow thruster
Speed, knots: 25
Range, n miles: 7,000 at 15 kt; 9,000 at 12 kt
Complement: 153 (15 officers) plus 25 marines

Missiles, SSM: 8 Aerospatiale MM 40 Block 2 Exocet ●; inertial cruise; active radar homing to 70 km (40 n miles) at 0.9 Mach; warhead 165 kg; sea-skimmer.
SAM Thomson-CSF Crotale Naval CN 2 octuple launcher ●, command line of sight guidance; radar/IR homing to 13 km (7 n miles) at 3.5 Mach; warhead 14 kg. 26 missiles. Space for 2 × 8 cell VLS ●

Guns: 1 DCN 3.9 in (100 mm) 55 TR ●; 78 rds/min to 17 km (9 n miles); weight of shell 13.5 kg.
 2 Giat 20F2 20 mm ●; 720 rds/min to 10 km (5.5 n miles).

Countermeasures: Decoys: 2 CSEE AMBL-1C (Dagaie Mk 2) ●; 10-barrelled trainable launchers; chaff and IR flares.

ESM: Thomson-CSF ARBR 21A (DR 3000-S) ●; radar intercept. ARBG-1 (Saigon) (F 710-712) or ARBG 2A (F 713-714) (Maigret), comms intercept.
 DIBV 10 Vampir ●, IR detector (can be fitted).

ECM: Dassault ARBB 33; jammer (can be fitted).
 Torpedo defence: SLO-25A Nixie.

Combat data systems: Thomson-CSFTAVITAC 2000. Link 11. Syracuse 2 SATCOM ●. OPSMER command support system INMARSAT

Electro-optic systems: Sagem TDS 90 VIGY optronic system

Radars: Air/surface search: Thales DRBV-15C (Sea Tiger 2) ●; E/F-band; range 110 km (60 n miles) for 2 m² target
 Navigation: 2 Racal Decca 1229 (DRBN 34B) ●; L-band. One set for helicopter control.

Fire control: Thomson-CSF Castor 2/JC ●, J-band; range 17 km (9.2 n miles) for 1 m² target
 Crotale ●, J-band (for SAM).

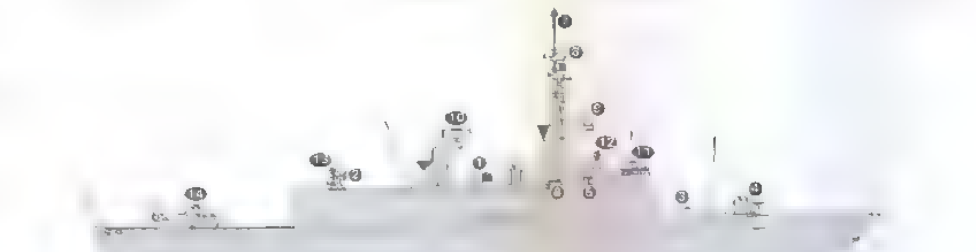
Helicopters: 1 Aerospatiale AS 565MA Panther ●, or platform for 1 Super Frelon. NH90 in due course.

Programmes: Originally described as 'Frigates Légères' but this was changed in 1992 to 'Frigates type La Fayette'. First three ordered 25 July 1988; three more 24 September 1992 but the last of these was cancelled in May 1996. The construction timetable was delayed by several months because of funding problems.

Modernisation: Exocet MM40 Block 3 missiles may be fitted

Structure: Constructed from high-tensile steel with a double skin from waterline to upperdeck. 10 mm plating protects vital spaces. External equipment and upper deck fittings are concealed or placed in low positions. Superstructure inclined at 10° to vertical to reduce REA. Extensive use of radar absorbent paint. DCN Semahe helicopter handling system. RHIB assault craft fitted—these are launched and recovered from a stern access. The design includes potential to install new and/or replace old weapon systems in the future. This includes the SAAM/F system to replace Crotale (space is available forward of the bridge to install Sylver A43 octuple VLS launchers for Aster 15 missiles). This upgrade is not believed to be funded.

Operational: La Fayette started sea trials 27 September 1993, Surcouf 4 July 1994, Courbet 14 September 1995, Aconit 14 April 1998 and Guepratte on 16 January 2001. These frigates are designed for out of area operations



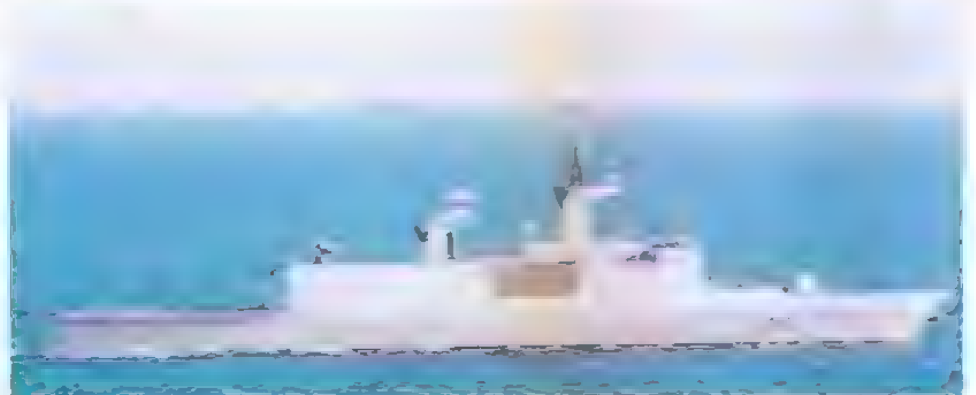
LA FAYETTE

(Scale 1 : 1,200), Ian Sturton / 0581797



GUÉPRATTE

3/2008*, Guy Toremans / 1335774



COURBET

2/2008*, B Prézelin / 1335757

on overseas stations. Super Frelon helicopters can land on the flight deck. NH 90 prototype trials in Courbet in 1998. The ship can launch inflatable boats from a hatch in the stern which hinges upwards. The Vampir IR detector

and ARBB 33 jammer are fitted 'for but not with'. Courbet refitted 2005. All based at Toulon
Sales. Three of an improved design to Saudi Arabia, six for Taiwan, and six for Singapore.



SURCOUF

10/2008*, Peter Ford / 1335773

9 D'ESTIENNE D'ORVES (TYPE A 69) CLASS (FFGM)

Name	No	Builders	Laid down	Launched	Commissioned
LIEUTENANT DE VAISSEAU LE HÉNAFF	F 789	Lorient Naval Dockyard	21 Mar 1977	16 Sep 1978	13 Feb 1980
LIEUTENANT DE VAISSEAU LAVALLÉE	F 790	Lorient Naval Dockyard	30 Nov 1977	12 May 1979	8 Oct 1980
COMMANDANT L'HERMINIER	F 791	Lorient Naval Dockyard	29 May 1979	7 Mar 1981	19 Jan 1986
PREMIER MAÎTRE L'HER	F 792	Lorient Naval Dockyard	15 Dec 1978	28 June 1980	5 Dec 1981
COMMANDANT BLAISON	F 793	Lorient Naval Dockyard	15 Nov 1979	7 Mar 1981	28 Apr 1982
ENSEIGNE DE VAISSEAU JACOBET	F 794	Lorient Naval Dockyard	8 July 1980	26 Sep 1981	23 Oct 1982
COMMANDANT DUCUING	F 795	Lorient Naval Dockyard	1 Oct 1980	26 Sep 1981	17 Mar 1983
COMMANDANT BIROT	F 796	Lorient Naval Dockyard	23 Mar 1981	22 May 1982	14 Mar 1984
COMMANDANT BOUAN	F 797	Lorient Naval Dockyard	12 Oct 1981	23 Apr 1983	31 Oct 1984

Displacement, tons: 1,175 standard; 1,250 (F 789-791), 1,290 (F 792-793), 1,330 (F 794-797) full load

Dimensions, feet (metres): 264.1 x 33.8 x 18 (sonar) (80.5 x 10.3 x 5.5)

Main machinery: 2 SEMT-Pielstick 12 PC2 V 400 diesels; 12,000 hp(m) (8.82 MW); 2 shafts; LIPS cp props
2 SEMT-Pielstick 12 PA6 V 280 BTC diesels; 14,400 hp(m) (10.6 MW) sustained; 2 shafts; LIPS cp props (Commandant L'Herminier)

Speed, knots: 24; 25 (F 791). **Range, n miles:** 4,500 at 15 kt

Complement: 90 (7 officers) plus 18 marines (in some)

Missiles: SSM: 4 Aerospatiale MM 40 (MM 38 in F 789-791) Exocet ●; inertial cruise; active radar homing to 70 km (40 n miles) (or 42 km (23 n miles) at 0.9 Mach (MM 40), warhead 165 kg; sea-skimmer; active radar homing to 42 km (23 n miles) at 0.9 Mach (MM 38).

SAM: Metra Simbad twin launcher for Mistral ●; IR homing to 4 km (2.2 n miles); warhead 3 kg.

Guns: 1 DCN/Creusot-Loire 3.9 in (100 mm)/55 Mod 68 CADAM automatic ●; 80 rds/min to 17 km (9 n miles) anti-surface; 8 km (4.4 n miles) anti-aircraft; weight of shell 13.5 kg
2 Gat 20 mm ●; 720 rds/min to 10 km (5.5 n miles).
4-12.7 mm MGs

Torpedoes: 4 fixed tubes ● ECAN L5; dual purpose; active/passive homing to 9.5 km (5.1 n miles) at 35 kt; warhead 150 kg; depth to 550 m (1,800 ft).

A/S mortars: 1 Creusot-Loire 375 mm Mk 54 6-tubed trainable launcher (F 789, F 790, F 791), range 1,600 m; warhead 107 kg. Removed from others.

Countermeasures: Decoys: 2 CSEE AMBL-1A (Dagaie) 10-barrelled trainable launchers ●; chaff and IR flares; H- to J-band

SLO-25 Nixie torpedo decoy

ESM: ARBR 16; radar warning.

Combat data systems: Syracuse 2 SATCOM (F 792, F 793, F 794, F 795, F 796, F 797) ●. OPSMER command support system with Link 11 (receive only) in MM 40 ships. INMARSAT.

Weapons control: Thomson-CSF Vega system; CSEE DM-Ab (Panda) optical secondary director.

Radars: Air/surface search: Thomson-CSF DRBV 51A ●; G-band

Navigation: Kelvin Hughes 1007; I-band.

Fire control: Thomson-CSF DRBC 32E ●; I-band.

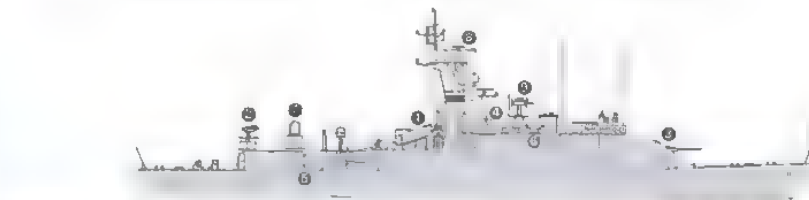
Sonars: Thomson Sintra DUBA 25; hull-mounted; search and attack, medium frequency

Programmes: Classified as 'Avisos'.

Modernisation: In 1985 *Commandant L'Herminier*, F 791, fitted with 12PA6 BTC Diesels Rapides as trial for Type F 70. Most have dual MM 38/MM 40 ITL (Installation de Tir Légère) capability. Weapon fit depends on deployment and operational requirement. Those without ITL are fitted with ITS (Installation de Tir Standard) Syracuse 2 SATCOM fitted in F 792-797, vice the A/S mortar, and accommodation provided for commandos. Metra Simbad launchers have been fitted aft of the A/S mortar/Syracuse SATCOM for operations. Fast raiding craft fitted to *Commandant Birot* and to others in due course.

Operational: Endurance, 30 days and primarily intended for coastal A/S operations. Also available for overseas patrols. All assigned to FAN with F 794, F 795, F 796 and F 797 based at Toulon; the remainder at Brest. Decommissioning plans are under review. It is likely that the Toulon-based ships will be reduced to a patrol ship role following the removal of ASW systems (sonar, torpedoes, mortars) and remain in service until 2017-20. The Brest-based ships are to retain their ASW capability and are likely to be decommissioned 2014-18.

Sales: The original *Lieutenant de Vaisseau Le Hénaff* and *Commandant L'Herminier* sold to South Africa in 1976 while under construction. As a result of the UN embargo



PREMIER MAÎTRE L'HER

(Scale 1 : 900), Ian Sturton / 0535887



COMMANDANT L'HERMINIER

5/2008*, B Prézélin / 1335756



ENSEIGNE DE VAISSEAU JACOBET

9/2008*, B Prézélin / 1335755

on arms sales to South Africa, they were sold to Argentina in September 1978 followed by a third, specially built. Six ships were sold to Turkey in October 2000. All delivered

by July 2002 after refit at Brest. The last one, *Second Maître Le Bihan*, decommissioned from the French Navy on 26 June 2002. No further sales are planned.



PREMIER MAÎTRE L'HER

9/2008*, B Prézélin / 1335754

6 FLORÉAL CLASS (FFGHM)

Name	No	Builders	Laid down	Launched	Commissioned
FLORÉAL	F 730	Chantiers de l'Atlantique, St Nazaire	2 Apr 1990	6 Oct 1990	27 May 1992
PRAIRIAL	F 731	Chantiers de l'Atlantique, St Nazaire	11 Sep 1990	16 Mar 1991	20 May 1992
NIVÔSE	F 732	Chantiers de l'Atlantique, St Nazaire	16 Jan 1991	10 Aug 1991	16 Oct 1992
VENTÔSE	F 733	Chantiers de l'Atlantique, St Nazaire	28 June 1991	14 Mar 1992	5 May 1993
VENDEMIARE	F 734	Chantiers de l'Atlantique, St Nazaire	17 Jan 1992	23 Aug 1992	21 Oct 1993
GERMINAL	F 735	Chantiers de l'Atlantique, St Nazaire	17 Aug 1992	14 Mar 1993	18 May 1994

Displacement, tons: 2,600 standard; 2,950 full load

Dimensions, feet (metres): 306.8 x 45.9 x 14.1
(93.5 x 14 x 4.3)

Main machinery: CODAD; 4 SEMT-Pielstick 6 PA6 L 280 BTC diesels; 8,820 hp(m) (6.5 MW); sustained; 2 shafts; LIPS cp props; 272 hp (200 kW) bow thruster; 340 hp(m) (250 kW)

Speed, knots: 20

Range, n miles: 9,000 at 15 kt

Complement: 90 (11 officers) (including aircrew) plus 24 Marines + 13 spare

Missiles: SSM: 2 Aerospatiale MM 38 Exocet ●; inertial cruise; active radar homing to 42 km (23 n miles) at 0.9 Mach; warhead 165 kg; sea-skimmer.

SAM: 1 or 2 Matra Simbad twin launchers can replace 20 mm guns or Dagaie launcher

Guns: 1 DCN 3.9 in (100 mm) Mod 68 CADAM ●; 78 rds/min to 17 km (9 n miles); weight of shell 13.5 kg

2 Gat 20 F2 20 mm ●; 720 rds/min to 10 km (5.5 n miles).

Countermeasures: Decoys (fitted for but not with); 2 CSEE AMBL-1C (Dagaie Mk II); 10-barreled trainable launchers ●; chaff and IR flares.

ESM: Thomson-CSF ARBR 16A (F 735) ●, radar intercept ARBG 1A (Saigon); comms intercept (F 730 and F 733)

Combat data systems: ACOM/OPSMER command support system (F 735) Syracuse (F 730 and F 733) and INMARSAT ● SATCOM

Electro-optic systems: CSEE Najir optronic director ●.

Radars: Air/surface search Thomson-CSF Mars DRBV 21C ●; D-band.



PRAIRIAL

(Scale 1 : 900), Ian Sturton / 0529161

Navigation: 2 Racal Decca 1229 (DRBN 34A), I-band (1 for helicopter control ●).

Helicopters: 1 AS 565MA Panther or platform for 1 AS 332F Super Puma ●

Programmes: Officially described as 'Frégates de Surveillance' or 'Ocean capable patrol vessel' and designed to operate in the offshore zone in low-intensity operations. First two ordered on 20 January 1989, built at Chantiers de l'Atlantique, St Nazaire, with weapon systems fitted by DCAN Lorient. Second pair ordered 9 January 1990; third pair in January 1991. Named after the months of the Revolutionary calendar

Structure: Built to merchant passenger marine standards with stabilisers and air conditioning. New funnel design improves air flow over the flight deck. Has one freight bunker aft for about 100 tons cargo. Second-hand Exocet MM 38 has been fitted instead of planned MM 40.

Operational: Endurance, 50 days. Able to operate a helicopter up to Sea State 5. Stations as follows: Ventose in Antilles, Germinal at Toulon, Prairial in Tahiti, Floréal and Nivôse at La Réunion and Vendémiaire at Noumea (New Caledonia). Floréal refitted in floating dry-dock at Papeete in 2003. Service life 2022-24.

Sales: Two delivered to Morocco in 2002 and 2003.



PRAIRIAL

6/2008*, Chris Sattler / 1335772



VENDEMIARE

5/2005, Chris Sattler / 1193119

0 + 8 (3) AQUITAINE CLASS (FFGHM)

Name	Builders	Laid down	Launched	Commissioned
AQUITAINE	DCN, Lorient	Dec 2007	Dec 2009	Jan 2012
NORMANDIE	DCN, Lorient	2009	2011	2013
PROVENCE	DCN, Lorient	2010	2012	2014
BRETAGNE	DCN, Lorient	2011	2013	2015
AUVERGNE	DCN, Lorient	2012	2014	2016
LANGUEDOC	DCN, Lorient	2013	2015	2017
ALSACE	DCN, Lorient	2014	2016	2018
LORRAINE	DCN, Lorient	2015	2017	2019

Displacement, tons: 5,135 standard; 6,000 full load (approx)
Dimensions, feet (metres): 466.5 oa, 449.8 wl × 64.6 × 17.7 (142.2; 137.1 × 19.7 × 5.4)
Main machinery: CODLOG; 1 Fiat/GE LM 2500+ G4 gas turbine; 47,370 hp(m) (34.8 MW); 2 Jeumont motors, 2 shafts
Speed, knots: 27.5 (16 on motors)
Range, n miles: 6,000 at 15 kt
Complement: 108 (22 officers) (accommodation for 145)

Missiles: SLCM: 16 (2 octuple) cell Sylver A70 VLS ● for MBDA Scalp-Naval; inertial/terrain following navigation with GPS and high precision IIR terminal guidance to 1,000 km (540 n miles); warhead 300 kg.
SAM: 16 (2 octuple) cell Sylver A43 VLS for MBDA Aster 15 ●; inertial guidance, mid-course update and final active homing to 30 km (16.2 n miles) at 3 Mach
SSM: 8 MBDA Exocet MM 40 Block 3 ●; inertial cruise; active radar homing to 180 km (100 n miles) at 0.9 Mach, warhead 165 kg
Guns: 1 OTO Melara 76 mm/62SR ● 2–20 mm
Torpedoes: 2 twin 324 mm Eurotorp B 515/2H/F fixed launchers for Eurotorp MU 90, active/passive homing to 25 km (13.5 n miles) at 29 kt or 12 km (6.5 n miles) at 50 kt; warhead 32 kg, 19 weapons (F-ASM); 4 weapons (F-AVT).
Countermeasures: Decoys: 2 EADS NGDS 12-barrelled chaff, IR and anti-torpedo decoy launchers.
ESM/ECM: Sigyn CEM and RESM suite
Torpedo defence: SLAT (Thales TUS WASSB 525/12) and Alto torpedo warning system
Combat data systems: DCN/Thales SETIS CMS, Links 11 and 16, 22 and JSAT.
Electro-optic systems: 1 optronic FCS, Thales Artemis IRST.
Radars: Air/surface search: Thales Herakles 3-D multifunction ●; E/F-band.



FREMM

(Scale 1 : 1,200), Ian Sturton / 1170136

Fire control: Alenia Marconi NA-25XP ●, J-band.
Navigation: 2 to be decided.
Sonars: Thales TUS 4110CL; hull mounted (bow dome); active search and attack, Thales Captas UMS-4249 active/passive towed array (F-ASM)

Helicopters: 1 NH-90 ●, ASW aircraft in ASW variant. Transport aircraft and tactical UAV in land attack variant.

Programmes: Agreement reached on 7 November 2002 for a 27-ship collaborative programme with Italy. The original French requirement was for 17 FREMM of which there would be eight ASW (F-ASM) variants and nine land-attack (F-AVT). This plan was later modified by the 2009-14 Defence Programming Law in which the total number of ships was reduced to 11, the F-AVT variants were dropped and two AAW variants (FREDAs) were included. Contract for the first phase awarded on 16 November 2005 to Armaris (DCN/Thales joint venture) for the construction of a first batch of eight ships. This comprises six F-ASM and two FREDA (formerly F-AVT)

(Auvergne and Alsace). A second batch of three ships is to be funded by the 2009 budget.
Structure: FREMM has a conventional hull design. The main engine room contains the gas turbine and two diesel generators while the aft machinery space contains the motors. Particular attention has been paid to signature reduction. The radar signature is expected to be comparable to that of the La Fayette class while exhaust cooling measures are expected to achieve a comparatively low IR signature. Acoustic quietening is to be achieved by the rafting of engines and motors and the use of electric propulsion. The original design for a single integrated mast has been abandoned in favour of a two mast configuration. The Herakles radar is housed in the foremast and communications and IFF in the after mast. F-AVT will have accommodation for 30 marines and will be able to launch/recover 9.5 m raiding craft through a stern access. FREDA are to include 2 16 cell launchers for Aster 15 and 30.
Operational: Sea trials for Aquitaine are planned to start in 2010.

SHIPBORNE AIRCRAFT

Notes: The naval drone concepts for the French Navy have moved to a common navy/army project for a VTOL drone that could perform both tactical and long-range missions. It should be able to operate from the flight deck of a frigate. Contenders contracted on 10 November 2006 are Thales, Boeing Little Bird, Sagem/Bell/Rheinmetall with an Eagle Eye derivative and EADS/Vertivision with Orka 2000. Following a feasibility study, a demonstration phase will test a UAV operationally. Up to 50 UAV may be required in due course. On 1 December 2005, a contract was awarded to DCN to study and develop the integration of UAVs on board naval ships (with the objective of deck trials at sea on a frigate in 2009)

Numbers/Type: 26 Dassault Aviation ACM Rafale M.
Operational speed: Mach 2.
Service ceiling: 50,000 ft (15,240 m).
Range: 2,000 n miles (3,700 km).
Role/Weapon systems: Total procurement of 58 Rafale M single-seaters (air superiority and ground/surface attack). First of two Rafale M naval prototypes (single-seaters) flown 12 December 1992. First deck trials in Foch in 1993. First production Rafale M flown 7 July 1999 and assigned to development trials. Second aircraft delivered to the Navy 19 July 2000 and 14 more delivered by 2007 to form Flotille 12F. All aircraft at standard F1 (air superiority role; crash programme carried out to enable tanker role). Further aircraft at standard F2 with limited air-to-ground capabilities. Prototype M2 brought to this standard for carrier trials in December 2005; first production aircraft delivered in March 2006, seven more delivered in 2007, and last seven in 2008 to replace Super Etendards in Flotille 11F. Standard F3 true multirole variant to enter service from 2009 (with full air superiority, air-to-ground, air-to-surface, nuclear strike and reconnaissance capabilities). All 15 Rafale F2 being converted to F3 standard by September 2009. This is to be followed by nine F1 by 2015. Sensors: Thales/Dassault Electronique RBE2 multirole radar; Thales/Dassault Electronique/MBDA SPECTRA integrated EW/IR countermeasure suite; Thales/Sagem OSF optronic surveillance and target acquisition equipment (from standard F2); MIDSCO MIDS-LVT terminal for Link 16 (from standard F2); Thales Reco NG optronic reconnaissance pod (for eight specially wired standard F3 Rafales). Weapons: Gist M791 30 mm cannon; up to eight AAMs (air defence role), including MBDA Magic 2 short range and MBDA Mica EM medium range AAMs (standard F1); MBDA Mica IR replacing Magic 2 from standard F2 (later, MBDA Meteor to replace Mica EM); MBDA SCALP-EG stand-off precision guided ASM (from standard F2); Sagem AASM general purpose precision ammunition (from standard F2); MBDA Exocet AM 39 Block 2 Mod 2 ASM (one carried) and ASMP-A nuclear strike missile (standard F3); nacelle for air-to-air refuelling. Up to 8 tons of military load on 13 hardpoints.



RAFALE M 6/2008, Ships of the World / 1335/49

Numbers/Type: 43 Dassault-Breguet Super Etendard.
Operational speed: Mach 1.
Service ceiling: 45,000 ft (13,700 m).
Range: 1,460 n miles (2,700 km).
Role/Weapon systems: Carrierborne all-weather strike fighter with nuclear strike capabilities and limited air defence role; tactical recon role to be added. All aircraft still in inventory modernised 1994–1999 to Standard F3. Standard F4 for all the fleet from mid-2000 to early 2005; tactical recon role added; standard 5 upgrade for a total of 35 aircraft by 2008. Service life extended to 2015. Sensors: Dassault Electronique Anémone radar, DRAX (standard 3) or Thales-Detexis Sherlock-F ESM (standard 4), SAGEM UAT 90 computer, Thomson-CSF Barracuda jammer, Phimat chaff dispenser, Alkan IR decoy dispenser; Thales Optrosys photo/optronic chassis (with Omera 40 panoramic camera and SDS-250 digital camera) in a ventral bay (Standard F4); Thales Improved Damocles day/night FLIR/designator (Standard F4 and F5). Weapons: air defence and self protection two Matra BAe Dynamic Magic 2 short range AAMs and two DEFA 30 mm cannon; nuclear strike: one Aerospatiale ASMP nuclear ASM; air-to-surface: one Aerospatiale AM 39 Exocet anti-ship missile, air-to-ground: bombs and MBDA CEMB/BANG 125 or 250 bombs with Raytheon Enhanced Paveway 2 precision guidance (Standard 4 and 5) or one Aerospatiale AS 30L laser guided missile. 7 hardpoints (from standard 4).



SUPER ÉTENDARD 6/2005, Paul Jackson / 1153141

Numbers/Type: 3 Grumman E-2C Hawkeye Group 2.
Operational speed: 320 kt (593 km/h)
Service ceiling: 37,000 ft (11,278 m).
Range: 1,540 n miles (2,852 km).
Role/Weapon systems: Used for AEW, and direction of AD and strike operations. First pair ordered in May 1995 and delivered in April and December 1998 respectively. Third delivered in December 2003. First two aircraft completed upgrade programme (including eight-bladed propellers) in 2006. Procurement of a fourth aircraft was discontinued in December 2007. Sensors: APS-145 radar, ESM, ALR-73 PDS, ALO-108 airborne tactical data system with Links 11 and 16. Weapons: Unarmed



E-2C 1/2007, B Prézalin / 1305021

260 France/Shipborne aircraft

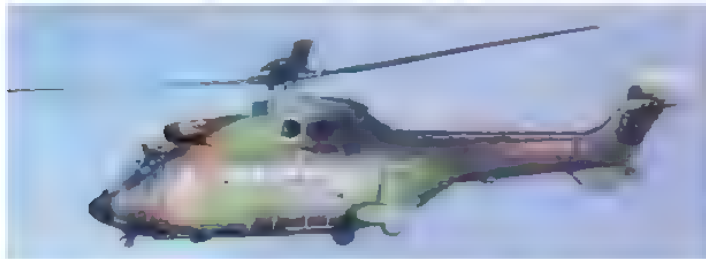
Numbers/Type: 4/10 Eurocopter EC 725 R2 Cougar Mk 2 Plus Resco/EC 725 HUS

Operational speed: 154 kt (285 km/h).

Service ceiling: 13,120 ft (4,000 m).

Range: 421 n miles (780 km).

Role/Weapon systems: Cougar Resco perform the Combat SAR (C-SAR) mission with AF Squadron EH 1/67 'Pyrenées' (with mixed Air Force/Navy crews). One or two to embark in *Charles de Gaulle* for every deployment. A total of 14 such aircraft is expected. Cougar HUS (Hélicoptère Unite Speciale) are operated by Army Aviation Flight no 3 for special operations, including maritime counter-terrorism, and could be embarked in *Charles de Gaulle*, LHDs, LSDs, FREMM/AVT, La Fayette and Floreal class frigates. Sensors: Bendix 1400C radar; Thales Chlio FLIR; Thales Sherlock radar warning; Thales MWS 20 Damien missile warning; Marconi laser detector, Alkan Ellips chaff dispenser; Link 16 in duo course (Resco helicopters). Weapons: 2 FN 7.62 mm MGs (possibly 12.7 mm MGs or 20 mm cannons on HUS variant). Capable of carrying 29 passengers or 11 stretchers.



EC 725 HUS

1/2007, B Prézélin / 1305077



EC 725 RESCO

1/2007, B Prézélin / 1305024

Numbers/Type: 3/6/15 Eurocopter (Aerospatiale) SA 365F Dauphin 2/SA 365N Dauphin 2/AS 565MA Panther

Operational speed: 165 kt (305 km/h)

Service ceiling: 16,700 ft (5,100 m)

Range: 486 n miles (900 km).

Role/Weapon systems: New-built SA 365F Dauphin 2s acquired to replace Alouette IIIs for carrierborne SAR. They feature the same ORB-32 radars as Panthers. SA 365Ns are second-hand helicopters purchased for SAR, general surveillance and public service roles from various locations in metropolitan France. They do not have any radar. Fifteen AS 565 Panthers purchased in several batches to operate from Cassard class DDGs, La Fayette and Floreal class frigates. 16th aircraft acquired from the Armée de l'Air (French Air Force). All Panthers to be modernised to Standard 2 2008-2012 with new avionics, comprehensive countermeasures suite (laser, radar and missile warning systems, decoy dispenser), FLIR and datalink. Follow-on Standard 3 are to feature a new surveillance radar and lightweight anti-ship missiles. Service life to 2025 (AS 565MA). Sensors: (AS 565MA and SA 365F) Thales ORB-32 radar and (AS 565MA) Thales Chlio FLIR on some helicopters (all fitted for); Titus tactical situation management aid (with encrypted data link). Weapons: (AS 565MA) provision for internally mounted 7.62 mm MG.



SA 365F DAUPHIN 2

2/2008*, B Prézélin / 1335752



AS 565 PANTHER

2/2008*, B Prézélin / 1335753

Numbers/Type: 1 NH Industries NH 90 NFH.

Operational speed: 162 kt (300 km/h).

Service ceiling: 13,940 ft (4,250 m).

Range: 621 n miles (1,150 km).

Role/Weapon systems: Total of 27 NH-90 ordered 30 June 2000 for the French Navy in two variants: 13 NHS support helicopters with secondary ASuW role; 14 NHC combat helicopters for ASW and ASuW. First production aircraft flown on 12 May 2006. Delivery programme: Two NHS by November 2009, all NHC by 2013. Sensors: both variants: Thales ENR surveillance radar; Sagem OLOSP tactical FLIR; MBDA Saphir decoy dispenser; Link 11; NHC: TUS FLASH dipping sonar, and UMS 2000-TSM 8203 sonobuoy processing system. Weapons: ASM (NHC and NHS); 2 MU 90 Impact torpedoes (NHC)



NH 90

3/2004, NH / 0062373

Numbers/Type: 100 Aerospatiale SA 330Ba Puma.

Operational speed: 139 kt (257 km/h).

Service ceiling: 15,750 ft (4,800 m).

Range: 297 n miles (550 km).

Role/Weapon systems: Troop carrying helicopter owned by French Army and operable from amphibious ships.



SA 330

6/2005, FAP / 0589661

Numbers/Type: 7 Aerospatiale SA 321G Super Frelon.

Operational speed: 135 kt (250 km/h).

Service ceiling: 10,170 ft (3,100 m).

Range: 420 n miles (778 km) 594 n miles (1,100 km) with auxiliary tank.

Role/Weapon systems: Formerly ASW helicopter; used for assault and support tasks embarked on carriers and LSDs; radar updated, provision for 27 passengers. Service life extended to 2012 to allow replacement by NH 90. Ass gnd to Flotille 32F. Sensors: Omara ORB search radar, Thales Chlio FLIR fitted to one aircraft. Weapons: Provision for 20 mm gun.



SUPER FRELON

7/2008*, B Prézélin / 1335751

Numbers/Type: 27 Westland Lynx Mk 4 (FNI)

Operational speed: 125 kt (232 km/h).

Service ceiling: 12,500 ft (3,810 m).

Range: 320 n miles (593 km).

Role/Weapon systems: Sole French ASW helicopter, all now of the Mk 4 variant; embarked in destroyers and deployed on training tasks. Service life to 2015. To be replaced by NH 90. A limited modernisation (Link 11 and Thales Chlio FLIR) programme will be applied to a small number of aircraft. Sensors: Omara 31 search radar, Alcatel (DUAV 4) dipping sonar, sonobuoys, Sextant Avionique MAD. Weapons: ASW; two Mk 46 Mod 1 (all aircraft being modified to launch EuroTorp Mu 90 Impact) torpedoes, or depth charges. ASV: 1-7.62 mm MG.



LYNX

2/2008*, B Prézélin / 1335750

Numbers/Type: 27 Aerospatiale SA 319B Alouette II.

Operational speed: 113 kt (210 km/h).

Service ceiling: 10,500 ft (3,200 m).

Range: 327 n miles (605 km).

Role/Weapon systems: General purpose helicopter SA 316B with Turboméca Artouste engine; SA 319B with Astazou engine; replaced by Lynx for ASW; now used for trials, surveillance and training tasks. Sensors: Some radar Weapons: Unarmed.



ALOUETTE II

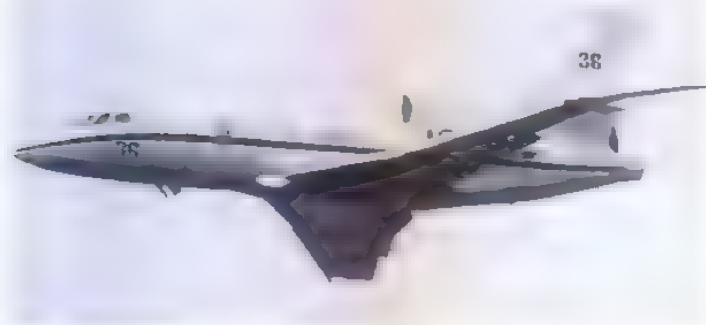
6/2008*, Chris Sattler / 1335771

LAND-BASED MARITIME AIRCRAFT (FRONT LINE)

Notes: In addition to frontline aircraft, the naval inventory includes 11 Embraer EMB-121 Xingu executive aircraft used for communications (Flotilles 24F and 28F) and eight CAP 10 and nine Morane-Saulnier (SOCATA) Rallye for initial in-flight training with EIP/escadronne 50S.

Numbers/Type: 4 Dassault Falcon 50M
Operational speed: 475 kt (880 km/h)
Service ceiling: 49,000 ft (14,930 m)
Range: 3,500 n miles (6,480 km)

Role/Weapon systems: Maritime reconnaissance and SAR roles in the Atlantic and overseas stations (replaced deleted Atlantic Mk 1). First aircraft delivered in December 1999 (for Opeval), second in March 2000, third in March 2001; fourth and last one late 2002. Being fitted with a Spationav VI terminal to share common picture with maritime surveillance assets. A Standard 2 modernisation programme is to be implemented from 2007. Allocated to Flotille 24F (Lann-Bihoué). Sensors: Thales/DASA Ocean Master 100(V) search radar, Thales Chilo FLIR, Inmarsat C. Weapons: Unarmed (two SAR chains). Endurance: six hours 30 minutes at 100 n miles (185 km) from base, four hours at 500 n miles (926 km) or one hour at 1,200 n miles (2,222 km).

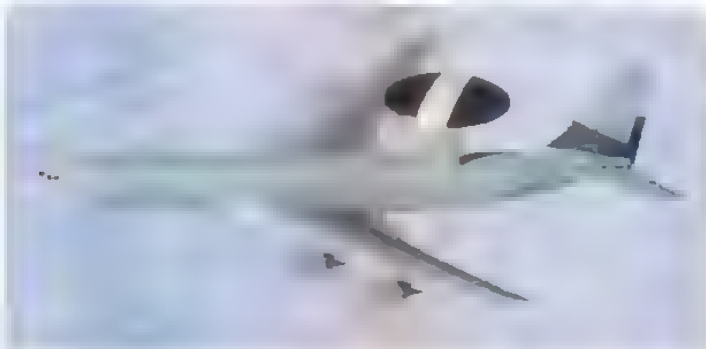


FALCON 50M

1/2007, B Prézélin / 1305025

Numbers/Type: 4 Boeing E-3F Sentry AWACS.
Operational speed: 460 kt (853 km/h)
Service ceiling: 30,000 ft (9,145 m)
Range: 870 n miles (1,610 km)

Role/Weapon systems: Air defence early warning aircraft with secondary role to provide coastal AEW for the Fleet; 6 hours endurance at the range given above. Modernised 2003-06 under the Radar System Improvement Programme (RSIP). Sensors: Westinghouse APY-2 surveillance radar, Bendix weather radar, Mk XII IFF, Yellow Gate, ESM, ECM. Weapons: Unarmed. Operated by the Air Force.



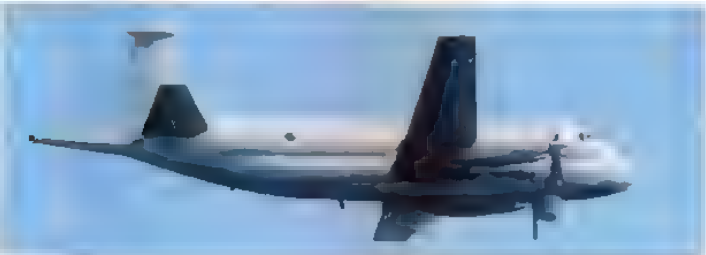
E-3F

6/2002, Armée de l'Air / 0118289

Numbers/Type: 27 Dassault Aviation Atlantique Mk 2
Operational speed: 355 kt (658 km/h)
Service ceiling: 32,800 ft (10,000 m)

Range: 11 hours patrol at 600 n miles from base; 8 hours patrol at 1,000 n miles from base; 4 hours patrol at 1,500 n miles from base.

Role/Weapon systems: Maritime reconnaissance. ASW, ASV, COMINT/ELINT roles. Last one delivered in January 1998. Assigned to Flotilles 21F and 23F. Six aircraft are in long-term storage. Sensors: Thomson-CSF Iguane radar, ARAR 13 ESM, ECM, FLIR, MAD, sonobuoys (with DSAX-1 Thomson-CSF Sadang processing equipment). Link 11 (being fitted in all). COMINT/ELINT equipment optional. Integrated sensor/weapon system built around a CIMS A 15/125X computer. Weapons: Two AM 39 Exocet ASMs in ventral bay, or up to eight lightweight torpedoes (Mk 46 and later Mu 90), or depth charges, mines or bombs. Limited modernisation programme planned to adapt aircraft to Mu 90 torpedoes. More extensive modernisation planned for 18 aircraft 2008-2015. Four other aircraft are likely to be limited to a reconnaissance role. One withdrawn from service in 2007. Aircraft deployed to Dakar, Djibouti and (occasionally) Chad.



ATLANTIQUE II

3/2006, M Declercq / 1157138

Numbers/Type: 10 Aerospatiale N262E
Operational speed: 226 kt (420 km/h)
Service ceiling: 26,900 ft (8,200 m)

Role/Weapon systems: Crew training and EEZ surveillance role. All allocated to Flotilla 28F for surveillance, SAR and Flying School. Modified N262A aircraft. Service life 2014. Partial replacement by further Falcon 50M is under consideration. Sensors: Omera ORB 32 radar; photo pod. Weapons: Unarmed. Target towing capability.

Numbers/Type: 6 Dassault Aviation Falcon 10MER.
Operational speed: 492 kt (912 km/h)
Service ceiling: 35,500 ft (10,870 m)
Range: 1,920 n miles (3,560 km)

Role/Weapon systems: Primary aircrew/ECM training role but also has overwater surveillance role. Avionics upgrade (Standard 2) programme started in 2006. Sensors: Search radar. Weapons: Unarmed. Allocated to Flotille 57S (Landivisiau).



FALCON 10MER

7/2003, Paul Jackson / 0569995

Numbers/Type: 5 Dassault Aviation Falcon 200/Gardian.
Operational speed: 470 kt (870 km/h)
Service ceiling: 45,000 ft (13,715 m)
Range: 2,425 n miles (4,490 km)

Role/Weapon systems: Assigned to Flotilla 25F based at Tahiti with permanent detachments at Tontouta (New Caledonia) and Martinique. Maritime reconnaissance role. Service life 2015; modernisation/replacement is under consideration. Sensors: Thomson-CSF Varan radar, Omega navigation, ECM/ESM pods. Weapons: Unarmed.

PATROL FORCES

Notes: (1) 'Sauvegarde Maritime' is the organisation that encompasses the surveillance and traffic control of all maritime approaches around continental France and overseas territories. It also includes pollution control. Although all naval ships could participate in surveillance tasks, specialised vessels include the OPVs manned by the navy, patrol vessels and patrol craft of the 'Gendarmerie Maritime', French Customs and 'Affaires Maritimes'. In addition there are merchant support vessels on long-term charter (see *Government Maritime Forces*). All these ships, including specialised naval ships, display blue/white/red stripes on hull sides.

(2) Naval patrol ships (OPVs) are referred to as 'Patrouilleurs de Service Public' (PSP; Public Service Special Patrol Vessel). All PSPs and other government service craft are to be fitted with Spationav VI terminals to share a common maritime picture.

(3) The potential use of Unmanned Surface Vehicles (USV) is under investigation.

(4) There are some 60 RHIBs in service for harbour and ship protection.

1 LAPÉROUSE CLASS (PBO)

Name	No	Builders	Launched	Commissioned
ARAGO	P 675 (ex-A 795)	Lorient Naval Dockyard	9 Sep 1990	9 July 1991

Displacement, tons: 830 standard; 980 full load
Dimensions, feet (metres): 193.5 × 35.8 × 11.9 (59 × 10.9 × 3.6)
Main machinery: 2 Wärtsilä UD 30 V12 M6D diesels; 2,500 hp(m) (1.84 MW); 2 cp props, bow thruster; 160 hp(m) (120 kW)
Speed, knots: 15. **Range, n miles:** 5,200 at 12 kt
Complement: 30 (3 officers)
Guns: 2 — 12.7 mm MGs.
Radars: Navigation: 1 Decca E 250 (DRBN 38A); 1 Furuno; I-band.

Comment: Ex-survey ship converted in 2002 for patrol duties. Based at Toulon. Equipped with raiding craft.



ARAGO

1/2008, B Prézélin / 1335748

1 STERNE CLASS (PBO)

Name	No	Builders	Commissioned
STERNE	P 680	La Perrière, Lorient	20 Oct 1980

Displacement, tons: 250 standard; 380 full load
Dimensions, feet (metres): 160.7 × 24.6 × 9.2 (49 × 7.5 × 2.8)
Main machinery: 2 SACM-Wärtsilä UD33V 12M5 diesels; 3,600 hp(m) (2.65 MW) sustained; electrohydraulic auxiliary propulsion on starboard shaft; 150 hp(m) (110 kW); 2 shafts
Speed, knots: 20; 6 on auxiliary propulsion. **Range, n miles:** 4,900 at 12 kt; 1,500 at 20 kt
Complement: 20 (3 officers); 2 crews
Guns: 2 — 12.7 mm MGs.
Radars: Navigation: 1 Racal Decca; 1 Furuno; I-band.

Comment: Sterne was the first ship for the FSMC. Has active tank stabilisation. Launched 31 October 1979 and completed 18 July 1980 for the 'Affaires Maritimes' but then transferred and is now manned and operated by the Navy from Brest. Service life 2009.



STERNE

11/2004, B Prézélin / 1042296

10 P 400 CLASS (LARGE PATROL CRAFT) (PBO)

Name	No	Builders	Commissioned
LAUDACIEUSE	P 682	CMN, Cherbourg	18 Sep 1986
LA BOUDEUSE	P 683	CMN, Cherbourg	15 Jan 1987
LA CAPRICIEUSE	P 684	CMN, Cherbourg	13 Mar 1987
LA FOUQUEUSE	P 685	CMN, Cherbourg	13 Mar 1987
LA GLORIEUSE	P 686	CMN, Cherbourg	18 Apr 1987
LA GRACIEUSE	P 687	CMN, Cherbourg	17 July 1987
LA MOQUEUSE	P 688	CMN, Cherbourg	18 Apr 1987
LA RAILLEUSE	P 689	CMN, Cherbourg	16 May 1987
LA RIEUSE	P 690	CMN, Cherbourg	13 June 1987
LA TAPAGEUSE	P 691	CMN, Cherbourg	11 Feb 1988

Displacement, tons: 406 standard; 480 full load
Dimensions, feet (metres): 179.8 × 26.2 × 8.5 (54.8 × 8 × 2.5)
Main machinery: 2 SEMT-Pielstick 16 PA4 200 VGDS diesels; 8,000 hp(m) (5.88 MW) sustained; 2 shafts
Speed, knots: 23. **Range, n miles:** 4,200 at 15 kt
Complement: 26 (3 officers) plus 20 passengers
Guns: 1 Bofors 40 mm/60; 1 Giat 20F2 20 mm; 2—7.62 mm MGs.
Radars: Surface search: 1 Racal Decca DRBN-38A (Bridgemaster E 250); I-band

Programmes: First six ordered in May 1982, with further four in March 1984. The original propulsion system was unsatisfactory. Modifications were ordered and construction slowed. This class relieved the Patra fast patrol craft which have all transferred to the Gendarmerie.
Structure: Steel hull and superstructure protected by an upper deck bulwark. Design modified from original missile craft configuration. Now capable of transporting personnel with appropriate store rooms. Of more robust construction than previously planned and used as overseas transports. Can be converted for missile armament (MM 38) with dockyard assistance and Simbad PDMS is under consideration. *Laudacieuse* has done trials with a VDS-12 sonar. Twin funnels replaced the unsatisfactory submerged diesel exhausts in 1990-91. P 682 fitted with new propellers in 2003. If successful the rest of the class will be fitted.
Modernisation: A modernisation programme started in 2002. P 682, 683, 689, 690 and 691 have been refitted. The remainder completed by 2005.
Operational: Deployments: Antilles; P 685, French Guiana; P 682, 684, Nourma; P 686, 688, La Réunion; P 683 and 690 Tahiti; P 689 and P 691. P 687 completed refit at Lorient in 2006 and subsequently based at Brest. Endurance, 15 days with 45 people aboard. Replacement is under consideration. P 685 to be deleted in 2009.
Sales: To Gabon and Oman



LA GRACIEUSE 9/2008*, J Brodie / 1335747



LA GRACIEUSE 6/2006, B Prézeln / 1040716

1 TRAWLER TYPE (PSO)

Name	No	Builders	Commissioned
ALBATROS (ex-Névé)	P 681	Ch de la Seine Maritime	1967

Displacement, tons: 1,940 standard; 2,800 full load
Dimensions, feet (metres): 278.9 × 44.3 × 19.7 (85.0 × 13.5 × 6.0)
Main machinery: Diesel-electric; 2 SACM UD 33 V12 S4 diesel generators; 3,050 hp(m) (2.24 MW) sustained; 2 motors; 2,200 hp(m) (1.62 MW); 1 shaft
Speed, knots: 15. **Range, n miles:** 14,700 at 14 kt
Complement: 50 (8 officers) plus 15 passengers
Guns: 1 Bofors 40 mm/60. 2—12.7 mm MGs.
Countermeasures: ESM ARBR 16 radar detector
Radars: Surface search: 2 DRBN 38A; I-band

Comment: Former trawler bought in April 1993 from Compagnie Nav. Caennaise for conversion into a patrol ship. Commissioned 19 May 1984. Conducts patrols from Réunion to Kerguelen, Crozet, St Paul and Amsterdam Islands with occasional deployments to South Pacific Vertrep facilities. Can carry 200 tons cargo, and has 4 tonne telescopic crane. Hospital with six berths and operating room. Major refit in Lorient from June 1990 to March 1991 included new diesel-electric propulsion. A further major overhaul was undertaken in France August 2001-April 2002. Maintenance now carried out in Indian Ocean Shipyards. Service life 2015



ALBATROS 4/2002, B Prézeln / 0528841

1 GRÈBE CLASS (PBO)

Name	No	Builders	Commissioned
GRÈBE	P 679	SFCN, Villeneuve La Garenne	6 Apr 1991

Displacement, tons: 300 standard; 410 full load
Dimensions, feet (metres): 170.6 × 32.2 × 9 (52 × 9.8 × 2.8)
Main machinery: 2 Wärtsilä UD 33 V12 M6D diesels; 4,800 hp(m) (3.53 MW); diesel-electric auxiliary propulsion; 245 hp(m) (180 kW); 2 shafts; cp props
Speed, knots: 18, 7.5 on auxiliary propulsion
Range, n miles: 4,500 at 12 kt
Complement: 19 (4 officers), accommodation for 24
Guns: 2—12.7 mm MGs.
Radars: Navigation: Racal Decca; I-band

Comment: Type Espadon 50 ordered 17 July 1988 and launched 16 November 1989. Senter 'Deep V' hull, stern ramp for craft storage and handling. Large deck area (8 × 8 m) for Vertrep operations. Pollution control equipment and remotely operated water-jet gun for firefighting. Based at Toulon from November 1997. Service life 2016



GRÈBE 6/2007, Per Körnefeldt / 1170123

3 FLAMANT (OPV 54) CLASS (PBO)

Name	No	Builders	Launched	Commissioned
FLAMANT	P 676	CMN, Cherbourg	24 Apr 1995	18 Dec 1997
CORMORAN	P 677	Laroux & Lotz, Lorient	15 May 1995	29 Oct 1997
FLUVIER	P 678	CMN, Cherbourg	2 Dec 1996	18 Dec 1997

Displacement, tons: 314 standard, 390 full load
Dimensions, feet (metres): 179.8 × 32.8 × 9.2 (54.8 × 10 × 2.8)
Main machinery: CODAD; 2 Deutz/MWM 16V TBD 620 diesels and 2 MWM 12V TBD 234 diesels; 7,230 hp(m) (5.32 MW) sustained; 2 shafts; LIPS cp props
Speed, knots: 22 (7 idling)
Range, n miles: 4,500 at 14 kt
Complement: 20 (3 officers)
Guns: 2—12.7 mm MGs.
Radars: Surface search: 1 Racal Decca Bridgemaster 250 (DRBN 38A); I-band
Navigation: Racal Decca 20V90 (DRBN 34B); I-band. Racal Decca DRBN 34A (Bridgemaster E 250), I-band

Comment: Authorised in July 1992 and ordered in August 1993 to a Senter Deep V design. Has a stern door for a 7 m EDL 700 fast assault craft or a Zodiac Hurricane RIB, capable of 30 kt. Two passive stabilisation tanks are fitted, and a remotely operated water-jet gun for firefighting. Deck area of 12 × 9 m for Vertrep. Similar to craft built for Mauritania in 1994. Hulls of all three ships strengthened by DCN Brest by late 2004. Service life: 2022. All based at Cherbourg.



FLAMANT 7/2008*, Maritime Photographic / 1335770

AMPHIBIOUS FORCES

Notes: (1) There are plans to acquire new EDA (Engins de Débarquement Amphibie) landing craft to replace CTMs and operate with Mistral class LHDs and Foudre class LSDs. They will be faster than current CTMs and LCMs. L-Cat from CNIM is a candidate.
(2) About 25 LCVPs are still in service (from 59 built). Most are used on board LSDs (Foudre class), Batral LCTs and AGRs.
(3) Replacement of the Batral class LSTs is under consideration. Options include new Ro-Ro vessels.
(4) Evaluation of a new 30 m landing craft began in October 2008. The L-Cat demonstrator was built by the Gémefin Shipyard at La Rochelle and has the potential to act as a ship-to-shore connector, combining the attributes of a catamaran for transit and, by deploying a movable pontoon deck, a landing craft in beaching mode



L-Cat demonstrator 11/2008*, CNIM / 1294/96

2 + 1 (1) MISTRAL CLASS (AMPHIBIOUS ASSAULT SHIPS) (LHDM/BPC)

Name	No	Builders	Laid down	Launched	Commissioned
MISTRAL	L 9013	DCN Brest	10 July 2003	6 Oct 2004	15 Dec 2005
TONNERRE	L 9014	DCN Brest	26 Aug 2003	26 July 2005	1 Aug 2007

Displacement, tons: 16,529 standard; 21,600 full load; 22,300 flooded

Dimensions, feet (metres): 653 × 105 × 20.3 (199 × 32 × 6.2)

Flight deck, feet (metres): 653 × 105 (199 × 32)

Main machinery: Electric propulsion: 4 (3 Wärtsilä 16V32 and 1 Wärtsilä 18V200) diesel generators provide total of 20.8 MW for propulsion and services. 2 Alstom Mermaid podded propulsors trainable through 360°; 19,040 hp(m) (14 MW) sustained; 1 bow thruster; 2,040 hp(m) (1.5 MW)

Speed, knots: 19

Range, n miles: 11,000 at 15 kt; 6,000 at 18 kt

Complement: 177 (20 officers)

Military lift: 450 (up to 900 in austerity conditions) troops and 60 armoured vehicles (13 MBTs) (approx 1,200 tons of cargo) 4 CTM (LCU) or 2 LCACs.

Missiles: SAM 2 MBDA Simbad twin PDMS launchers for Matra BAE Dynamics Mistral; IR homing to 6 km (3.2 n miles); warhead 3 kg; anti-sea-skimmer.

Guns: 2 Breda Mauser 30 mm/70; 800 rds/min to 3 km; weight of shell 0.38 kg. 4—12.7 mm MGs.

Countermeasures: ESM: ARBR 21; intercept.

Torpedo defence: SLAT system.

Combat data systems: SENIT 9 combat data system, SIC 21 command support system for joint operations; space available for afloat CJTF command; Syracuse III, Fleetsatcom and Inmarsat. Link 11, Link 16.

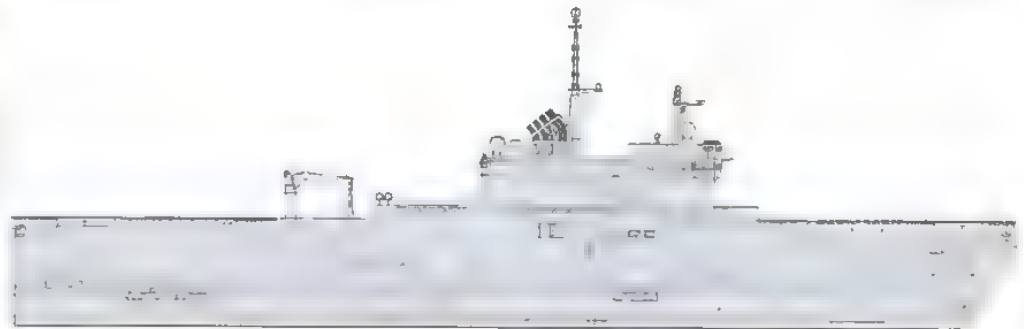
Weapons control: 2 Segem VIGY-20 optronic systems.

Raders: Air/surface search. Thales MRR; 3-D; G-band.

Navigation: 2 Racal-Decca Bridgemaster E 250 (DRBN 38A); I-band

Helicopters: Up to 16 NH90 or SA 330 Puma or AS 532U2 Cougar or AS 665 Tigre attack helicopters.

Programmes: Designated BPC (Bâtiment de Projection et de Commandement, support and command ship for force projection), ex-NTCD (new LHDMs); which have replaced *Duragan* and *Oraga*. Design and definition phase launched 12 November 1999; building contract notified 22 December 2000; ordered from DCN (prime contractor) and Alstom Marine-Chantiers de l'Atlantique. Forward sections built at St Nazaire, and middle and aft blocks at Brest where final construction and outfitting took place. Sixty per cent of the aft section subcontracted to Stocznia Remontowa, Gdansk, and shipped to Brest by barge. Two further ships are planned to replace the



MISTRAL

(Scale 1 : 1,500), Ian Sturton / 1042093



MISTRAL

10/2008, Peter Ford / 1335787

Foudre-class LSDs: While delivery was not expected until about 2020, the order for the third ship is now expected in 2009.

Modernisation: Measures to improve self-defence capabilities are under consideration.

Structure: Built to merchant marine standards. Flight deck has 6 spots, one of which calibrated for CH-53 or MV-22 operations. One 1,800 m² hangar for helicopters or vehicles (2 lifts), one 2,650 m² hangar for vehicles only (1 lift); up to 1,200 tons load on vehicle deck. Well dock

885 m². Hospital: 69 beds; additional modular field hospital may be embarked for humanitarian missions. Other modular facilities could also be embarked according to missions.

Operational: Roles: forward presence, force projection, logistic support for deployed force (ashore or at sea), humanitarian aid, disaster relief, command ship for combined operations. Endurance: 45 days. Sea trials of *Mistral* began 7 March 2005 and of *Tonnerre* on 13 December 2005. Both base at Toulon.



MISTRAL

6/2006, Ships of the World / 1305010

For details of the latest updates to *Jane's Fighting Ships* online and to discover the additional information available exclusively to online subscribers please visit jfs.janes.com

2 Foudre Class (Landing Ships Dock) (LSDH/TCD 90)

Name	No	Builders	Laid down	Launched	Commissioned
FOUDRE	L 9011	DCN, Brest	26 Mar 1986	19 Nov 1988	7 Dec 1990
SIROCO	L 9012	DCN, Brest	9 Oct 1994	14 Dec 1996	21 Dec 1998

Displacement, tons: 8,190 (*Foudre*), 8,230 (*Siroco*) light, 12,400 full load; 17,200 flooded

Dimensions, feet (metres): 651 × 77.1 × 17 (30 2 flooded) (168 × 23.5 × 5.2; 9.2)

Main machinery: 2 SEMT-Pielstick 16 PC2.5 V 400 diesels, 20,800 hp(m) (15.3 MW) sustained, 2 shafts; LIPS cp props; bow thruster; 1,000 hp(m) (735 kW)

Speed, knots: 21. **Range, n miles:** 11,000 at 15 kt

Complement: 218 (18 officers)

Military lift: 470 (up to 2,000 for 3 days) troops plus 1,880 tons load; 1 EDIC/CDIC plus 4 CTMs (typical) or 2 CDIC or 10 CTMs or 20 LARC XV amphibious vehicles; 150 vehicles

Missiles, SAM: 2 (*Siroco*) or 3 (*Foudre*) MBDA Matra Simbad twin launchers ●; Mistral; IR homing to 4 km (2.2 n miles); warhead 3 kg.

Guns: 3 Breda/Mausser 30 mm/70 ●. 800 rds/min to 3 km (1.6 n miles); weight of shell 0.36 kg. 4–12 7 mm MGs.

Countermeasures: ECM: 2 Thales ARBB 36A jammers. SLO-25 Nixie towed torpedo decoy.

Combat data systems: STIDAV/SENIT 8-01 for close range air defence; Syracuse SATCOM ●. OPSMER command support system. Link 11 (receive only). INMARSAT

Weapons control: 2 Sagem DIBC-2A VIGY-105 optronic systems (for 30 mm guns).

Radars: Air/surface search: Thomson-CSF DRBV 21A Mars ●; D-band.

Surface search: Racal Decca 2459 (*Foudre*); I-band

Navigation: 2 Racal-Decca DRBN 34A (*Siroco*) or Racal-Decca 1229 (*Foudre*); I-band (1 for helo control) ●



SIROCO

(Scale 1 : 1,500), Ian Sturton / 0529157

Helicopters: 4 AS 532UL Cougar or SA 330B Puma ● or 2 Super Frelon.

Programmes: First ordered 5 November 1984, second 11 April 1994. Transports de Chalands de Debarquement (TCD)

Modernisation: Sadral SAM replaced by two lightweight Simbad SAMs either side of bridge. New air search radar 30 mm guns to replace 40 mm and 20 mm in *Foudre* and fitted on build in *Siroco*. Sagem optronic fire control fitted in 1992.

Structure: Designed to take a mechanised regiment of the Rapid Action Force and act as a logistic support ship. Extensive command (OPSMER and other systems) and hospital facilities (500 m²) include two operating suites and 47 beds. Modular field hospital may be embarked on *Siroco*.

Well dock of 122 × 14.2 m (1,732 m²) which can be used to dock a 400 tons ship. Crane of 37 tons and lift of 52 tons (*Foudre*) or 38 tons (*Siroco*). Flight deck of *Foudre* 1,450 m² with two landing spots (the landing grid and SAMAHE helo handling system have been removed). Additional landing spot on the (removable) well rolling cover. *Siroco* landing deck extended aft up to the lift to give a 1,740 m² area. Flume stabilisation fitted in 1993 to *Foudre*.

Operational: Two landing spots on flight deck plus one on deck well rolling cover. Can operate Super Frelons or Super Pumas. Could carry up to 1,800 troops in emergency. Endurance, 30 days (with 700 persons aboard). Assigned to FAN and based at Toulon. Typical loads, one CDIC, four CTM, 10 AMX 10RC armoured cars and 50 vehicles or total of 180 to 200 vehicles (without landing craft).



SIROCO

6/2002, French Navy / 0529144



FOUDRE

8/2004, B Prézélin / 1042719

4 BATRAL TYPE (LIGHT TRANSPORTS AND LANDING SHIPS) (LSTH)

Name	No	Builders	Commissioned
FRANCIS GARNIER	L 9031	Brest Naval Dockyard	21 June 1974
DUMONT D'URVILLE	L 9032	Français de l'Ouest	5 Feb 1983
JACQUES CARTIER	L 9033	Français de l'Ouest	28 Sep 1983
LA GRANDIÈRE	L 9034	Français de l'Ouest	20 Jan 1987

Displacement, tons: 750 standard; 1,580 full load
Dimensions, feet (metres): 262.4 × 42.6 × 7.9 (86 × 13 × 2.4)
Main machinery: 2 SACM AGO 195V12 diesels; 3,600 hp(m) (2.65 MW) sustained, 2 shafts; cp props
Speed, knots: 14.5 **Range, n miles:** 4,500 at 12 kt
Complement: 52 (5 officers)
Military lift: 180 troops; 12 vehicles; 350 tons load; 10 ton crane
Missiles: SAM: 2 Matra Simbad twin launchers (may be fitted).
Guns: 2 Bofors 40 mm/60 (L 9031). 2 Giat 20F2 20 mm (L 9032-L 9034). 2—12.7 mm MGs.
Radars: Navigation: DRBN 32; I-band.

Helicopters: Platform for Lynx or Panther.

Programmes: Classified as Batral 3F Bâtiments d'Assaut et de TRANSPORT Légers (BATRAL). First two launched 17 November 1973. *Dumont D'Urville* floated out 27 November 1981. *Jacques Cartier* launched 28 April 1982 and *La Grandière* 15 December 1985. *FGarnier* refitted at Brest 2000

Structure: 40 ton bow ramp; stowage for vehicles above and below decks. One LCVP and one LCPS carried. Helicopter landing platform. Last three of class have bridge one deck higher, a larger helicopter platform and a crane replaces the boom on the cargo deck.

Operational: Deployment: *F Garnier*, Martinique; *D D'Urville*, Papeete; *J Cartier*, New Caledonia; *La Grandière*, Indian Ocean. Service lives of *F Garnier* (2011), *Dumont D'Urville* (2012), *J Cartier* (2013) and *La Grandière* (2014) extended. *Champlain* placed in reserve in Martinique 2004 and later sunk as a target. Deletion of *F Garnier* in 2009 is expected.

Sales: Ships of this class built for Chile, Gabon, Ivory Coast and Morocco. *La Grandière* was also built for Gabon under Clause 29 arrangements but funds were not available



FRANCIS GARNIER

5/2006, M Declercq / 116/13/

2 CDIC CLASS (LCT)

Name	No	Builders	Commissioned
RAPIÈRE	L 9061	SFCN, Villeneuve la Garenne	28 July 1988
HALLEBARDE	L 9062	SFCN, Villeneuve la Garenne	2 Mar 1989

Displacement, tons: 380 standard; 750 full load
Dimensions, feet (metres): 194.9 × 39 × 5.9 (59.4 × 11.9 × 1.8)
Main machinery: 2 SACM Uni Diesel UD 30 V12 M1 diesels; 1,200 hp(m) (882 kW) sustained; 2 shafts
Speed, knots: 10.5 **Range, n miles:** 1,000 at 10 kt
Complement: 18 (1 officer) plus 230 passengers
Military lift: 340 tons
Guns: 2 Giat 20F2 20 mm. 2—12.7 mm MGs.
Radars: Navigation: Recal Decca 1229; I-band

Comment: CDIC (Chaland de Débarquement d'Infanterie et de Chars) built to work with Foudre class. The wheelhouse can be lowered to facilitate docking manoeuvres in the LPDs. Assigned to FAN at Toulon. Given names on 21 July 1997. Replacement of these ships is under consideration. Service lives: 2012



HALLEBARDE

1/2007, B Prézeln / 1305028

2 EDIC 700 CLASS (LCT)

Name	No	Builders	Commissioned
SABRE	L 9051	SFCN, Villeneuve la Garenne	13 June 1987
DAGUE	L 9052	SFCN, Villeneuve la Garenne	19 Dec 1987

Displacement, tons: 365 (L 9051), 325 (L 9052) standard; 736 full load
Dimensions, feet (metres): 193.6 × 38.1 × 5.8 (59 × 11.6 × 1.7)
Main machinery: 2 SACM Uni Diesel UD 30V12 M3 diesels; 1,400 hp(m) (1 MW) sustained, 2 shafts
Speed, knots: 12 **Range, n miles:** 1,800 at 12 kt
Complement: 10 plus 180 passengers
Military lift: 200 tons, 11 trucks or 5 AMX 30
Guns: 2 Giat 20F2 20 mm. 2—12.7 mm MGs.
Radars: Navigation: Recal Decca 1229; I-band.

Comment: Ordered 10 March 1986. Given names on 29 April 1999. Rated as Engins de Débarquement d'Infanterie et Chars (EDIC III). Based at Dakar-Cap Vert (L 9051) and Djibouti (L 9052). L 9051 refitted in 2004. Similar craft to Lebanon and Senegal. Service lives: 2011



SABRE

6/2008*, Cor Van Nierkerken / 1335786

15 CTMS (LCM)

CTM 17-31

Displacement, tons: 59 standard; 150 full load
Dimensions, feet (metres): 78 × 21 × 4.2 (23.8 × 6.4 × 1.3)
Main machinery: 2 Poyaud V8520NS diesels; 450 hp(m) (331 kW); 2 shafts
Speed, knots: 9.5
Range, n miles: 380 at 8 kt
Complement: 4 + 200 passengers
Military lift: 90 tons (maximum), 48 tons (normal)
Guns: 2—12.7 mm MGs
Radars: Navigation I-band.

Comment: First series of 16 built 1966-70 and all have been deleted. Second series CTM 17-18 built by Auroux, Arzon; CTM 19-31 built at CMN, Cherbourg 1982-92. All have a bow ramp. Chaland de Transport de Matériel (CTM). CTM 17 based at Lorient, CTM 18 at Mayotte, CTM 24, 25 at Djibouti, CTM 26 at Dakar and 10 at Toulon. Six others of the class, CTM 12-16, are based at La Rochelle and operated by the French Army Transport Corps (BTI). The Army CTM 17 is based at Dakar-Cap Vert.



CTM 27

2/2008*, B Prézeln / 1335745

MINE WARFARE FORCES

Notes: Replacement of the capabilities of the current mine-countermeasures force is under consideration. The new system, to be introduced from about 2018, is likely to be based on unmanned underwater vehicles.

3 ANTARÈS (BRS) CLASS (ROUTE SURVEY VESSELS) (MHI)

Name	No	Builders	Commissioned
ANTARÈS	M 770	Socarenam, Boulogne	15 Dec 1993
ALTAÏR	M 771	Socarenam, Boulogne	8 July 1994
ALDÉBARAN	M 772	Socarenam, Boulogne	10 Mar 1995

Displacement, tons: 250 standard; 340 full load
Dimensions, feet (metres): 92.6 × 25.3 × 13.1 (28.3 × 7.7 × 4)
Main machinery: 1 Baudouin 12P15-2SR diesel; 800 hp(m) (590 kW); 1 shaft; cp prop; bow thruster
Speed, knots: 12 **Range, n miles:** 3,600 at 10 kt
Complement: 25 (1 officer)
Guns: 1—12.7 mm MG.
Radars: Navigation: 1 Recal-Decca Bridgmaster C 180; I-band
Sonars: 1 TUS DUBM-44 towed sidescan.

Comment: The vessels' role is to conduct surveillance operations in the approaches to Brest in support of the SSBN fleet. BRS Bâtiments Remorqueurs de Sonars. Trawler type similar to Glycine class (see *Training Ships* section). The DUBM 418 towed bodies have been replaced by TUS DUBM-44 Synthetic Aperture Sonar. A mechanical sweep is also carried. There are two 4.5 ton hydraulic cranes. Original dual navigation training role has been lost.



ALTAÏR

7/2008*, B Prézeln / 1335744

13 ÉRIDAN (TRIPARTITE) CLASS (MINEHUNTERS) (MHC)

Name	No	Laid down	Launched	Commissioned
ÉRIDAN	M 641	20 Dec 1977	2 Feb 1979	16 Apr 1984
CASSIOPEE	M 642	26 Mar 1979	26 Sep 1981	5 May 1984
ANDROMÈDE	M 643	6 Mar 1980	22 May 1982	18 Oct 1984
PÉGASE	M 644	22 Dec 1980	23 Apr 1983	30 May 1985
ORION	M 645	17 Aug 1981	6 Feb 1985	14 Jan 1986
CROIX DU SUD	M 646	22 Apr 1982	6 Feb 1985	14 Nov 1986
AIGLE	M 647	2 Dec 1982	8 Mar 1986	1 July 1987
LYRE	M 648	13 Oct 1983	14 Nov 1986	16 Dec 1987
PERSÉE	M 649	30 Oct 1984	19 Apr 1988	4 Nov 1988
SAGITTAIRE	M 650	1 Feb 1993	14 Jan 1995	2 Apr 1996
VERSEAU (ex Iris)	M 651	20 May 1986	21 June 1987	6 Oct 1988
CÉPHÉE (ex-Fuchsia)	M 652	28 Oct 1985	23 Oct 1987	18 Feb 1988
CAPRICORNE (ex-Dianthus)	M 653	17 Apr 1985	26 Feb 1987	14 Aug 1987

Displacement, tons: 562 standard; 615 full load
Dimensions, feet (metres): 168.9 x 29.2 x 12.5 (51.5 x 8.9 x 3.8)
Main machinery: 1 Stork Wärtsilä A-RUB 215V-12 diesel; 1,860 hp(m) (1.37 MW) sustained, 1 shaft; LIPS cp prop
Auxiliary propulsion: 2 motors; 240 hp(m) (179 kW); 2 active rudders; 120 hp (90 kW); 1 bow thruster
Speed, knots: 18; 7 on auxiliary propulsion
Range, n miles: 3,000 at 12 kt
Complement: 49 (5 officers)

Guns: 1 Giat 20F2 20 mm; 720 rds/min to 2 km; 1 12.7 mm MG. 2—7.62 mm MGs.
Countermeasures: MCM: 2 ECA PAP 104 Mod 4 ROVs, Bofors Double Eagle Mk 2 ROV.
Combat data systems: TSM 2061
Radars: Navigation: Racal Decca DRBN 38A (Bridgemaster E 250); I-band.
Sonars: 1 DUBM 21E (TUS 2022 Mk III) sonar (hull-mounted) and one SPIV PVDS on Bofors Double Eagle Mk 2 ROV; dual frequency.

Programmes: All French ships built in Lorient. Belgium, France and the Netherlands each agreed to build 15 (10 in Belgium with option on five more). Subsequently the French programme was cut to 10. Belgium provided all the electrical installations, France all the minehunting gear and some electronics and the Netherlands the propulsion systems. Replacement for the last of class (sold to Pakistan) was ordered in January 1992. Three Belgian ships of the class acquired between March and August 1997 after being in reserve since 1990.

Modernisation: A modernisation programme started in 2001 and was completed in December 2005. Modernisation included replacement of sonar by TUS 2022 Mk III, fitting of a Bofors Double Eagle Mk 2 ROV, a new tactical data system and upgrade of radar and comms.

Structure: GRP hull. Equipment includes: autopilot and hovering; automatic radar navigation; navigation aids by Loran and Syledis.

Operational: Minehunting, minesweeping, patrol, training, directing ship for unmanned mine-sweeping, HQ ship for diving operations and pollution control. Prepacked 5 ton modules of equipment embarked for separate tasks. M 645, 651 and 653 based at Toulon, remainder at Brest. M 651 and M 649 to be deleted in 2009.

Sales: The original tenth ship of the class, completed in 1989, was transferred to Pakistan 24 September 1992 as part of an order for three; the second built in Lorient, the third in Karachi.



ÉRIDAN 6/2008*, Martin Mokrus / 1335743



CÉPHÉE 5/2008*, Michael Nitz / 1335785



CROIX DU SUD 6/2008*, Harald Carstens / 1335784

4 MCM DIVING TENDERS (MCD)

Name	No	Builders	Launched	Commissioned
VULCAIN	M 611	La Perrière, Lorient	17 Jan 1986	11 Oct 1986
PLUTON	M 622	La Perrière, Lorient	13 May 1986	12 Dec 1986
ACHERON	A 613	CMN, Cherbourg	19 Nov 1986	21 Apr 1987
STYX	M 614	CMN, Cherbourg	3 Mar 1987	22 July 1987

Displacement, tons: 409 standard; 505 full load
Dimensions, feet (metres): 136.5 x 24.6 x 12.5 (41.6 x 7.5 x 3.8)
Main machinery: 2 SACM MGO 175 V16 ASHR diesels; 2,200 hp(m) (1.62 MW); 2 shafts, bow thruster; 70 hp(m) (51 kW)
Speed, knots: 13.7
Range, n miles: 2,800 at 13 kt, 7,400 at 9 kt
Complement: 14 (1 officer) plus 12 divers
Guns: 1—12.7 mm MG. 2—7.62 mm MGs.
Radars: Navigation: Decca DRBN 38; I-band.

Comment: First pair ordered in December 1984. Second pair ordered July 1985. Designed to act as support ships for clearance divers. (Bâtiments Bases pour Plongeurs Démouleurs - BBPD). Vulcain based at Cherbourg, Pluton at Toulon, Achéron at Toulon as a diving school tender and Styx at Brest. Modified Chamols (BSR) class design. 5 ton hydraulic crane.



VULCAIN 4/2008*, Derek Fox / 1335742

SURVEY AND RESEARCH SHIPS

Notes: (1) These ships are painted white. A total of about 100 officers and technicians with oceanographic and hydrographic training is employed in addition to the ships' companies listed here. They occupy the extra billets marked as 'scientists'.
 (2) In addition to the ships listed below there is a civilian-manned 25 m trawler *L'Aventurière II* (launched July 1986) operated by GESMA, Brest for underwater research which comes under DCN.
 (3) Two 9 m survey launches, *Matthaw* and *Hunter* were built in 1980.
 (4) In New Caledonia, there is a 30 m buoy-tender *Louis Hémin* and a 7 m survey launch *Chambeyran*.
 (5) There are three ROVs used for research and salvage. *Ereto* can operate to a depth of 1,200 m; *Achille* to 400 m; *Ulisse* to 1,000 m.

1 BEAUTEMPS-BEAUPRÉ CLASS (BHO HYDROGRAPHIC AND OCEANOGRAPHIC SURVEY SHIP) (AGOR)

Name	No	Builders	Laid down	Launched	Commissioned
BEAUTEMPS-BEAUPRÉ	A 758	Alstom Marine, Lorient	17 July 2001	26 Apr 2002	13 Dec 2003

Displacement, tons: 2,125 standard; 3,330 full load
Dimensions, feet (metres): 264.5 x 48.9 x 23.0 (80.6 x 14.9 x 7)
Main machinery: Diesel-electric; four 1,500 hp(m) (1.1 MW) Mitsubishi diesels; 2 Alstom electric motors; 2,950 hp (2.2 MW); 1 shaft; 3,000 hp(m) (2.2 MW).
 2 active rudders 300 hp(m) (220 kW) each; bow thruster 600 hp(m) (440 kW).

Speed, knots: 14
Range, n miles: 8,300 at 12 kt
Complement: 26 (5 officers) (two crews) plus 25 to 30 scientists
Guns: 2—7.62 mm MGs
Radars: Navigation: 2 Kongsberg; I-band
Sonars: EG & G side looking towed sonar; Kongsberg/Simrad EM 120 deep multipath echo sounder (12 kHz); Kongsberg/Simrad EA 600 deep echo sounder (12 kHz); Kongsberg/Simrad EM 1002S shallow waters multipath echo-sounder (95 kHz); Kongsberg/Simrad EA 400-210 shallow waters echo sounder (33 kHz); Kongsberg/Simrad SBP 120 (3 to 7 kHz) narrow beam and SHOM 9TR 109 (3.5 kHz) wide beam sediment echo sounders. Bodenseewerk KSS31 gravimeter; Thales SMM II magnetometer; acoustic current profiler. Most sensor transducers mounted on a removable chassis fixed underneath the hull. Oceanographic buoys; Sippican Mk 21

Comment: Contracted to Alstom-Leroux Naval 13 March 2001. Derived from the civilian research ship *Thalassa* built in 1995 by Leroux & Lotz (now part of Alstom Marine) for the French government civilian agency IFREMER 95 per cent funded by the MoD and 5 per cent by the Ministry of civilian research on behalf of IFREMER that will use the ship 10 days per year. First steel cut 17 July 2001. Started builder sea trials 17 October 2002 and official acceptance trials late December. Two VH 8 survey launches, 10 tonne stern gantry and 10 tonne crane; up to 5 shelters can be shipped and bolted on the deck to increase lab surfaces; up to 4 vehicles can be stored in the hold. Endurance 45 days. Bâtiment hydrographique et océanographique (BHO, hydrographic and oceanographic survey ship)



BEAUTEMPS-BEAUPRÉ 8/2008*, B Prézilin / 1335741

1 DUPUY DE LÔME INTELLIGENCE COLLECTION SHIP (AGIH)

Name	No	Builders	Laid down	Launched	Commissioned
DUPUY DE LÔME	A 759	Royal Niestern Sander, Delfzijl	1 Dec 2002	27 Mar 2004	23 June 2006

Displacement, tons: 3,100 standard; 4,000 full load
 Dimensions, feet (metres): 333.8 × 51.7 × 16.1 (1077 × 15.8 × 4.9)
 Main machinery: 2 MaK 9M25 diesels; 7,965 hp (5.94 MW); 2 shafts; 2 bow thrusters
 Speed, knots: 16 Range, n miles: 3,400 at 16 kt
 Complement: 32 + 78 specialists
 Guns: 2—12.7 mm MGs
 Radars: Navigation: 2 Racal-Decca DRBN 38A; 1 band.

Programmes: Programme initiated 29 October 2001. Contract awarded 14 January 2002 to Thales Naval France (for the mission system) and Compagnie Nationale de Navigation to procure and maintain the vessel for initial five year period. Installation of the MINREM mission system started at Toulon in January 2005. After trials, the ship was delivered to the navy on 15 December 2005 and replaced *Bougainville* in April 2006.

Structure: The ship has a design life of 30 years and is fitted with a flight deck and underway replenishment facilities.

Operational: Fitted with both COMINT and ELINT equipment. The ship is to be available for 350 days a year and active for 240 days. There are two complements. Based at Brest.



DUPUY DE LÔME 8/2008, *Ships of the World* / 1335/170

1 POURQUOI PAS? CLASS (OCEANOGRAPHIC SURVEY SHIP) (AGOR)

Name	No	Builders	Laid down	Launched	Commissioned
POURQUOI PAS?	—	Alstom Marine, St Nazaire	20 Jan 2004	14 Oct 2004	27 Sep 2005

Displacement, tons: 5,000 standard; 6,600 full load
 Dimensions, feet (metres): 353.0 × 65.6 × 22.6 (1076 × 20 × 6.9)
 Main machinery: Diesel-electric; four Wärtsilä 8L 20C diesel generators 7,725 hp (5.8 MW); two Alstom electric motors; 4,500 hp(m) (3.3 MW); 2 shafts; LIPS cp props
 Speed, knots: 14.5 Range, n miles: 16,000 at 11 kt
 Complement: 33 + 40 scientists
 Radars: Navigation: 2 Kongsberg; 1-band.

Sonars: Reason Seabat 7111 (100 kHz) and Seabat 7150 (12/24 kHz) multipath echo sounders; Simrad EA 600 (12/38/200 kHz) deep echo sounder; RDI Ocean Surveyor current profiler (38/150 kHz); Eramer/Triton Elica sediment echo sounder (2-8 kHz); most sensor transducers mounted on a removable chassis fixed underneath the hull; also optional towed sonars.

Comment: Contract awarded 17 December 2002 to Alstom Marine. Funded 55 per cent by the Ministry of Research and Education, and 45 per cent by the MoD which will use the ship 150 days per year; civilian manned (operated by Genevir on behalf of IFREMER research agency — see Government Maritime Forces), with navy specialists when operating for military campaigns. First steel cut 1 September 2003. Trials in February 2005 and delivery in March 2005. Optional additional labs in containers; helo dock. Able to operate the *Nautilus* mini sub, the *Victor 6000* ROV or the future NATO Submarine Rescue System (NSRS); can embark up to three navy VH 8 survey launches (two under davits), stern gantry to handle equipments up to 22 tonnes. Space allocated to embark up to 20 20 ft containers. Endurance 60 days. *Pourquoi Pas?* (Why not?) is the name given by the famous explorer and oceanographer Jean-Baptiste Charcot (1867-1936) to several of his research vessels.



POURQUOI PAS? 9/2005, *B Prézellin* / 1153176

3 LAPÉROUSE (BH2) CLASS (AGS)

Name	No	Builders	Launched	Commissioned
LAPÉROUSE	A 791	Lorient Naval Dockyard	14 Nov 1986	20 Apr 1988
BORDA	A 792	Lorient Naval Dockyard	14 Nov 1986	16 June 1988
LAPLACE	A 793	Lorient Naval Dockyard	9 Nov 1988	5 Oct 1989

Displacement, tons: 850 standard, 980 full load
 Dimensions, feet (metres): 193.5 × 35.8 × 13.8 (59 × 10.9 × 4.2)
 Main machinery: 2 Unidiesel UD 30 175V12RVR diesels; 2,500 hp(m) (1.84 MW); 2 cp props; auxiliary propulsion; electric motor and 160 hp(m) (120 kW); bow thruster
 Speed, knots: 15 Range, n miles: 6,000 at 12 kt
 Complement: 31 (3 officers) plus 11-18 scientists
 Guns: 2—7.62 mm MGs
 Radars: Navigation: Decca Bridgemaster (DRBN 38A) (A 791, 792); Furuno (A 793); 1-band.

Sonars: Thomson Sintra DUBM 42 (A 792, A 793), active search; high frequency. DUBM 21C (A 791); active search; high frequency. EG & G towed sidescan sonar. Kongsberg/Simrad EM 1002 S shallow water multipath echo sounder (95 kHz); Thales SMM II magnetometer; sediment echo sounder. Atlas DESO 20 echo sounder (A 791) (100 kHz).

Comment: Ordered under 1982 and 1986 estimates, first two on 24 July 1984, third 22 January 1986 and fourth (*Arago* — converted in 2002 to patrol craft) on 12 April 1988. BH2 (Bâtiments Hydrographiques de 2e classe). Carry 2-3 VH 8 survey launches. Based at Brest.



BORDA 6/2007, *B Prézellin* / 1305032

1 RESEARCH SHIP (AGMH)

Name	No	Builders	Launched	Commissioned
MONGE	A 601	Chantiers de l'Atlantique, St Nazaire	6 Oct 1990	5 Nov 1992

Displacement, tons: 17,760 standard; 21,040 full load
 Dimensions, feet (metres): 740.1 × 81.4 × 25.3 (225.6 × 24.8 × 7.7)
 Main machinery: 2 SEMT-Pielstick 8 PC2.5 L 400 diesels; 10,400 hp(m) (7.65 MW) sustained; 1 shaft; LIPS cp props; bow thruster; 1,360 hp(m) (1 MW)
 Speed, knots: 16 Range, n miles: 15,000 at 15 kt
 Complement: 115 (9 officers) plus 90 military and civilian technicians
 Guns: 2—20 mm 2—12.7 mm MGs
 Combat data systems: Tavitac 2000 for trials.

Radars: Air search: Thomson-CSF DRBV 15C (Sea Tiger Mk 2); E/F-band. Missile tracking: 1 Gascogne; C-band. 2 Amor; C-band. 1 Savoie; C-band. 1 Stratus (for trajectory); L-band. 6 Antares (telemetry); E/F-band. Navigation: Two Racal Decca (DRBN 34A) (one for helo control); 1-band. Helicopters: 1 Alouette III.

Comment: Ordered 25 November 1988. Rated as a BEM (Bâtiment d'Essais et de Mesures). Laid down 26 March 1990, and launched 6 October 1990. She has 14 telemetry antennas, optronic tracking unit; LIDAR; Syracuse SATCOM and Inmarsat. Flume tank stabilisation restricts the ship to a maximum of 9° roll at slow speed in Sea State 6. Flagship of the Trials Squadron. Used for space surveillance by the French Space Agency (CNES) and for M 45 and M 51 ballistic missile tests. Hangar space for two Super Frelon or NH 90. To be equipped a single Stratus with two aeriels, to replace Savoie and Stratus, by 2009. Based at Brest.



MONGE 5/2008, *B Prézellin* / 1335739

1 LAPÉROUSE CLASS (MCD/BEGM)

Name	No	Builders	Launched	Commissioned
THÉTIS (ex-Nerèide)	A 785	Lorient Naval Dockyard	14 Dec 1986	9 Nov 1988

Displacement, tons: 900 standard; 1,050 full load
 Dimensions, feet (metres): 193.5 × 35.8 × 12.5 (59.0 × 10.9 × 3.8)
 Main machinery: 2 Uni Diesel UD 30 V16 M4 diesels; 2,710 hp(m) (1.99 MW) sustained; 1 shaft; cp prop
 Speed, knots: 15 Range, n miles: 6,000 at 12 kt
 Complement: 38 (2 officers) plus 7 passengers
 Guns: 2—12.7 mm MGs
 Radars: Navigation: Racal Decca Bridgemaster (DRBN 38A); 1 band.

Sonars: VDS; Thomson Sintra DUBM 42 and DUBM 60A; active search; high frequency TUS TSM 2022 Mk 3 PVDS (fitted to Double Eagle ROV); active search and classification.

Comment: Same hull as Lapérouse class. Classified as Bâtiment Experimental Guerre de Mines (BEGM). Operated by the Centre d'Études, d'Instruction et d'Entraînement de la Guerre des Mines (CETIEGM) in Brest. Launched 19 March 1988. Renamed to avoid confusion with Y 700. Equipped to conduct trials on all underwater weapons and sensors for mine warfare. Can lay mines. Can support six divers.



THÉTIS 7/2008, *B Prézellin* / 1335739

7 TYPE VH 8 FASSMER SURVEY LAUNCHES (YGS)

Displacement, tons: 4.5
 Dimensions, feet (metres): 25.9 × 7.9 × 1.6 (7.9 × 2.4 × 0.5)
 Main machinery: 1 Volvo Penta Aquamatic Duotop (41 TD) diesel; 2-drive; 1 shaft; 237 hp(m) (174 kW)
 Speed, knots: 17 Range, n miles: 109
 Complement: 6

Comment: Built by Fr. Fassmer GmbH & Co (Germany); first craft delivered October 2002 and based at Toulon since July 2003. Last craft delivered October 2003. Carried by *Beautemps-Beaupré* and Lapérouse-class survey vessels. Vedette hydrographique de 8m (VH 8). Fitted with two echo sounders, one multipath echo sounder (Simrad EM 3200), side-scan towed sonar and towed magnetometer. Unofficial names: *Albatros*, *Cormoran*, *Gaëland*, *Guillemot*, *Mscareux*, *Pelican*, *Phaeton*.

1 RESEARCH SHIP (AETL)

Name	No	Builders	Launched	Commissioned
DENTI	A 743	DCANToulon	7 Oct 1975	15 July 1976

Displacement, tons: 190 full load
 Dimensions, feet (metres): 113.8 × 21.6 × 7.5 (34.7 × 6.6 × 2.3)
 Main machinery: 2 Baudouin DP8 diesels; 960 hp(m) (706 kW); 2 shafts; cp props
 Speed, knots: 12. Range, n miles: 800 at 12 kt
 Complement: 6 (2 officers) plus 6 scientists
 Radars: Navigation: Decca; I-band.

Comment: Employed on ammunition trials for DCN off Toulon. Service life extended to 2010.



DENTI 6/2007, B Prézellin / 1305035

TRAINING SHIPS

Notes: The incomplete hull of *Narvik*, the first type BAMO catamaran minehunter (project cancelled), has been adapted to act as a training hulk for marines to conduct ship assault operations. Laid up at Lorient.

2 CHIMERE CLASS (TRAINING SHIPS) (AXL)

CHIMÈRE Y 706 FARFADET Y 711

Displacement, tons: 100 full load
 Dimensions, feet (metres): 100.1 × 17.1 × 5.7 (30.5 × 5.2 × 1.75)
 Main machinery: 2 Baudouin DK4 M diesels; 400 hp (300 kW); 1 shaft
 Speed, knots: 11
 Complement: 7
 Radars: Navigation: Decca 1226; I-band.

Comment: Naval school tenders built at Bayonne and which entered service in 1970 (Y 706) and 1971 (Y 711). Due to be decommissioned in 2010.



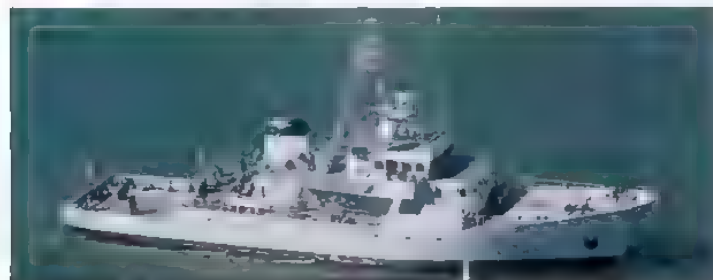
CHIMÈRE 11/2006, B Prézellin / 1040701

8 LÉOPARD CLASS (AXL)

Name	No	Builders	Commissioned
LÉOPARD	A 748	ACM, St Malo	4 Dec 1982
PANTHÈRE	A 749	ACM, St Malo	4 Dec 1982
JAGUAR	A 760	ACM, St Malo	18 Dec 1982
LYNX	A 751	La Perrière, Lorient	18 Dec 1982
GUÉPARD	A 752	ACM, St Malo	1 July 1983
CHAÇAL	A 753	ACM, St Malo	10 Sep 1983
TIGRE	A 754	La Perrière, Lorient	1 July 1983
LION	A 755	La Perrière, Lorient	10 Sep 1983

Displacement, tons: 335 standard; 470 full load
 Dimensions, feet (metres): 141 × 27.1 × 10.5 (43 × 8.3 × 3.2)
 Main machinery: 2 SACM MGO 175 V16 ASHR diesels; 2,200 hp(m) (1.62 MW); 2 shafts; cp props
 Speed, knots: 15. Range, n miles: 4,800 at 12 kt
 Complement: 15 plus 22 trainees
 Guns: 2—12.7 mm MGs.
 Radars: Navigation: Racal Decca DRBN-38A (Bridgemaster E 250), I-band.

Comment: First four ordered May 1980. Further four ordered April 1981. Form 20ème Divec (Training division) for shiphandling training and occasional EEZ patrols. Based at Brest. To be decommissioned 2010–14.



PANTHÈRE 6/2008, Michael Nitz / 1335703

2 GLYCINE CLASS (AXL)

Name	No	Builders	Commissioned
GLYCINE	A 770	Socarenam, Boulogne	11 Apr 1992
EGLANTINE	A 771	Socarenam, Boulogne	9 Sep 1992

Displacement, tons: 250 standard; 295 full load
 Dimensions, feet (metres): 92.8 × 25.3 × 12.5 (28.3 × 7.7 × 3.8)
 Main machinery: 1 Baudouin 12P15-2SR diesel, 800 hp(m) (588 kW); 1 shaft; cp prop
 Speed, knots: 10. Range, n miles: 3,800 at 10 kt
 Complement: 10 + 18 trainees
 Radars: Navigation: 4 Furuno, I-band.

Comment: Trawler type training ships. Three more built in 1995–96 as route survey craft (included under *Mine Warfare Forces* section). Based at Brest.



EGLANTINE 8/2007, B Prézellin / 1305037

2 LA BELLE POULE CLASS (AXS)

L'ÉTOILE A 649 LA BELLE POULE A 650

Displacement, tons: 275 full load
 Dimensions, feet (metres): 127 × 24.3 × 12.1 (37.5 × 7.4 × 3.7)
 Main machinery: 1 Baudouin DNP 8 diesel, 245 hp(m) (180 kW); 1 shaft
 Speed, knots: 9 (diesel)
 Complement: 20 (1 officer) plus 20 trainees

Comment: Auxiliary sail vessels. Built by Chantiers de Normandie (Fécamp) and launched 7 July 1932 and 8 February 1932 respectively. Accommodation for three officers, 30 cadets, five petty officers, 12 men. Sail area 450 m². Attached to Naval School. A 650 refitted in 2006.



LA BELLE POULE 6/2008, B Prézellin / 1335737

1 SAIL TRAINING SHIP (AXS)

LA GRAND HERMINE (ex-*La Route est Belle*, ex-*Ménestrel*) A 653

Displacement, tons: 13 full load
 Dimensions, feet (metres): 45.9 × 13.5 × 6.6 (14.0 × 4.1 × 2.0)
 Main machinery: 1 MWM D 225A diesel, 55 hp (41 kW); 1 shaft
 Speed, knots: 7
 Complement: 7
 Radars: Navigation: 1 Furuno DRBN 39; I-band.

Comment: Training yawl built in Marseille in 1932. Procured by the French Navy in 1963 and based at Brest.



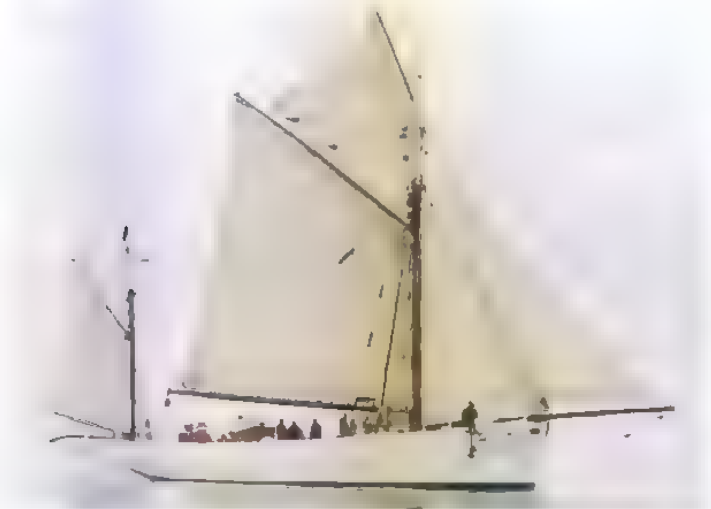
LA GRAND HERMINE 2/2005, B Prézellin / 1153158

1 SAIL TRAINING SHIP (AXS)

Name	No	Builders	Launched
MUTIN	A 652	Florimond-Guignardeau, Les Sables d'Olonne	18 Mar 1927

Displacement, tons: 57 full load
Dimensions, feet (metres): 108.3 × 21 × 11.2 (33 × 6.4 × 3.4)
Main machinery: 1 diesel; 112 hp(m) (82 kW); 1 auxiliary prop
Speed, knots: 6 (diesel)
Range, n miles: 860 at 6 kt
Complement: 12 + 8 trainees
Radars: Navigation: Furuno; I-band.

Comment: Attached to the Navigation School. Has a sail area of 312 m². This is the oldest ship in the French Navy. Used by the SOE during the Second World War.



MUTIN 7/2005, B Prézélin / 1153159

AUXILIARIES

Notes. (1) The programme to procure up to eight 'Bâtiments de Soutien et d'assistance hauturiers' (BSAH) has been delayed due to funding difficulties and may have been overtaken by plans (announced in July 2008) to charter two 'Bâtiments de Soutien, d'assistance et de dépollution' (BSAP) from Bourbon Offshore.

(2) 30–40 harbour service craft are to be procured to replace older series of harbour tenders and service craft. With the same basic hull and machinery, the class should comprise pilot boats, diving support tenders and fire-fighting craft. Entry into service is planned by 2010.

(3) Inshore transport duties at Brest and Toulon have been chartered to civilian companies. At Brest, Société Morbihannaise de Navigation (SMN) awarded a five-year contract from 1 July 2004 to transport 2,300 daily passengers from Brest to and from Lanvéoc-Poulmic and l'Île Longue. The company has progressively introduced five purposely-built light transports; *Bindy*, *Tibidy*, *Trebéron*, *Arun* and *Térenex* built 2004–05 by Gamelin, La Rochelle (aluminium hull and superstructure, 35.4 × 9 × 1.7 m, 20 kt, 400 passengers).

(4) There are plans to acquire four new AOR to replace the Durance class from about 2017

4 CHAMOIS CLASS (SUPPLY TENDERS) (AG/ATS/YDT/YPC/YPT)

Name	No	Builders	Commissioned
TAAPE	A 633	La Perrière, Lorient	2 Nov 1983
ÉLAN	A 768	La Perrière, Lorient	7 Apr 1978
CHEVREUIL	A 774	La Perrière, Lorient	7 Oct 1977
GAZELLE	A 775	La Perrière, Lorient	13 Jan 1978

Displacement, tons: 315 (375 A 633) light, 505 full load
Dimensions, feet (metres): 136.1 × 24.6 × 10.5 (41.5 × 7.5 × 3.2)
Main machinery: 2 SACM AGO 175 V16 diesels; 2,850 hp(m) (2.06 MW); 2 shafts; cp props; bow thruster
Speed, knots: 14.5
Range, n miles: 7,200 (6,000 A 633) at 12 kt
Complement: 20 plus 12 spare berths
Radars: Navigation: Racal Decca 1226; I-band.

Comment: Similar to the standard fish oil rig support ships. Can act as tugs, oil pollution vessels, salvage craft (two 30 ton and two 5 ton winches), coastal and harbour controlled minelaying, torpedo recovery, diving tenders and a variety of other tasks. Bollard pull 25 tons. Can carry 100 tons of stores on deck or 125 tons of fuel and 40 tons of water or 65 tons of fuel and 120 tons of water. *Taape* ordered in March 1982 from La Perrière of improved design but basically similar with bridge one deck higher. *Élan* based at Cherbourg, remainder at Toulon. Three paid off so far, one of which (ex-*Chamois*) transferred to Madagascar in May 1996. *Élan*, *Chevreuil* and *Gazelle* to be decommissioned in late 2009 and *Taape* in 2013.



CHEVREUIL 4/2008*, B Prézélin / 1335736

4 DURANCE CLASS
(UNDERWAY REPLENISHMENT TANKERS) (AORHM)

Name	No	Builders	Laid down	Launched	Commissioned
MEUSE	A 607	Brest Naval Dockyard	2 June 1977	2 Dec 1978	21 Nov 1980
VAR	A 608	Brest Naval Dockyard	8 May 1979	1 June 1981	29 Jan 1983
MARNE	A 630	Brest Naval Dockyard	4 Aug 1982	2 Feb 1985	16 Jan 1987
SOMME	A 631	Normed, la Seyne	3 May 1985	3 Oct 1987	7 Mar 1990

Displacement, tons: 7,600 (A 607); 7,800 (others) standard; 17,900 (A 607); 18,500 (others) full load
Dimensions, feet (metres): 515.9 × 69.5 × 38.5 (157.3 × 21.2 × 10.8)
Main machinery: 2 SEMT-Pielstick 16 PC2.5 V 400 diesels, 20,800 hp(m) (15.3 MW) sustained; 2 shafts; LIPS cp props
Speed, knots: 19
Range, n miles: 9,000 at 15 kt
Complement: 162 (11 officers) plus 29 spare
Cargo capacity: 1,300 tons FFO; 5,200 diesel; 3,000 TR5 Avcat; 130 distilled water; 170 victuals; 150 munitions, 50 naval stores (*Meuse*) 1,300 tons FFO; 8,400 diesel; 1,090 TR5 Avcat; 260 distilled water; 170 munitions; 250 tons spare parts (*Var*, *Somme* and *Marne*)

Missiles: SAM: 3 (1 in A 607) Matra Simbad twin launchers, Mistral; IR homing to 4 km (2.2 n miles); warhead 3 kg.
Guns: 1 Bofors 40 mm/L 60
 2 Oerlikon Mk 10 20 mm.
 4—12.7 mm MGs
Countermeasures: ESM/ECM
Combat data systems: AIDCOMER command support system (fitted for BCR ships). Syracuse and INMARSAT SATCOM
Radars: Navigation: 2 Racal Decca Bridgemaster (DRBN 38A); I-band.

Helicopters: 1 SA 319B Atouette III.

Programmes: One classed as Pétrolier Ravitailleur d'Escadres (PRE). Other three classed as Bâtiments de Commandement et de Ravitaillement (BCR; Command and Replenishment Ships)

Modernisation: EW equipment fitted to improve air defences under the 3A programme in 1996–99. Simbad SAM may be carried at bridge deck level. Oerlikon 20 mm to be replaced by 12.7 mm MGs.

Structure: Four beam transfer positions and two stern, two of the beam positions having heavy transfer capability. *Var*, *Marne* and *Somme* differ from *Meuse* in several respects. The bridge extends further aft, boats are located either side of the funnel and a crane is located between the gantries. Also fitted with Syracuse 3 SATCOM

Operational: *Var*, *Marne* and *Somme* are designed to carry a Maritime Zone staff or Commander of a Logistic Formation and a commando unit of up to 45 men. Capable of accommodating 250 men. Assigned to FAN with one of the three BCR ships deployed to the Indian Ocean as a Flagship. *Somme* replaced *Var* in that role for two years from August 2009. To be replaced after 2015 by new ships

Sales: One to Australia built locally; two of similar but smaller design to Saudi Arabia. One to Argentina in July 1999.



MEUSE 2/2008*, B Prézélin / 1335735



MARNE 3/2007, Paul Daly / 1170125

1 ALIZE CLASS (DIVING TENDER) (YDT)

Name	No	Builders	Commissioned
ALIZÉ	A 645	Socarénam, Boulogne	8 Nov 2005

Displacement, tons: 1,100 standard; 1,700 full load
Dimensions, feet (metres): 196.8 × 45.3 × 16.4 (60.0 × 13.8 × 5.0)
Main machinery: 2 ABC diesels; 3,800 hp (2.8 MW); 2 shafts; bow thruster
Speed, knots: 14 **Range, n miles:** 7,500 at 12 kt
Complement: 17 (3 officers) plus 30 passengers
Guns: 2—12.7 mm MGs.
Radars: Navigation: Racal Decca Bridgemaster (DRBN 38A); I-band
Helicopters: Platform for one medium.

Comment: Ordered in November 2003. Replaced *Isard* in diving support role in 2006. Equipped with recompression chamber and medical facilities. Based at Toulon.



ALIZÉ 6/2007, Per Körnefeldt / 1170123

270 France/Auxiliaries

1 LE MALIN CLASS (YDT)

LE MALIN (ex-Apache) A 616

Displacement, tons: 1,100 full load
Dimensions, feet (metres): 177.2 x 36.1 x 7 (54.0 x 11.0 x 7)
Main machinery: 1 diesel; 2,550 hp (1.9 MW); 1 shaft
Speed, knots: 14
Complement: 16 (2 officers)
Radars: Navigation 2 Furuno, I-band.

Comment: Ex-fishing vessel built in Gdansk in 1997, seized on 23 June 2004 and acquired by the French Navy on 7 September 2005 at Port des Galets (La Reunion). Refitted at Toulon in 2006 and entered French naval service as a diving tender replacing *Poséidon* in that role in April 2006. Based at Toulon.



LE MALIN

10/2006, B Prézélin / 1040705

1 RR 4000 TYPE (SUPPLY TENDERS) (AFL)

Name	No	Builders	Commissioned
REVI	A 635	Breheret, Couéron	9 Mar 1985

Displacement, tons: 1,035 light, 1,577 full load
Dimensions, feet (metres): 167.3 x 41.3 x 13.1 (51 x 12.6 x 4)
Main machinery: 2 SACM-Wärtsilä AGO 195 V12 M6 diesels; 4,410 hp(m) (3.24 MW); 2 shafts; cp props; 2 bow thrusters; 400 hp (300 kW)
Speed, knots: 14.5
Range, n miles: 5,800 at 12 kt
Complement: 26 (2 officers) plus 8 passengers
Radars: Navigation, Racal Decca Bridgemaster (DRBN 38A); I-band.

Comment: 'Remorqueurs ravitailleurs' built for le Centre d'Expérimentation du Pacifique. Can carry 400 tons of cargo or six 20 ft containers, 50 ton gantry and 18 ton cranes. Two water cannons on deck. Boilard pull 47 tons. Based at Papeete.



RR 4000 CLASS

4/2007, B Prézélin / 1305040

1 TRANSPORT LANDING SHIP (LSL)

Name	No	Builders	Commissioned
GAPEAU	L 9090	Chantier Serra, la Seyne	2 Oct 1987

Displacement, tons: 563 standard; 1,090 full load
Dimensions, feet (metres): 216.5 x 41.0 x 11.2 (66 x 12.5 x 3.4)
Main machinery: 2 diesels; 550 hp(m) (404 kW); 2 shafts
Speed, knots: 11
Range, n miles: 1,900 at 10 kt
Complement: 6 + 30 scientists
Cargo capacity: 460 tons
Radars: Navigation: Racal Decca 1226 and Furuno FRS 1000; I-band.

Comment: Supply ship with bow doors. Operates for Centre d'Essais de la Méditerranée. Conducts transfers between Toulon or Port Pothuau and Levant Island (missile range).



GAPEAU

5/2003, Per Körnefeldt / 0309982

1 MOORING VESSEL (ABU)

TELENN MOR Y 692

Displacement, tons: 392 standard; 520 full load
Dimensions, feet (metres): 135.8 x 29.9 x 6.2 (41.4 x 9.1 x 1.9)
Main machinery: 2 Baudouin diesels, 900 hp(m) (670 kW)
Speed, knots: 8
Radars: 1 Racal Decca; I-band

Comment: Commissioned on 16 January 1986 and based at Brest. Equipped with 18 ton hydraulic crane.



TELENN MOR

8/2006, B Prézélin / 1040706

2 RANGE SUPPORT VESSELS (YFRT)

Athos A 712	Aramis A 713
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Displacement, tons: 89 standard; 108 full load
Dimensions, feet (metres): 105.3 x 21.3 x 6.2 (32.1 x 6.5 x 1.9)
Main machinery: 2 SACM UD 33V12 M5 diesels; 3,950 hp(m) (2.94 MW); 2 shafts
Speed, knots: 28
Range, n miles: 1,200 at 15 kt
Complement: 13 plus 6 passengers
Guns: 1—12.7 mm MG
Radars: Navigation, Racal Decca 1226 (A 712); Furuno (A 713); I-band.

Comment: Built by Chantiers Navals de l'Estérel for Missile Trials Centre of des Landes (CELM). Based at Bayonne, forming Groupe des Vedettes de l'Adour. A 712 commissioned 20 November 1979 and A 713 on 9 September 1980. Classified as Range Safety Craft from July 1995. Athos completed refit at Cherbourg in April 2003. Service life extended to 2010.



ATHOS

5/2008, B Prézélin / 1336734

9 VIP 21 DIVING TENDERS (YDT)

Dionée Y 790	Liseron Y 793	Genéty Y 796
Myosotis Y 791	Magnolia Y 794	Giroflée Y 797
Gardénia Y 792	Ajoncy Y 795	Acanthe Y 798

Displacement, tons: 35 standard; 49 full load
Dimensions, feet (metres): 71.2 x 16.1 x 5.2 (21.7 x 4.9 x 1.6)
Main machinery: 2 Baudouin 12F11M or V6TI 330 diesels; 530 hp(m) (390 kW); 3 shafts (1 for loitering)
Speed, knots: 13. **Range, n miles:** 500 at 12 kt
Complement: 4 plus 14 divers
Radars: Navigation, Racal Decca RD 170

Comment: Diving tenders built at Lorient. First one delivered in February 1990. Y 794 and Y 798 based at Cherbourg. Y 790, Y 791, Y 792, Y 795 and Y 797 based at Toulon. Y 793 and Y 796 based at Brest. Rated as 'Vedettes d'Instruction Plongée de 21 m (VIP 21)', divers training craft, and 'Vedettes d'Intervention Plongeurs-Démineurs (VIPD 21)', clearance diving team support craft.



GENÉT

5/2008, B Prézélin / 1336733

10 TYPE V14 (HARBOUR CRAFT) (YFL)

TAINA Y 754	PALANGRIN Y 777	AUTÉ Y 786
L'ÉTOILE DE MER Y 762	Y 779	TIARÉ Y 787
DHARUBA Y 763	Y 780	
AVEL MORY Y 765	Y 781	

Displacement, tons: 14.5 standard; 19.5 full load
 Dimensions, feet (metres): 47.9 x 15.1 x 6.2 (14.6 x 4.6 x 1.9)
 Main machinery: 2 Baudouin diesels; 1,000-750 hp (735-551 kW); 2 shafts
 Speed, knots: 25
 Range, n miles: 400 at 11 kt
 Complement: 4

Comment: Y 754, Y 786 (both at Brest) and Y 787 (Nouméa) are small personnel transport craft. Y 762 (Toulon) and Y 765 (Brest) VIP transport craft. Y 763 and P 790 patrol boats (the latter having been used by the Gendarmerie Maritime), both based at Mayotte, Indian Ocean. Y 777 (Brest) radiological monitoring craft. Y 779 (Cherbourg), Y 780 (Brest) and Y 781 (Toulon) pilot craft. Design by DCN Cherbourg. Same hull and similar arrangement as for PBs manned by the Gendarmerie Maritime (see *Government Forces*). Built under control of DCN Lorient by Stento Shipyard, Balaruc-les-Bains in 1987-88, or by Chantiers Alan Sibiri, Carantec, in 1990-93



Y 786 9/2007, B Prézelin / 1305047



Y 777 9/2007, B Prézelin / 1305045

2 VTP CLASS (TRANSPORTS) (YFB)

KERMEUR Y 758	KERNALEGUEN Y 759
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Displacement, tons: 15 standard, 21 full load
 Dimensions, feet (metres): 45.9 x 7 x 7 (14.0 x 7 x 7)
 Main machinery: 2 MAN diesels; 800 hp (600 kW); 2 shafts
 Speed, knots: 8
 Complement: 3 + 45 passengers
 Radars: Navigation; Furuno; I-band.

Comment: Built by Raidco Marine and delivered 19 September 2006. GRP hull and superstructure. Used as transport craft at l'île Longue.



KERMEUR 8/2007, B Prézelin / 1305044

6 FLOATING REPAIR FACILITIES

Comment: There is one 150 x 33 m floating dock of 3,800 tons capacity, built at Brest in 1975. Based at Papeete. There are five floating cranes: three 15 ton cranes at Toulon (GFA 1, 3 and 4), one at Brest (GFA 6 *Alpaga*) and one 60 ton crane at Cherbourg.

2 PHAÉTON CLASS (TOWED ARRAY TENDERS) (YAG)

PHAÉTON Y 656	MACHAON Y 657
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Displacement, tons: 69 standard; 75 full load
 Dimensions, feet (metres): 63.0 x 22.3 x 3.9 (19.2 x 6.8 x 1.2)
 Main machinery: 2 SACM diesel; 720 hp (530 kW); waterjet
 Speed, knots: 8. Range, n miles: 300 at 8 kt
 Complement: 4

Comment: 18.6 m catamarans built in 1993-94 at Brest. Water-jet propulsion, speed 8 kt. Hydraulic crane and winch to handle submarine towed arrays. *Phaéton* based at Toulon. *Machaon* at Brest.



MACHAON 6/2008*, B Prézelin / 1335732

42 + 5 HARBOUR SUPPORT CRAFT

Comment: There are 11 oil barges (CICGH), one of which is of 1,200 tonnes and the rest between 100 and 800 tonnes, eight 400 tonne oily bilge barges (CIEM), three anti-pollution barges (800 tonne BAPM, and two 400 tonne CIEP), and seven water barges (CIE, 120 to 400 tonnes). Some self-propelled. Also 10 self-propelled YFLUs (CHA 27-30, 32, 34-38), and one 15 m Saa Truck craft (*Anthies*)



CHA 30 10/1999, van Ginderen Collection / 0069961

1 RADIOLOGICAL MONITORING CRAFT (AGE)

CORALLINE A 790

Displacement, tons: 41 standard; 49 full load
 Dimensions, feet (metres): 71.2 x 16.1 x 5.2 (21.7 x 4.9 x 1.6)
 Main machinery: 2 Baudouin 12F11M diesels, 530 hp (390 kW); 2 shafts
 Speed, knots: 13. Range, n miles: 500 at 12 kt
 Complement: 7
 Radars: Navigation. Furuno 1832, I-band

Comment: Built by DCN Lorient and delivered 1 December 1990. Similar to VIP 21 diving tenders but with different superstructure. Employed on radiation monitoring tasks at Cherbourg.

3 VIR FIREFIGHTING CRAFT (YTR)

AVEL ABER (ex- <i>Eloarn</i>) Y 783	LA LOUDE Y 784	LA DIVETTE Y 785
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Displacement, tons: 14 standard; 23 full load
 Dimensions, feet (metres): 47.9 x 15.1 x 6.2 (14.6 x 4.6 x 1.9)
 Main machinery: 2 Baudouin V6 T1450 diesels; 750 hp (550 kW); 2 shafts
 Speed, knots: 17. Range, n miles: 110 at 12 kt
 Complement: 4
 Radars: Navigation. Furuno 1832; I-band

Comment: Firefighting craft built by Alan Sibiri, Carantec, and delivered in 1993-94. Similar to V 14 craft. Equipped with two water cannons.



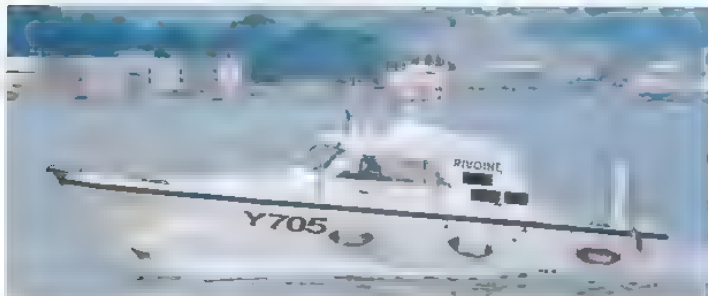
AVEL ABER 8/2008*, B Prézelin / 1335731

5 COUACH-PLASCOA 980 (SERVICE CRAFT) (YFL)

NYMPHEA Y 603 (ex-P706) **PIVOINE** Y 705 (ex-P705)
FUCHSIA Y 604 (ex-P712) **GENERAL DELFOSSE** Y 710 (ex-P 710)
GENDARME PEREZ Y 605 (ex-P 708)

Displacement, tons: 6 standard; 7 full load
Dimensions, feet (metres): 32.5 x 12.2 x 3.3 (9.9 x 3.73 x 1.0)
Main machinery: 2 Volvo Penta TAMD 61 diesels; 500 hp (370 kW); 2 shafts
Speed, knots: 28. **Range, n miles:** 200 at 15 kt
Complement: 4
Radars: Navigation: Furuno 2400; I-band.

Comment: Former Gendarmerie Maritime craft built in 1985 and transferred in 2004-05. Based at Brest (*Nymphée, General Delfosse*), Toulon (*Pivoine*), Saint Mandrier (*Fuchsia, Gendarme Perez*).



PIVOINE 10/2006, B Prézélin / 1040/11

6 ARCOR 34 (SERVICE CRAFT) (YFL)

LAVANDE Y 606 (ex-P 717) **GENTIANE** - (ex-P 711) **STERDEN**
LILAS Y 703 (ex-P 703) **BEGONIA** - (ex-P 704) **AN HEOL**

Displacement, tons: 7 standard, 8 full load
Dimensions, feet (metres): 33.8 x 12.3 x 3.34 (10.3 x 3.7 x 1.0)
Main machinery: 2 Volvo Penta TAMD 61 diesels; 500 hp (370 kW); 2 shafts
Speed, knots: 26. **Range, n miles:** 200 at 20 kt
Complement: 3
Radars: Navigation: Furuno 1830, I-band.

Comment: Built in 1989-90 by CN d'Aquitaine. *Sterden* and *An Heol* are used as transport craft in the submarine base at l'Île Longue. The others are former Gendarmerie Maritime craft transferred in 2004-05. Based at Brest (*Begonia*), l'Ecole Navale (*Lilas*), Saint Mandrier (*Lavande*) and Hyères (*Gentiane*).

5 SELF-PROPELLED FLOATING CRANES (YD)

Y 675-679

Displacement, tons: To be announced
Dimensions, feet (metres): 70.2 x 37.7 x 5.6 (21.4 x 9.9 x 1.7)
Main machinery: 2 diesels; 300 hp (220 kW); 2 shafts
Speed, knots: 6
Complement: 3

Comment: Ordered from Socarenam, Boulogne-sur-Mer on 16 January 2007 and delivered in March 2008. Equipped with a crane with a capacity of 8.3 tonnes to 8.5 metres and a winch with a capacity of 12 tonnes. Capable of carrying 24 tonnes of cargo. One based at Cherbourg and two each at Brest and Toulon.



Y 677 5/2008, B Prézélin / 1335/30

TUGS

2 ESTEREL (TYPE RPC 50) CLASS (COASTAL/HARBOUR TUGS) (YTM)

ESTEREL A 641 (ex-Y 601) **LUBÉRON** A 642 (ex-Y 602)

Displacement, tons: 510 standard; 670 full load
Dimensions, feet (metres): 119.1 oa; 116.5 wl x 38.1 x 16.4 (36.3; 35.5 x 11.6 x 5)
Main machinery: 2 ABC 8 DZ 1000, 179 diesels; 2 Voith-Schneider 28 GII propulsors; 5,120 hp(m) (3,812 kW)
Speed, knots: 14. **Range, n miles:** 1,500 at 12 kt
Complement: 8
Radars: Navigation: Furuno DRBN 39; I-band

Comment: Ordered 15 December 2000; built by SOCARENAM, Boulogne. *Estérel* delivered 27 March 2002 and *Lubéron* 4 July 2002. Based at Toulon to assist *Charles de Gaulle* in harbour. Bollard pull 52 tonnes; 1,350 kN towing winch, fire fighting equipment, 20 cubic metre tank for pollution control dispersal agent. Classified as 'Remorqueurs portuaires et côtiers de 50 tonnes de traction' (RPC 50, 50 tonne bollard pull harbour tugs).



ESTEREL 6/2008, B Prézélin / 1335/29

2 OCEAN TUGS (ATA)

MALABAR A 664 **TENACE** A 669

Displacement, tons: 1,080 light; 1,454 full load
Dimensions, feet (metres): 167.3 x 37.8 x 18.6 (51 x 11.5 x 5.7)
Main machinery: 2 Krupp MaK 9 M 452 AK diesels, 4,600 hp(m) (3.38 MW); 1 shaft; Kort nozzle
Speed, knots: 15
Range, n miles: 9,500 at 13 kt
Complement: 56 (2 officers)
Radars: Navigation: Racal Decca RM 1226 (A 669); Racal Decca 060 (A 664); I-band. Racal Decca 080; I-band.

Comment: *Malabar* and *Tenace* built by J. Oelkers, Hamburg. *Tenace* commissioned 15 November 1973, and *Malabar* on 3 February 1976. Based at Brest. Can carry firefighting and oil-pollution control equipment. Bollard pull, 60 tons. One of the class to Turkey in 1999. To be decommissioned in 2011.



MALABAR 7/2006, B Prézélin / 1040/12

3 BÉLIER CLASS (YTB)

BÉLIER A 695 **BUFFLE** A 696 **BISON** A 697

Displacement, tons: 356 light; 500 full load
Dimensions, feet (metres): 104.3 x 30.2 x 13.8 (31.8 x 9.2 x 4.2)
Main machinery: 2 SACM-Wärtsilä UD 33V12 M4 diesels; 2,600 hp(m) (1.91 MW); 2 Voith-Schneider props
Speed, knots: 11
Complement: 12
Radars: Navigation: Racal-Decca C 810; I-band.

Comment: Built by DCN at Cherbourg. *Bélier* commissioned 10 July 1980, *Buffle* on 19 July 1980, *Bison* on 16 April 1981. A 695 and 697 based at Toulon and A 696 at Brest. Bollard pull, 25 tons. Service life: 2015



BISON 6/2008, Cor Van Nierkerken / 1335/82

3 MAÏTO CLASS (YTM)

MAÏTO A 636 **MAROA A 637** **MANINI A 638**

Displacement, tons: 228 standard, 280 full load
Dimensions, feet (metres): 90.5 × 27.2 × 11.5 (27.6 × 8.3 × 3.5)
Main machinery: 2 SACM Wärtsilä UD 30 L6 M6 diesels; 1,280 hp(m) (940 kW); 2 Voith-Schneider propulsors
Speed, knots: 11
Range, n miles: 1,200 at 11 kt
Complement: 6 + 4 passengers
Radar: Navigation: Racal-Decca 1226, I-band.

Comment: Built by SFCN, Villeneuve-La-Garonne, and formerly used at the CEP Nuclear Test Range. *Maïto* commissioned 25 July 1984 and is based at Martinique. *Maroa* (commissioned 28 July 1984) and *Manini* (commissioned 12 September 1985) are both based at Papeete, Tahiti. Bollard pull, 12 tons. Fire-fighting water cannon



MAÏTO 11/2006, *M Declerck* / 1167128

16 FRÉHEL CLASS (COASTAL TUGS) (YTM)

LARDIER Y 638 **TAILLAT Y 642** **FREHEL A 675** **KÉREON (ex-Sicie) A 679**
GIENS Y 639 **NIVIDIC Y 643** **SAIRE A 676** **SICIE A 680**
MENGAM Y 640 **LE FOUR Y 647** **ARMEN A 677** **TAUNOA A 681**
BALAGUIER Y 641 **PORT CROS Y 649** **LA HOUSSAYE A 678** **RASCAS A 682**

Displacement, tons: 220 standard, 259 full load
Dimensions, feet (metres): 82 × 27.6 × 11.2 (25 × 8.4 × 3.4)
Main machinery: 2 SACM-Wärtsilä UD 30 V12 M3 diesels (A 675 and 676); 2 Baudouin P 15 25 (others); 2 Voith-Schneider propulsors; 1,280 hp(m) (941 kW); 1,360 hp(m) (1 MW) in later vessels
Speed, knots: 11
Range, n miles: 800 at 10 kt
Complement: 8 (coastal); 5 (harbour)
Radars: 1 Racal Decca RM 170 or Bridgemaster C 181; I-band

Comment: Built at Lorient Naval et Industries shipyard (formerly Chantiers et Ateliers de la Perrière, now part of Leroux et Lotz) and at Boulogne by SOCARENAM. *Fréhel* in service 23 May 1989, based at Cherbourg, *Saire* 6 October 1989 at Cherbourg, *Armen* 6 December 1991 at Brest, *La Houssaye* 30 October 1992 at Brest, *Kéréon* 5 December 1992 at Brest, *Mengam* 6 October 1994 at Brest and *Sicie* 6 October 1994 at Toulon, *Giens* 2 December 1994 at Toulon, *Lardier* 12 March 1995 at Toulon, *Balaguiier* 8 July 1995 at Toulon, *Taillet* 18 October 1995 at Toulon, *Taunoa* completed 9 March 1996 at Brest, *Nividic* on 13 February 1996 at Brest, *Port Cros* on 21 June 1997 at Toulon, *Le Four* on 13 March 1998 at Brest and *Rascas* on 22 November 2003 at Toulon. Bollard pull 12 tons. Type RPC 12 coastal tugs, with 'A' pennant numbers and a crew of eight. Type RP12 harbour tugs with 'Y' pennant numbers and a crew of five. A further order for six craft has been abandoned.



LARDIER 6/2008*, *Cor Van Nierkerken* / 1335781

4 TYPE RP 10 HARBOUR TUGS/PUSHERS (YT)

MORSE Y 770 **OTARIE Y 771** **LOUTRE Y 772** **PHOQUE Y 773**

Displacement, tons: 83 standard; 97 full load
Dimensions, feet (metres): 47.2 × 21.0 × 6.9 (14.4 × 6.4 × 2.1)
Main machinery: 2 Baudouin 6R123S diesels; 800 hp (588 kW); 2 shafts
Speed, knots: 8
Range, n miles: 160 at 7 kt
Complement: 4
Radars: Navigation: Furuno M 1832; I-band.

Comment: Ordered on 21 November 2003. All entered service on 5 October 2005. Built by SOCARENAM, Boulogne. Bollard pull 10 tons. *Morse* based at Mayotte and the remainder at Toulon



OTARIE 4/2008*, *B Prézelin* / 1335728

1 ACTIF CLASS (YTM)

ACHARNÉ A 693

Displacement, tons: 218 standard; 293 full load
Dimensions, feet (metres): 89.9 × 24.6 × 14.8 (27.4 × 7.5 × 4.5)
Main machinery: 1 SACM MGO V16 diesel, 1,050 hp(m) (773 kW); 1 shaft; prop in Kort nozzle
Speed, knots: 11 **Range, n miles:** 4,100 at 10 kt
Complement: 15
Radars: Navigation: 1 Decca; I band.

Comment: Last of 12 coastal tugs commissioned 5 July 1974. Bollard pull 13 tons. Based at Cherbourg. To be decommissioned in 2010



ACHARNÉ 6/2003, *Schaeffer/Marsen* / 0569968

2 BONITE (TYPE RP 380) CLASS (HARBOUR TUGS) (YTL)

BONITE Y 630 **ROUGET Y 634**

Displacement, tons: 95 full load
Dimensions, feet (metres): 68.2 × 20.3 × 8.5 (20.8 × 6.2 × 2.6)
Main machinery: 1 Poyaud UD 1215 diesel; 380 hp (280 kW); 1 shaft
Speed, knots: 10
Complement: 7

Comment: Both built by Schneider, Châlons-sur-Saône, and commissioned in 1975. Attached to the Naval Academy and Training Centre. Based at Lanvéoc-Poulmic, near Brest. Service life 2010.

4 TYPE PSS 10 PUSHER TUGS (YTL)

P 101-104

Displacement, tons: 44 standard; 69 full load
Dimensions, feet (metres): 57.4 × 21.0 × 6.6 (17.5 × 6.4 × 2.0)
Main machinery: 2 Poyaud UD 25 L06 M4D diesels; 800 hp (588 kW); 2 shafts in Kort nozzles
Speed, knots: 10. **Range, n miles:** 480 at 6 kt
Complement: 3

Comment: Built by Leroux Naval Industrie, Lorient, and commissioned in 1993. Designed to handle Le Triomphant class SSBNs. *P 101* and *P 102* based at Brest and *P 103* and *P 104* at Cherbourg.



P 101 6/2008*, *B Prézelin* / 1335727

274 France/Tugs – Government maritime forces

26 TYPE P4 PUSHER TUGS (YTL)

P 6 P 13-24 P 26-38

Displacement, tons: 28 standard; 30 full load
Dimensions, feet (metres): 39.0 × 14.4 × 6.9 (11.9 × 4.4 × 2.1)
Main machinery: 2 Poyaud UD 6 (P 6); 430 hp (316 kW) or Poyaud UD 18 (P 13-30); 440 hp (324 kW) or Baudouin V6 TI 330 (P 31-38); 480 hp (353 kW) diesels, 2 shafts
Speed, knots: 9
Range, n miles: 540 at 8 kt
Complement: 3

Comment: Built by shipyards at Brest and Lorient. P 6 entered service in 1973, P 13-18 1982-83 and the remainder 1989-97. Based at naval bases in France and overseas. Bollard pull 5 tons.



P 17

5/2008*, B Prézélin, 1335/26



ABEILLE BOURBON

8/2008*, B Prézélin / 1335725

1 ULSTEIN UT 710 (SALVAGE AND RESCUE TUG) (ARS)

ARGONAUTE (ex-Island Patriot)

Displacement, tons: 2,371 standard; 4,420 full load
Dimensions, feet (metres): 226.0 × 50.8 × 23.0 (68.9 × 15.5 × 7)
Main machinery: 2 Rolls Royce Bergen BRM-9 diesels; 10,800 hp(m) (8.1 MW); 2 shafts; 2 cp props with Kort nozzles; 2 bow and 1 stern thrusters
Speed, knots: 16
Range, n miles: 19,000 at 10 kt
Complement: 9 plus 22 passengers
Radars: Navigation: 2 Raytheon; I-band

Comment: Built by Aker-Brevik Construction AS, Norway, the ship was launched on 7 July 2003 and entered service with Island Offshore on 12 December 2003. Chartered by the French government from 1 January 2004 and modified in June 2004 to meet naval requirements. Based at Brest. Fitted for pollution control and with fire-fighting equipment. Capable of operating an ROV.



ARGONAUTE

6/2008*, Richard Scott / 1335780

GOVERNMENT MARITIME FORCES

Notes: (1) 'Action de l'Etat en Mer (AEM)' encompasses all activities regarding maritime surveillance and sea traffic control, fishery protection and policing, SAR, safety of navigation, pollution control and so on. It involves the Marine Nationale (navy), the Gendarmerie Maritime, the Affaires Maritimes, the Douanes françaises (customs), the Administration des Phares et Balises (lighthouses and navigation aids management organisation) and some local police forces. The organisation is for French mainland as well as for overseas territories. In homeland waters, it is under the direct control of the flag officers (C-in-Cs) at Cherbourg, Brest and Toulon. All ships and craft involved in AEM tasks display 'AEM markings' (inclined blue/white/red stripes on their hull sides). This also applies to naval manned patrol vessels (patrouilleurs de service public, PSP) and to the Eurocopter SA 365N Dauphin 2 helicopters acquired by the naval air arm for SAR duties. (2) For the 'Sauvegarde maritime' (maritime approaches surveillance organisation), most AEM tasked vessels (including naval OPVs) and coastal VTS are connected, through a dedicated datalink, to the Spationav common maritime picture network. Spationav display terminals are also being fitted to the Dassault Falcon 50M land-based maritime surveillance aircraft.

AUXILIARIES

Notes: (1) Permanently chartered vessels for AEM tasks include four salvage and rescue tugs, and four support and pollution fighting vessels. They perform civilian tasks such as safety of navigation, SAR, pollution control, and military missions in support of the fleet: torpedo recovery, diving operation support, submarine crew rescue, experiments, and so on. (2) In addition, the UK tug *Anglian Monarch* is chartered from Klyne Tugs Ltd, under a share agreement with the UK Maritime and Coast Guard Agency. Based at Dover. (3) A contract was renewed with Abeilles International in July 2002 for emergency use of a large fleet of harbour tugs. Similar contracts are concluded with local fishing associations. (4) The DGA (Directorate General for Armament) charters the 67 m *Langevin* for submarine associated trials. (5) On 29 November 2005, the European Maritime Safety Agency (EMSA) contracted Louis Dreyfus Armateurs (LDA) for the standby charter of the cable repair vessel *He de Bréhat* (built 2001, 14,960 UMS, 140 m, 15 kt) for oil recovery during emergencies. Currently chartered for the maintenance and repairs of transatlantic submarine cables, this ship is based at Brest. It will receive some modifications to be classified as '(standby) oil recovery vessel'; it will be capable of recovering and storing up to 4,000 m³ of polluted water and of deploying a ROV.

2 ULSTEIN UT 515 (SALVAGE AND RESCUE TUGS) (ARS)

ABEILLE BOURBON ABEILLE LIBERTÉ

Displacement, tons: 3,200 standard; 4,000 full load
Dimensions, feet (metres): 262.5 × 54.1 × 21.3 (80.0 × 16.5 × 6.5)
Main machinery: 4 MaK 8M32C diesels; 21,700 hp(m) (16 MW); 2 shafts; 2 cp props; 2 bow and 2 stern thrusters
Speed, knots: 19.5
Complement: 12
Radars: Navigation: 2 Furuno; I-band.

Comment: Contract awarded in November 2003 to Abeilles International for the procurement and operation (over eight years) of two Ulstein 515 salvage tugs, classified as Remorques d'Intervention, d'Assistance et de Sauvetage (RIAS). Equipped with a 500 ton towing winch and with extensive fire-fighting and pollution control equipment. Vessels built by Maritim, Gdansk and outfitted by Myklebust, Norway. The first ship, *Abeille Bourbon*, entered service on 21 May 2005 and is based at Brest. She was fitted with a reinforced bow in November 2007. *Abeille Liberté* entered service on 25 October 2005 and is based at Cherbourg. There are two crews of 12 per ship.

2 ULSTEIN UT 507 CLASS (SALVAGE TUGS) (ARS)

ABEILLE FLANDRE (ex-Neptun Suecia)

ABEILLE LANGUEDOC (ex-Neptun Gothia)

Displacement, tons: 3,000 standard; 3,500 full load
Dimensions, feet (metres): 207.7 × 47.2 × 23.9 (63.4 × 14.4 × 7.3)
Main machinery: 4 MaK 8M453AK diesels; 23,000 hp (16.9 MW); 2 cp props; 2 Ulstein bow thrusters
Speed, knots: 17
Range, n miles: 36,000 at 10 kt
Complement: 12
Radars: Navigation: 1 Racal Decca Bridgemaster; 1 Racal Decca Bright Track 90, E/F-band

Comment: Built by Ulstein Hatho A/S, Norway and entered service in 1978 and 1979. On long-term charter from Abeilles International since 14 December 1979. Bollard pull 180 tons. *Abeille Flandre* based at Toulon since 30 May 2005 and *Abeille Languedoc* at La Pallice, near La Rochelle, since 25 October 2005. Both ships refitted in 2005.



ABEILLE FLANDRE

8/2008*, B Prézélin / 1335774

2 ULSTEIN UT 711 CLASS (BUOY TENDERS) (ABU)

ALCYON (ex-Bahram) **AILETTE** (ex-Cyrus)

Displacement, tons: 1,210 standard; 1,900 full load
Dimensions, feet (metres): 173.9 x 43.6 x 22.3 (53.0 x 13.3 x 6.8)
Main machinery: 2 Bergens-Normo KVMB-12 diesels; 6,200 hp (3.9 MW); 2 cp props, 1 Ulstein 90 bow thruster; 500 hp (370 kW); 1 Rolls Royce bow thruster (Ailette only), 400 hp (300 kW)
Speed, knots: 14.5. **Range, n miles:** 5,400 at 14 kt
Complement: 7 plus 15 passengers
Radars: Navigation: Racal-Decca Bridgemaster 252C and Furuno FR 2120; I-band.

Comment: Built by A & C de la Manche, Dieppe and entered service in 1981 and 1982. On long-term charter from SURF (Groupe Bourbon). Former oil-field supply vessels both modernised in 2002-03 by Chantiers Pirou, Concarneau, for limited oil-pollution control activities: TRANSREC 250 sea skimming system and polluted water storage capacity of 500 m³. New 23 ton hydraulic deck crane fitted; dynamic positioning system fitted to *Ailette*. Deck capacity 480 tons and bollard pull of 64 tons. *Alcyon* based at Brest and *Ailette* at Toulon.



AILETTE 2/2008, B Prézélin / 1336/23

1 ULSTEIN UT 704 CLASS (SALVAGE AND RESCUE TUG) (ARS)

CARANGUE (ex-Pilot Fish, ex-Smit Lloyd 119, ex-Maersk Handler)

Displacement, tons: 1,300 standard; 2,000 full load
Dimensions, feet (metres): 212.3 x 45.3 x 19.7 (64.7 x 13.8 x 6.0)
Main machinery: 2 Nohars-Nohab F2 16V-D diesels; 7,050 hp (5.2 MW); 2 cp props; bow thruster
Speed, knots: 16. **Range, n miles:** 21,000 at 10 kt
Complement: 8
Radars: Navigation: 2 Furuno; I-band.

Comment: Built by Samsung SB, Kojin, South Korea and entered service in 1980. On long-term charter from Abeilles International since 1994. Equipped with two fire-pumps, two water cannons, anti-pollution equipment and a hydraulic crane. Based at Toulon.



CARANGUE 2/2008, B Prézélin / 1335/72

1 AQUITAINE EXPLORER CLASS (SALVAGE VESSEL) (ARS)

AQUITAINE EXPLORER (ex-Abeille Supporter, ex-Seaway Hawk, ex-Seaway Devon)

Displacement, tons: 2,600 full load
Dimensions, feet (metres): 208.7 x 44.0 x 18.9 (63.6 x 13.4 x 5.75)
Main machinery: 2 MaK 12M453AK diesels; 8,800 hp (6.9 MW); 2 cp props; bow and stern lateral thrusters
Speed, knots: 14
Complement: 11 + 27
Radars: Navigation: I-band.

Comment: Built by Aukra Bruk, Norway and entered service in 1975. Acquired in 1982 by DGA (Armaments Directorate) for support of undersea activities in conjunction with CEL (Landes Launch Centre) (Abyssub ROV operates to 5,000 m). Operated by Abeilles International until 30 June 2000 and thereafter by NTA/ABC Maritime. Bollard pull 100 tons. Also used in support of pollution control. Based at Bayonne.



AQUITAINE EXPLORER 1/2005, B Prézélin / 1153165

RESEARCH SHIPS

Note: Several government agencies use research vessels for various purposes. Most of them are operated by GENAVIR on their behalf. Main agency is IFREMER (Institut Français de Recherche pour l'Exploitation de la Mer) that operates four large ocean-going vessels; *Pourquoi Pas?* (2005, 6,600 tons), *Thalassa* (1996, 3,022 tons), *L'Atalante* (1989, 3,550 tons), *Le Suroît* (1975, modernised 1999, 1,132 tons); and three coastal operations vessels: *L'Europe* (1993, 264 tons catamaran), *Thalia* (1978, 135 grt, trawler type) and *Gwen Drez* (1978, 249 tons, trawler type) IRD (Institut de Recherche pour le Développement, ex-ORSTOM) operates in the Pacific two research vessels: *Antée* (1995, 421 grt, catamaran) and *Alis* (1987, 198 grt UMS, trawler type), and two smaller craft. INSU (Institut National des Sciences de l'Univers) operates five coastal vessels (12.5 to 24.9 m) along the French coasts. TAAF (Administration des Terres Australes et Antarctiques Françaises) uses *Marion Dufresne* (1995, 9,403 GRT UMS, 120 m long), a large support ship for Antarctic operations also fitted for scientific research work, *L'Astrolabe*, (ex-*Austral Fish*, 1986, 1,370 grt) and *La Curieuse* (1989, 150 grt UMS, trawler type).

POLICE (GENDARMERIE MARITIME)

Note: The Gendarmerie Maritime is a force of 1,050 officers and men belonging to the Gendarmerie Nationale but acting under the operational control of the Marine Nationale. The Force is tasked to safeguard, supervise and control shipping traffic.

1 PATRA CLASS (COASTAL PATROL CRAFT) (PB)

Name	No	Builders	Commissioned
GLAIVE	P 671	Auroux, Arcachon	2 Apr 1977

Displacement, tons: 115 standard; 1475 full load
Dimensions, feet (metres): 132.5 x 19.4 x 5.2 (40.4 x 5.9 x 1.6)
Main machinery: 2 SACM AGO 195 V12 diesels; 4,410 hp (m) (3.24 MW); 2 shafts; cp props
Speed, knots: 26
Range, n miles: 1,750 at 10 kt; 750 at 20 kt
Complement: 18 (1 officer)
Guns: 1 Bofors 40 mm/60. 2—7.5 mm MGs.
Radars: Surface search: Racal Decca 1226; I-band.

Comment: Based at Cherbourg. Service life extended to 2010.



PATRA CLASS 6/2006, B Prézélin / 1040756

4 GERANIUM CLASS (PB)

Name	No	Builders	Commissioned
GÉRANIUM	P 720	DCN, Lorient	19 Feb 1997
JONQUILLE	P 721	Chantiers Guy Couach Plascoe	15 Nov 1997
VIOLETTE	P 722	DCN, Lorient	4 Dec 1997
JASMIN	P 723	Chantiers Guy Couach Plascoe	15 Nov 1997

Displacement, tons: 80 (P 270, P 722), 82 (P 721, P 723) standard; 100 full load
Dimensions, feet (metres): 105.7 x 20 x 6.2 (32.2 x 6.1 x 1.9)
Main machinery: 2 Deutz/MWM TBD 516 V16; 1 Deutz/MWM TBD 516 V12; 3,960 hp (2.95 MW); 2 shafts; 1 Hamilton 422 water-jet
Speed, knots: 30
Range, n miles: 1,500 at 15 kt
Complement: 15 (2 officers)
Guns: 1—12.7 mm MG. 1—762 mm MG.
Radars: Navigation. Racal-Decca CH 180/6; E/F-band.

Comment: There are some minor differences between the DCN (details shown) and the Plascoa craft. *Géranium* based at Cherbourg; *Jonquille* at Réunion Island (to Toulon in September 2008); *Violette* at Pointe-à-Pitre, Guadeloupe; *Jasmin* at Papeete, Tahiti. Two similar craft built for Affaires Maritimes.



JONQUILLE 10/2008, Peter Ford / 1335777

4 VSC 14 CLASS (PB)

MIMOSA P 761 RÉSÉDA P 778 MELIA A 789 HORTENSIA P 791

Displacement, tons: 21 full load
Dimensions, feet (metres): 47.9 × 15.1 × 6.2 (14.6 × 4.6 × 1.9)
Main machinery: 2 Baudouin 12 F11 SM diesels, 800 hp(m) (588 kW); 2 shafts
Speed, knots: 20
Range, n miles: 360 at 18 kt
Complement: 7
Guns: 1—12.7 mm MG 1—7.62 mm MG.
Radars: Navigation: Furuno; I-band.

Comment: Type V14 SC. P 761, P 789 and P 778 built 1987-88 and P 791 1990-92. Similar to naval tenders with Y pennant numbers. P 778 and P 791 at Brest and A 789 and P 761 at Toulon. Being replaced in service by VCSM craft.



RÉSÉDA 7/2008*, B Prézélin / 1335771

1 FULMAR CLASS (COASTAL PATROL CRAFT) (PB)

FULMAR (ex-Jonathan) P 740

Displacement, tons: 550 standard; 680 full load
Dimensions, feet (metres): 120.7 × 27.9 × 15.4 (36.8 × 8.5 × 4.7)
Main machinery: 1 Stork Wärtsilä 8 FDH 240G diesel; 1,200 hp(m) (882 kW); 1 shaft.
Bow thruster
Speed, knots: 13
Range, n miles: 3,500 at 12 kt
Complement: 9 (1 officer)
Guns: 1—12.7 mm MG
Radars: Surface search: 2 Furuno; I-band.

Comment: Former trawler built in 1990, acquired in October 1996 and converted for patrol duties by April 1997. Recommissioned 28 October 1997 and is based at St Pierre and Miquelon for western Atlantic Fishery Protection duties.



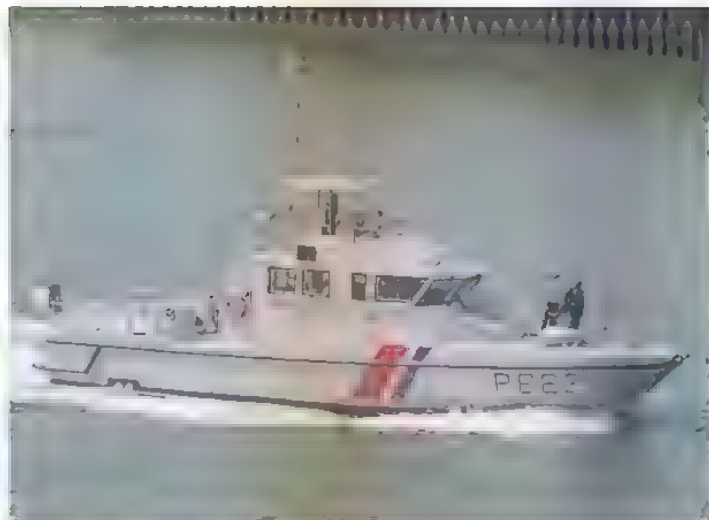
FULMAR 2000, French Navy / 0104486

24 TYPE VCSM (PATROL CRAFT) (PB)

ÉLORN P 601	YSER P 607	CHARENTE P 613	HUVEAUNE P 619
VERDON P 602	ARGENS P 608	TECH P 614	SÈVRE P 620
ADOUR P 603	HÉRAULT P 609	PENFELD P 615	ABER-WRACH P 621
SCARPE P 604	GRAVONA P 610	TRIEUX P 616	ESTÉRON P 622
VERTONNE P 605	ODET P 611	VÉSUBIE P 617	MAHURY P 623
DUMBEA P 606	MAURY P 612	ESCAUT P 618	ORGANABO P 624

Displacement, tons: 42
Dimensions, feet (metres): 65.6 × 17.1 × 4.9 (20.0 × 5.2 × 1.5)
Main machinery: 2 MAN V12 diesels; 2 shafts; 2,000 hp(m) (1,470 kW)
Speed, knots: 28
Range, n miles: 530 at 15 kt
Complement: 5
Guns: 2—7.62 mm MG.
Radars: Navigation: Furuno; I-band.

Comment: Designated 'Vedette Côtière de Surveillance Maritime' (VCSM), coastal surveillance craft Raidco RPB 20. Ordered in two batches of 11 on 6 Dec 2001 and 6 June 2002. Built at l'Herbaudière by Raidco Marine with the co-operation of Chantiers Beneteau. Bear names of rivers. First of class (P 601) entered service on 20 June 2003 followed by P 602-604 in 2003, P 605-610 in 2004 and P 611-615 in 2005. The remainder entered service by March 2007. Replace VSC 14 and VSC 10 craft. GRP hull and superstructure. One 4.9 m RIB fitted aft on an inclined ramp. Also fitted with water-cannon. P 606 based at Noumea, New Caledonia, P 623 and P 624 in French Guiana and P 602 at Mayotte. Two similar craft in service in Morocco and two in Senegal.



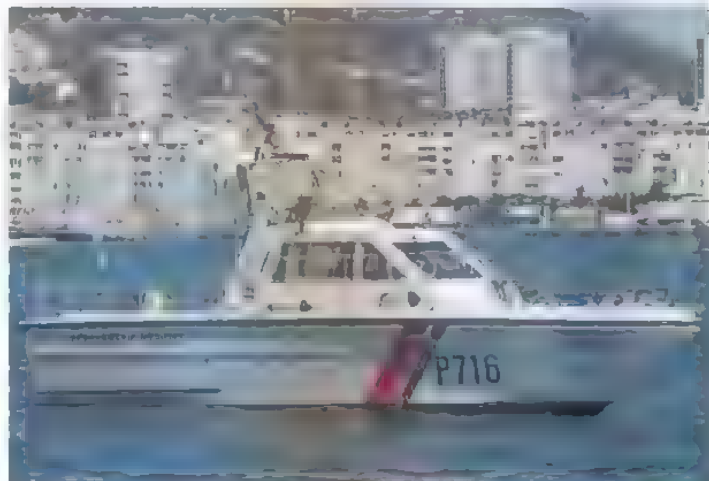
ESTÉRON 5/2008*, Marco Ghiglino / 1335778

2 ARCOR 34 (PATROL CRAFT) (PB)

CAPITAINE MOULIÉ P 713 MDLC JACQUES P 716

Displacement, tons: 7 standard; 8 full load
Dimensions, feet (metres): 33.8 × 12.3 × 3.34 (10.3 × 3.7 × 1.0)
Main machinery: 2 Volvo PentaTAMD 61 diesels, 500 hp (370 kW); 2 shafts
Speed, knots: 26
Range, n miles: 200 at 20 kt
Complement: 3
Radars: Navigation: Furuno 1830; I-band

Comment: Built in 1989-90 by CN d'Aquitaine. Being replaced



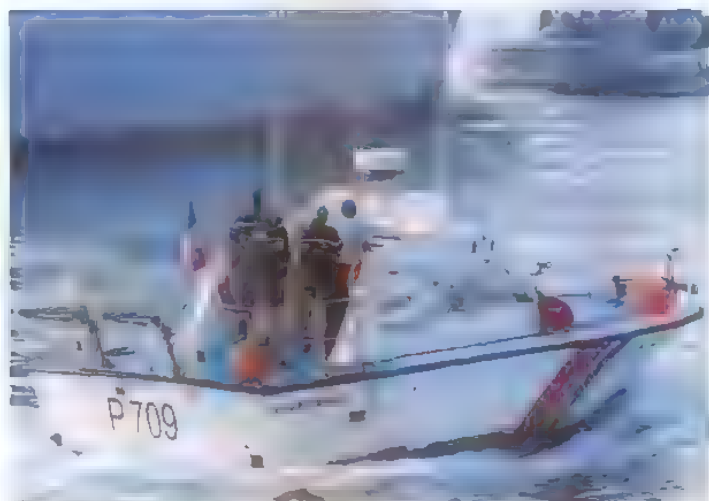
MDLC JACQUES 10/2008*, Peter Ford / 1335779

1 COUACH-PLASCOA 980 (PATROL CRAFT) (PB)

MDLC RICHARD Y 611 (ex-P 709)

Displacement, tons: 6 standard; 7 full load
Dimensions, feet (metres): 32.5 × 12.2 × 3.3 (9.9 × 3.73 × 1.0)
Main machinery: 2 Volvo PentaTAMD 61 diesels; 500 hp (370 kW); 2 shafts
Speed, knots: 28
Range, n miles: 200 at 15 kt
Complement: 4
Radars: Navigation: Furuno 2400; I-band

Comment: Built in 1985 MDLC Richard is a training craft for the Gendarmerie Maritime at Toulon.



MDLC RICHARD (old number) 6/2007, B Prézélin / 1305017

CUSTOMS (DOUANES FRANÇAISES)

Notes: The French customs service has a number of tasks not normally associated with such an organisation. In addition to the usual duties of dealing with ships entering either its coastal area or ports it also has certain responsibilities for rescue at sea, control of navigation, fishery protection and pollution protection. Operated by about 650 personnel, the fleet comprises 12 large patrol vessels (28 to 35 m), 16 patrol boats (15 to 27 m) and 27 smaller craft. The larger vessels include DF 48 *Arafenue* (105 tons), DF 41 *Aval Gwalarn* (67 tons), DF 42 *Suroit* (67 tons), DF 31 *Alizé* (64 tons), DF 37 *Vent d'Aval* (64 tons), DF 43 *Haize Hegoa* (64 tons), DF 44 *Mervent* (64 tons), DF 45 *Vent d'Auten* (64 tons), DF 46 *Aval Sterenn* (64 tons), DF 47 *Lissoro* (64 tons), DF 36 *Kan Avel* (64 tons) and DF 40 *Vent d'Aront* (61 tons). In addition, two 400 ton patrol ships *Jacques Oudart Fourmentin* and *Kermovan* (ex-*Tevennek*), entered service in 2007 and 2008 respectively. All vessels have DF numbers painted on the bow and 'AEM markings' (blue/white/red inclined stripes). There are also 13 Reims-Cessna F406 lightweight patrol aircraft, including three equipped for pollution control and six Eurocopter AS 350B1 Ecureuil helicopters. On 20 December 2005, the Customs ordered, through the Directorate General for Armament (DGA), five Eurocopter EC 135 helicopters specially equipped for the maritime surveillance role (FLIR) and SAR. They will be delivered in 2007 to replace some of the Ecureuils.



KERMOVAN 8/2008, B Prézeln / 1335720

AFFAIRES MARITIMES

Notes: The Affaires Maritimes is a force administered and funded by the Ministry of Transport to enforce safety of navigation, SAR, fishery protection and pollution control. The force also contributes to surveillance against terrorist activities. Operational control is vested locally in Préfet Maritimes who are naval flag officers. SAR is coordinated through a network of Maritime Rescue Coordination Centres (MRCC) at Gris Nez (Dover Strait), Jobourg (Western Channel), Corsen (Brittany), Etel (Bay of Biscay), La Garde (Mediterranean, Gulf of Lion), Aspretto (Corsica), Port des Galets (La Réunion), Fort-de-France (Caribbean). CROSS Etel is responsible for monitoring all fishing activity in French waters. Vessels operated by Affaires Maritimes are usually unarmed and manned by civilians. They are painted with grey/blue hulls, grey superstructure and display the AEM blue/white/red stripes, PM pennant numbers and 'Affaires Maritimes' written on the superstructure. The fleet comprises:

- Five large patrol vessels (30–52 m): PM 41 *Themis* (400 tons), PM 40 *Iris* (230 tons), PM 32 *Armoise* (91 tons), PM 30 *Gabian* (76 tons), PM 29 *Mauve* (65 tons); *Osiris*, a seized fishing trawler, is based at La Réunion.
- 19 patrol launches (8–17 m). Most recent are four Callisto class 16 m FPB 50 Mk II patrol boats built 2000–01 by OCEA, Les Sables d'Olonne.
- Service craft which may be identified by 'Phares & Balises' written on the superstructure. Larger vessels include: *Armorique* (500 tons), *Hauts de France* (450 tons), *Gascogne*, *Provence* (326 tons), *Chef de Caux* (128 tons), *Louis Henin* (73 tons) and *Le Kahouanne* (73 tons).



IRIS 10/2008, Adolfo Ortigueira Gil / 1335769



HAUTS DE FRANCE 5/2004, Schaeffer/Marsan / 1042222



THEMIS 7/2007, B Prézeln / 1305048

Gabon



MARINE GABONAISE

Country Overview

A former French colony, the Gabonese Republic achieved independence in 1960. Located astride the Equator, the country has an area of 103,347 square miles and has borders to the north with Cameroon and Equatorial Guinea and to the

east and south with Congo. It has a 480 n mile coastline with the Atlantic Ocean. The capital, largest city and principal port is Libreville and there is a further port at Port-Gentil. Territorial seas (12 n miles) are claimed. A 200 n mile Exclusive Economic Zone (EEZ) has been claimed but the limits are not defined; jurisdiction is complicated

by the offshore islands of Iles de Annobon (Equatorial Guinea) and São Tomé and Príncipe.

Headquarters Appointments

Chief of Naval Staff
Captain Paul Bivigou Nziengui

Bases

Port Gentil, Mayumba

Personnel

2009: 600 (65 officers)

PATROL FORCES

2 P 400 CLASS (LARGE PATROL CRAFT) (PBO)

Name	No	Builders	Commissioned
GENERAL d'ARMÉE BA-OUMAR	P 07	CMN, Cherbourg	27 June 1988
COLONEL DJOUÉ-DABANY	P 08	CMN, Cherbourg	14 Sep 1990

Displacement, tons: 446 full load
Dimensions, feet (metres): 179 x 26.2 x 8.5 (54.6 x 8 x 2.5)
Main machinery: 2 Wärtsilä UD 33 V16 diesels; 8,000 hp(m) (5.88 MW) sustained; 2 shafts; cp props
Speed, knots: 24. **Range, n miles:** 4,200 at 15 kt
Complement: 32 (4 officers)
Military lift: 20 troops
Guns: 1 Bofors 57 mm/70 SAK 57 Mk 2 (P 07); 220 rds/min to 17 km (9 n miles); weight of shell 2.4 kg. Not in P 08 which has a second Oerlikon 20 mm.
 2 Giat F2 20 mm (P 08)
Weapons control: CSEE Naja optronic director (P 07).
Radars: Racal Decca 1226C; I-band

Programmes: Contract signed May 1985 with CMN Cherbourg. First laid down 2 July 1986, launched 18 December 1987 and arrived in Gabon 6 August 1988 for a local christening ceremony. Second ordered in February 1989 and launched 29 March 1990.
Structure: There is space on the quarterdeck for two MM 40 Exocet surface-to-surface missiles. These craft are similar to the French vessels but with different engines. *Djoué-Dabany* had twin funnels fitted in 1992, similar to French P 400 class conversions.



COLONEL DJOUÉ-DABANY 8/2000, Gabon Navy / 0104491

278 Gabon/Patrol forces – Gambia/Patrol forces

1 PATRA CLASS (FAST ATTACK CRAFT—MISSILE) (PTM)

Name	No	Builders	Commissioned
GÉNÉRAL NAZAIRE BOULINGUI (ex-Président Omar Bongo)	P 10	Chantiers Naval de l'Estérel	7 Aug 1978

Displacement, tons: 160 full load
Dimensions, feet (metres): 138 × 25.3 × 6.5 (42 × 7.7 × 1.9)
Main machinery: 3 SACM 195 V12 CSHR diesels; 5,400 hp(m) (3.97 MW) sustained; 3 shafts
Speed, knots: 32. **Range, n miles:** 1,500 at 15 kt
Complement: 20 (3 officers)
Missiles: SSM: 4 Aerospatiale SS 12M, wire-guided to 5.5 km (3 n miles) subsonic; warhead 30 kg
Guns: 1 Bofors 40 mm/60. 1 DCN 20 mm.
Radars: Surface search: Racal Decca RM1226; I-band.

Comment: Re-activated in 2000.



GÉNÉRAL NAZAIRE BOULINGUI 6/2000, Gabon Navy / 0104482

LAND-BASED MARITIME AIRCRAFT

Numbers/Type: 1 Embraer Emb-111 Bandeirante.
Operational speed: 194 kt (360 km/h).
Service ceiling: 25,600 ft (7,770 m).
Range: 1,590 n miles (2,945 km).
Role/Weapon systems: Air Force coastal surveillance and EEZ protection tasks are primary roles. Sensors: APS-128 search radar, limited ECM, searchlight. Weapons: ASV; 8 × 127 mm rockets or 28 × 70 mm rockets

AMPHIBIOUS FORCES

12 LANDING CRAFT PERSONNEL (LCVP)

Comment: Two 12 m craft built by Tanguy Marine, Le Havre in 1985. Equipped with two Volvo Penta 185 hp(m) (121 kW) engines. There are also 10 Simonneau craft: one of 12 m, two of 8 m and seven of 7 m.

1 BATRAL TYPE (LSTH)

Name	No	Builders	Launched	Commissioned
PRESIDENT EL HADJ OMAR BONGO	L 05	Français de l'Ouest, Rouen	16 Apr 1984	26 Nov 1984

Displacement, tons: 770 standard; 1,336 full load
Dimensions, feet (metres): 262.4 × 42.6 × 7.9 (80 × 13 × 2.4)
Main machinery: 2 SACM Type 195 V12 CSHR diesels, 3,600 hp(m) (2.65 MW); 2 shafts; cp props
Speed, knots: 16
Range, n miles: 4,500 at 13 kt
Complement: 39
Military lift: 188 troops; 12 vehicles; 350 tons cargo
Guns: 1 Bofors 40 mm/60; 300 rds/min to 12 km (6.5 n miles); weight of shell 0.89 kg. 2 –81 mm mortars. 2 Browning 12.7 mm MGs. 1 –762 mm MG.
Radars: Surface search, Racal Decca 1226; I-band.
Helicopters: Capable of operating up to SA 330 Puma size.

Comment: Sister to French *La Grandière*. Carries one LCVP and one LCP. Started refit by Denel, Cape Town in April 1996, and returned to service in 1997 with bow doors welded shut. Completed repair and cleaning at Abidjan during 2000.



PRESIDENT EL HADJ OMAR BONGO 6/1993, Gabon Navy / 0069977

POLICE

Notes: (1) Four Rodman 20 m craft were delivered in January 2006. Their names are: *Aworo* P 01, *Mangoye* P 02, *Batseng* P 03 and *Mondane* P 04.
 (2) Two Rodman 14 m craft were delivered in January 2006. Their names are: *Mbanie* and *Kouango*.



Gambia

Country Overview

The Republic of Gambia was a British protectorate until 1965 when it gained independence. With an area of 4,361 square miles, it has a short 43 n mile coastline with the Atlantic Ocean but is otherwise completely surrounded by Senegal. The two

countries united in 1981 to form the confederation of Senegambia but this collapsed in 1989 when the countries reverted to being separate states. The capital, largest city and principal port is Banjul (formerly Bathurst). Territorial seas (12 n miles) and a 200 n mile fishing zone are claimed. The patrol craft came under 3 Marine Company

of the National Army until 1996 when a navy was established.

Headquarters Appointments

Commander, Navy:
 Lieutenant Commander Sarjo Fofana

Personnel

(a) 2009: 150
 (b) Voluntary service

Bases

Banjul

PATROL FORCES

Notes: Two ex-Guardia Civil 16 m Rodman 55M craft were reported transferred by Spain on 9 July 2007.

2 PATROL CRAFT (PB)

FATIMAH I PT 01	SULAYMAN JUN-KUNG PT 02
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Displacement, tons: 25
Dimensions, feet (metres): 52.8 × 14.8 × 5.3 (16.1 × 4.5 × 1.6)
Main machinery: Caterpillar diesel; 800 hp (596 kW)
Speed, knots: 40
Guns: 3 – 762 mm MGs
Radars: Surface search: Furuno, I-band.

Comment: Procured from Taiwan in 1999



FATIMAH 6/2000, Gambian Navy / 0104493

1 PETERSON MK 4 CLASS (PB)

Name	No	Builders	Commissioned
BOLONG KANTA	P 14	Peterson Builders, Sturgeon Bay	15 Oct 1993

Displacement, tons: 24 full load
Dimensions, feet (metres): 50.9 × 14.8 × 4.3 (15.5 × 4.5 × 1.3)
Main machinery: 2 Detroit 6V-92A diesels; 520 hp (388 kW) sustained; 2 shafts
Speed, knots: 24. **Range, n miles:** 500 at 20 kt
Complement: 6
Guns: 2 – 12.7 mm MGs.
Radars: Raytheon R41X; I-band.

Comment: Reported seaworthy. Agreement with US government in September 2005 to assist with maintenance and spares. Similar craft in service in Egypt, Cape Verde and Senegal.



PETERSON Mk 4 (Senegal colours) 1/1998 / 0050096

Georgia



Country Overview

Formerly part of the USSR, the Republic of Georgia declared independence in 1991. Situated in the Transcaucasia region of western Asia, the country has an area of 26,900 square miles and is bordered to the north by Russia and to the south by Turkey, Armenia and Azerbaijan. It has a coastline of 167 n miles with the Black Sea on which Poti and Batumi are the principal ports. Tbilisi is the capital and largest city. The country includes two autonomous republics, Abkhazia and Ajaria, and one autonomous region, South Ossetia. USSR legislation appears still to apply to maritime claims. Territorial waters (12 n miles) are claimed, as is an EEZ (200 n miles) although the limits of the latter are not

defined. Naval and Coast Guard Forces (part of the Border Guard) formed 7 July 1993. While merger of the two forces has been considered, they are likely to remain different commands.

Much of the Georgian Navy and Coast Guard was destroyed during the Georgia-Russia conflict in August 2008. It is likely that remaining units will be merged into a single Coast Guard force.

Headquarters Appointments

Commander of the Navy:
Captain Besik Shengelia

Personnel

2008: 710 (184 officers)

Bases

Poti (HQ), Batumi

PATROL FORCES

Notes: In addition to the vessels listed below, the following vessels are on the Navy List:
(1) A former fishing vessel *Gantadi* (016) is used as a patrol craft and tender. It is armed with two 23 mm guns and 2—12.7 mm MGs.
(2) Three 'Aist' (Project 1398) class patrol launches (10, 12, 14). 14 is active with the Hydrographic Service and has a blue hull.
(3) A 'Nyryat' (DHK-81) and 'Flemingo' (DHK-82) are active with the Hydrographic service and are civilian manned.
(4) A Project 371U patrol launch *Gshi* (04).
(5) There are ten 9 m 'Black Shark' RHIBs built by Batumi Shipyard in 2006-07. Powered by two Mercury 250 hp outboard engines, they are capable of 48 kt and of carrying about 10 troops.
(6) There are two 7.5 m RHIBs A 24 and A 28. They are capable of 38 kt.

1 POLUCHAT 1 CLASS (PB)

AKHMETA 102

Displacement, tons: 86 standard; 100 full load
Dimensions, feet (metres): 97.1 × 19 × 4.8 (29.6 × 5.8 × 1.5)
Main machinery: 2 Type M 50 diesels; 2,200 hp(m) (1.6 MW) sustained; 2 shafts
Speed, knots: 20
Range, n miles: 1,500 at 10 kt
Complement: 15
Guns: 2—37 mm/L 68. 1—140 mm 17 round rocket launcher.
Radars: Surface search. Spin Trough; I-band.

Comment: Acquired in a disarmed state from commercial sources in Ukraine. Refitted at Metallist Ship Repair Yard, Bakhkava 2000-02.



P 102

8/2000, Hartmut Ehlers / 0104494

2 DILOS CLASS (PB)

Name	No	Builders	Commissioned
IVERIA (ex-Lindos)	201 (ex-P 269)	Hellenic Shipyard, Skaramanga	1978
MESTIA (ex-Dilos)	203 (ex-P 267)	Hellenic Shipyard, Skaramanga	1978

Displacement, tons: 74.5 standard; 86 full load
Dimensions, feet (metres): 95.1 × 16.2 × 5.6 (29 × 5 × 1.7)
Main machinery: 2 MTU 12V 331 TC92 diesels; 2,660 hp(m) (1.96 MW) sustained; 2 shafts
Speed, knots: 27
Range, n miles: 1,600 at 24 kt
Complement: 15
Guns: 4—23 mm ZSU (2 twin). 2—12.7 mm MGs.
Radars: Surface search: Racal Decca 1226C, I-band.

Comment: First one transferred from the Greek Navy in February 1998, second in September 1999. Reported to have been refitted in Greece in 2004.



IVERIA and MESTIA

10/2002, Hartmut Ehlers / 0652757

1 KAN 33 (FAST ATTACK CRAFT) (PBF)

SOKHUMI P 24

Displacement, tons: 120 full load
Dimensions, feet (metres): 116.8 × 22.0 × 4.7 (35.6 × 6.7 × 1.4)
Main machinery: 2 MTU 12V 4000 M90 diesels; 7,396 hp(m) (5.44 MW); 2MJP 753 DD waterjets
Speed, knots: 47
Range, n miles: 970 at 15 kt
Complement: 18 (2 officers)
Guns: 1—12.7 mm MG (stabilised).

Comment: With advanced composites structure, the craft are modified versions of those in service in the Turkish Coast Guard. The craft are suitable for use as the patrol of littoral waters, maritime interdiction and special forces operations. The vessel was delivered in mid 2008.



SOKHUMI

6/2008, Yonca-Onuk / 1335376

LAND-BASED MARITIME AIRCRAFT

Notes: While there is no naval air arm, two Mi-14 helicopters were reported delivered in April 2004 after five years undergoing refitting in Ukraine. They are believed to be for patrol and SAR duties and to be unarmed.

AMPHIBIOUS FORCES

1 VYDRA (PROJECT 106K) CLASS (LCU)

GURIA 001

Displacement, tons: 425 standard, 560 full load
Dimensions, feet (metres): 179.7 × 26.6 × 6.6 (54.8 × 8.1 × 2)
Main machinery: 2 Type 3-D-12 diesels; 600 hp(m) (440 kW) sustained; 2 shafts
Speed, knots: 12
Range, n miles: 2,500 at 10 kt
Complement: 20
Military lift: 200 tons or 100 troops or 3 MBTs
Guns: 4—23 mm ZSU (2 twin).
Radars: Navigation: Don 2; I-band.
IFF: High Pole

Comment: Built at Burges Shipyard 1974-75. Transferred to Georgia on 6 July 2001.



VYDRA CLASS

10/2002, Hartmut Ehlers / 0552747

COAST GUARD

Notes: In addition to the vessels listed below, the following vessels are on the Coast Guard list:
 (1) A former fishing vessel P 101.
 (2) Three Aust (Project 1398) class patrol launches (P 0212, 702, 703).
 (3) One Strzh (Project 1390) class launch P 0116.
 (4) One 44 m tug *Poti* (ex-Zorro) acquired from Ukraine in 1999 for salvage purposes.
 (5) Six patrol craft (P 0112-0116, P 105). P 0111 reported destroyed in August 2008.

1 LINDAU (TYPE 331) CLASS (WPBO)

Name	No	Builders	Commissioned
AYETY (ex-Minden)	P 22 (ex-M1085)	Burmester, Bremen	22 Jan 1960

Displacement, tons: 463 full load
Dimensions, feet (metres): 154.5 × 27.2 × 9.8 (47.1 × 8.3 × 2.8)
Main machinery: 2 MTU MD diesels; 4,000 hp (m) (2.94 MW); 2 shafts
Speed, knots: 16. **Range, n miles:** 850 at 16 kt
Complement: 43
Guns: 1 Bofors 40 mm/70. 2—12.7 mm MGs
Radars: Surface search: Atlas Elektronik TRS; I-band.

Comment: Paid off from German Navy in 1997 and transferred 15 November 1998 to the Coast Guard. Former minehunter refitted as a patrol craft in Germany before transfer. Reported destroyed in August 2008.



AYETY

10/2002, Hartmut Ehlers / 0562193

2 DAUNTLESS CLASS (WPB)

P 106 (ex-P 208)	P 209
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Displacement, tons: 11 full load
Dimensions, feet (metres): 40 × 14 × 4.3 (12.2 × 4.3 × 1.3)
Main machinery: 2 Caterpillar 3208TA diesels, 870 hp (650 kW); 2 shafts
Speed, knots: 27
Range, n miles: 600 at 18 kt
Complement: 5
Guns: 1—12.7 mm MG
Radars: Surface search: Raytheon; I-band

Comment: Aluminium construction. Acquired in July 1999 from SeaArk Marine.



P 209

10/2002, Hartmut Ehlers / 0552751

2 POINT CLASS (WPB)

Name	No	Builders	Commissioned
TSOTNE DADIANI (ex-Point Countess)	P 210 (ex-82335)	USCG Yard, Curtis Bay	8 Aug 1962
GENERAL MAZNIASHVILI (ex-Point Baker)	P 211 (ex-82342)	USCG Yard, Curtis Bay	30 Oct 1963

Displacement, tons: 66; 69 full load
Dimensions, feet (metres): 83.0 × 17.2 × 6.8 (25.3 × 5.3 × 1.8)
Main machinery: 2 Caterpillar 3412 diesels, 1,600 hp (1.19 MW); 2 shafts
Speed, knots: 23.5 **Range, n miles:** 1,500 at 8 kt
Complement: 10 (1 officer)
Guns: 2—12.7 mm MGs
Radars: Surface search: Hughes/Furuno SPS-73, I-band.

Comment: Steel hulled craft with aluminium superstructure. First transferred from United States in June 2000 and second on 12 February 2002.



GENERAL MAZNIASHVILI

10/2002, Hartmut Ehlers / 0589740

8 ZHUK CLASS (WPB)

P 102-104	P 203-207
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Displacement, tons: 25 full load
Dimensions, feet (metres): 49 × 14.8 × 2.4 (14.9 × 4.5 × 0.7)
Main machinery: 2 GM diesels, 450 hp (335 kW); 2 shafts
Speed, knots: 12
Range, n miles: 200 at 12 kt
Complement: 7
Guns: 2—23 mm (1 twin) (P 204, P 205)
 2—12.7 mm MGs (P 203).

Comment: P 102-104 constructed at Batumi 1997-99. P 203 transferred from Ukraine in April 1997. P 204-205 acquired from Ukraine and P 206-207 transferred from Georgian Navy in 1998. Two craft had been modernised under the 'Orbi' programme by late 2007.



P 203

10/2002, Hartmut Ehlers / 0552753



Germany

DEUTSCHE MARINE

Country Overview

The Federal Republic of Germany (FRG) is situated in central Europe. The country was re-unified in 1990 when the German Democratic Republic became part of the FRG. With an area of 137,823 square miles, it is bordered to the north by Denmark, to the east by Poland and the Czech Republic, to the south by Austria and Switzerland and to the west by France, Luxembourg, Belgium and the Netherlands. It has a 1,290 n mile coastline with the North and Baltic Seas which are linked by the Kiel Canal. The capital and largest city is Berlin. North Sea ports include Hamburg, Wilhelmshaven, Bremen, Nordenham and Emden, while the main Baltic ports are Lübeck, Wismar, Rostock and Stralsund. The Rhine is the principal inland waterway on which Duisburg is the largest port. Territorial seas (12 n miles) are claimed. An EEZ (200 n miles) has also been claimed.

Headquarters Appointments

Chief of Naval Staff:
 Vice Admiral Wolfgang Nolting
Chief of Staff:
 Rear Admiral Hans-Jochen Witthauer

Commander-in-Chief

Commander-in-Chief, Fleet:
 Vice Admiral Hans-Joachim Stricker

Diplomatic Representation

Defence Attaché in Paris:
 Rear Admiral George Von Maltzan
Defence Attaché in Rome:
 Captain J Schamong

Diplomatic Representation—continued

Naval Attaché in London:
 Captain Uwe Hovorka
Naval Attaché in Washington:
 Captain R Schmitt-Raiser
Naval Attaché in Moscow:
 Captain G Hamann
Defence Attaché in Pretoria:
 Captain Hans-Uwe Mergener
Defence Attaché in Kuala-Lumpur:
 Commander Heinz Udo Schindt
Defence Attaché in Abu Dhabi:
 Commander H Weis
Defence Attaché in Tunis:
 Commander J Giese
Defence Attaché in Copenhagen:
 Commander T Papanroth

Diplomatic Representation — continued

Naval Attaché in Tel Aviv:
Commander: W Knipprath
Defence Attaché in Mexico City:
Commander H P Lochbaum
Naval Attaché in Ankara:
Commander G Pichel
Naval Attaché in Bangkok:
Commander Joachim Schumacher
Defence Attaché in The Hague:
Commander L Stellmann
Defence Attaché in Lisbon:
Commander J H Mandt

Personnel

(a) 2009: 21,300 (5,192 officers) (including naval air arm) plus 3,700 conscripts
(b) 9 months' national service

Fleet Disposition

1st Flotilla (Kiel)
1st Corvette Squadron (Warnemünde); Type 130
7th FPB Squadron (Warnemünde); Type 143A
3rd and 5th Mine Warfare Squadron (Kiel); Type 332, 333 and 352
1st Submarine Squadron (Eckernförde); Type 206A and Type 212
Fleet Service Ships; Type 423
2nd Flotilla (Wilhelmshaven)
2nd Frigate Squadron; Type 123 and 124
4th Frigate Squadron; Type 122
Auxiliary Squadron; Type 702 (AORH), 703 (AOL), 704 (AOL), 720 (ATR), 722 (ATS), 760 (AEL)

Bases

C-in-C Fleet: Glücksburg, Naval Command: Rostock.
Baltic: Kiel, Warnemünde, Eckernförde.
North Sea: Wilhelmshaven.
Naval Arsenal: Wilhelmshaven, Kiel
Training (other than in bases above): Bremerhaven

Naval Air Arm

AG 51 (Tactical Air Support of Maritime Operations) (GAF Schleswig)
MFG 3 'Graf Zeppelin' (LRMP Wing at Nordholz)
P-3C Orion, remaining 2 Breguet Atlantic converted for Sigint; Sea Lynx (landbased for embarkation and maintenance); Dornier Do 228 (for pollution control)
MFG 5 (land-based SAR and Fleet Support with embarked helos) Sea King Mk 41.

Strength of the Fleet

Type	Active	Building (Projected)
Submarines—Patrol	10	2
Frigates	15	4
Corvettes	5	(8)
Fast Attack Craft—Missile	10	—
LCM/LCU	2	—
Minehunters	14	—
Minesweepers—Coastal	5	—
Minesweepers—Drones	18	—
Tenders	6	—
Replenishment Ships	5	1
Ammunition Transports	1	—
Tugs—Icebreaking	1	—
AGIs	3	—
Sail Training Ships	1	—
Diver Support Vessel	1	—

Prefix to Ships' Names

Prefix FGS is used in communications.

Hydrographic Service

This service, under the direction of the Ministry of Transport, is civilian-manned with HQ at Hamburg. Survey ships are listed at the end of the section.

DELETIONS**Submarines**

2006 U 30
2007 U 29
2008 U 22, U 25

Mine Warfare Vessels

2006 Weiden, Frankenthal
2007 Mühhausen

Survey and Research Ships

2004 Planet (old), Kalkgrund

Auxillaries

2006 Eisvogel, Nordwind
2007 Muschel
2008 Bergen (to Lebanon), TF 5

PENNANT LIST**Submarines**

S 172 U 23
S 173 U 24
S 181 U 31
S 182 U 32
S 183 U 33
S 184 U 34
S 194 U 15
S 195 U 16
S 196 U 17
S 197 U 18

Frigates

F 207 Bremen
F 208 Niedersachsen
F 209 Rheinland-Pfalz
F 210 Emden
F 211 Köln
F 212 Karlsruhe
F 213 Augsburg
F 214 Lübeck
F 215 Brandenburg
F 216 Schleswig-Holstein
F 217 Bayern
F 218 Mecklenburg-Vorpommern
F 219 Sachsen
F 220 Hamburg
F 221 Hessen

Corvettes

F 260 Braunschweig
F 261 Magdeburg
F 262 Erfurt
F 263 Oldenburg
F 264 Ludwigshafen

Patrol Forces

P 6121 S 71 Gepard
P 6122 S 72 Puma
P 6123 S 73 Hermelin
P 6124 S 74 Nerz
P 6125 S 75 Zobe

P 6126 S 76 Fretchen
P 6127 S 77 Dachs
P 6128 S 78 Ozelot
P 6129 S 79 Wiesel
P 6130 S 80 Hyäne

Mine Warfare Forces

M 1058 Fulda
M 1059 Weilheim
M 1061 Rottweil
M 1062 Sulzbach-Rosenberg
M 1063 Bad Bevensen
M 1064 Grömitz
M 1065 Dillingen
M 1067 Bad Rappenau
M 1068 Datteln
M 1069 Hornburg
M 1090 Pegnitz
M 1091 Kulmbach
M 1092 Hameln
M 1093 Auerbach
M 1094 Ensdorf
M 1095 Überherrn
M 1096 Passau
M 1097 Laboe
M 1098 Siegburg
M 1099 Herten

Amphibious Forces

L 762 Lechs
L 765 Schlei

Auxillaries

A 50 Alster
A 52 Oste
A 53 Oker
A 50 Gorch Fock
A 511 Elbe
A 512 Mosel
A 513 Rhein
A 514 Werra
A 515 Main
A 516 Donau

A 1409 Wilhelm Pultwer
A 1411 Berlin
A 1412 Frankfurt Am Main
A 1425 Ammersee
A 1426 Tegernsee
A 1435 Westerwald
A 1437 Planet
A 1439 Baftrum
A 1440 Juist
A 1441 Langeoog
A 1442 Spessart
A 1443 Rhön
A 1451 Wangerooge
A 1452 Spiekeroog
A 1458 Fehmarn
Y 811 Knurrhahn
Y 812 Lütje Hörn
Y 814 Knechtsand
Y 815 Scharhörn
Y 816 Vogelsand
Y 817 Nordstrand
Y 818 Langeness
Y 835 Todendorf
Y 836 Putlos
Y 837 Baumholder
Y 839 Munster
Y 842 Schwimmdock A
Y 880 Schwedeneck
Y 861 Kronsort
Y 862 Helmsand
Y 863 Stallergrund
Y 864 Mittelgrund
Y 866 Breitgrund
Y 875 Hiev
Y 876 Griep
Y 891 Altmark
Y 895 Wische
Y 1643 Bottsand
Y 1644 Eversand
Y 1656 Wustrow
Y 1658 Dranske
Y 1671 AK 1
Y 1675 AM 8
Y 1676 MA 2
Y 1677 MA 3
Y 1678 MA 1
Y 1679 AM 7
Y 1683 AK 6
Y 1685 Aschau
Y 1686 AK 2
Y 1687 Borby
Y 1689 Burns

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SUBMARINES

4 + 2 TYPE 212A (SSK)

Name	No	Builders	Laid down	Launched	Commissioned
U 31	S 181	HDW, Kiel	Feb 2000	20 Mar 2002	19 Oct 2005
U 32	S 182	TNSW, Emden	Jan 2002	4 Dec 2003	19 Oct 2005
U 33	S 183	HDW, Kiel	Oct 2002	13 Sep 2004	13 June 2006
U 34	S 184	TNSW, Emden	June 2003	1 July 2005	3 May 2007
U 35	S 185	HDW, Kiel	Aug 2007	2009	2013
U 36	S 186	HDW, Kiel	Aug 2008	2010	2013

Displacement, tons: 1,450 surfaced; 1,830 dived
Dimensions, feet (metres): 183.4; (187.3 Batch 2) × 23 × 19.7
 (56.9; (57.1) × 7 × 6)

Main machinery: Diesel-electric; 1 MTU 16V 396 diesel, 4,243 hp(m) (3.12 MW); 1 alternator; 1 Siemens Permasyn motor; 3,875 hp(m) (2.85 MW); 1 shaft, 9 Siemens/HDW PEM fuel cell (AIP) modules; 306 kW; sodium sulphide high-energy batteries

Speed, knots: 20 dived, 12 surfaced
Range, n miles: 8,000 at 8 kt surfaced
Complement: 28 (8 officers)

Torpedoes: 6–21 in (533 mm) bow tubes; water ram discharge; Atlas Elektronik DM 2 A4 torpedoes; wire guided active/passive homing to 50 km (27 n miles) at 50 kt; warhead 250 kg Total 12 weapons.

Countermeasures: DASA FL 1800U or EADS MRBR 800 (Batch 2); radar warning.

Weapons control: Kongsberg MSI-90U (Batch 1), Atlas Elektronik ISUS (Batch 2).

Radars: Navigation, Kelvin Hughes 1007; I-band

Sonars: STN Atlas Elektronik DBQS-40; passive ranging and intercept; FAS-3 flank and passive towed array, STN Atlas Elektronik MOA 3070 or Allied Signal ELAK; mine detection; active; high frequency.

Programmes: Design phase first completed in 1992 by ARGE 212 (HDW/TNSW) in conjunction with IKL. Authorisation for the first four of the class was given on 8 July 1994, but the first steel cut was delayed to 1 July 1998 because of modifications needed to achieve commonality with the Italian Navy. The order for Batch 2 of two modified boats was made on 22 September 2006 and steel for U 35 was cut on 21 August 2007. The submarines are to enter service in 2012 and 2013.

Modernisation: The fifth and sixth boats are to include EFAS flank array sonar, Carl Zeiss SERO 400 periscope and OMS 100 non-penetrating optronic mast. There will be a lock-in lock-out system for special forces and the PEM fuel-cell system is to be brought to the latest standard. IDAS, a missile system under evaluation, was fired from U 33 on 29 May 2008. The system has both

an anti-aircraft and land-attack capability and may be deployed from about 2014.

Structure: Equipped with a hybrid fuel cell/battery propulsion based on the Siemens PEM fuel cell technology. The submarine is designed with a partial double hull which has a larger diameter forward. This is joined to the after end by a short conical section which houses the fuel cell plant. Two LOX tanks and hydrogen stored in metal cylinders are carried around the circumference of the smaller hull section. Zeiss search and attack periscopes.

Operational: Maximum speed on AIP is 8 kt without use of main battery. U 32 conducted a submerged transit from the German Bight to the Bay of Cadiz 11–25 April 2006. The entire passage was conducted using air-independent propulsion and without snorkelling, a speed of advance of 4–5 kt. Based at Eckernförde as part of the First Submarine Squadron.

Sales: Two identical submarines have been built in Italy and two further are under contract.



U 31

2/2005, Michael Nitz / 1133424



U 34

5/2007, Michael Nitz / 1166726

6 TYPE 206A (SSK)

Name	No	Builders	Laid down	Launched	Commissioned
U 15	S 194	Howaldtswerke, Kiel	1 June 1970	15 June 1972	17 July 1974
U 16	S 195	Rhein Stahl Nordseewerke, Emden	1 Nov 1970	29 Aug 1972	9 Nov 1973
U 17	S 196	Howaldtswerke, Kiel	1 Oct 1970	10 Oct 1972	28 Nov 1973
U 18	S 197	Rhein Stahl Nordseewerke, Emden	1 Apr 1971	31 Oct 1972	19 Dec 1973
U 23	S 172	Rhein Stahl Nordseewerke, Emden	5 Mar 1973	26 May 1974	2 May 1975
U 24	S 173	Rhein Stahl Nordseewerke, Emden	20 Mar 1972	26 June 1973	16 Oct 1974

Displacement, tons: 450 surfaced; 498 dived
Dimensions, feet (metres): 159.4 x 15.1 x 14.8
 (48.6 x 4.6 x 4.5)

Main machinery: Diesel-electric; 2 MTU 12V 493 AZ90 GA 31L diesels; 1,200 hp(m) (882 kW) sustained; 2 alternators; 810 kW; 1 Siemens motor; 1,800 hp(m) (1.32 MW) sustained; 1 shaft

Speed, knots: 10 surfaced; 17 dived
Range, n miles: 4,500 at 5 kt surfaced
Complement: 22 (4 officers)

Torpedoes: 8 21 in (533 mm) bow tubes. STN Atlas DM 2A3; wire-guided, active homing to 13 km (7 n miles) at 35 kt, passive homing to 28 km (15 n miles) at 23 kt; warhead 260 kg.

Mines: GRP container secured outside hull each side. Each container holds 12 mines, carried in addition to the normal torpedo or mine armament (16 in place of torpedoes).

Countermeasures: ESM. Thomson-CSF DR 2000U with THORN EM Serie 2; intercept.

Weapons control: SLW 83 (TFCS).

Radars: Surface search. Thomson-CSF Calypso II; I-band.

Sonars: Atlas Elektronik DBQS-21D; passive/active search and attack; medium frequency Thomson Sintra DUUX 2; passive ranging.

Programmes: Authorised on 7 June 1969

Modernisation: Mid-life conversion of the class was a very extensive one, including the installation of new

sensors (sonar DBQS-21D with training simulator STU-5), periscopes, weapon control system (LEWA), ESM, weapons (torpedo Seeal), GPS navigation, and a comprehensive refitting of the propulsion system, as well as habitability improvements. Conversion work was shared between Thyssen Nordseewerke (U 23, 24, 15) at Emden and HDW (U 16, 17, 18) at Kiel. The work started in mid-1987 and completed in February 1992

Structure: Hulls are built of high-tensile non-magnetic steel

Operational: First squadron based at Eckornforde

Sales: Two unmodernised (Type 206) were to have been acquired by Indonesia but the sale was cancelled in late 1998.



U 18

7/2008*, B Sullivan / 1353048



U 15

5/2008*, Michael Nitz / 1353049

FRIGATES

4 BRANDENBURG CLASS (TYPE 123) (FFGHM)

Name	No	Builders	Laid down	Launched	Commissioned
BRANDENBURG	F 215	Blohm + Voss, Hamburg	11 Feb 1992	28 Aug 1992	14 Oct 1994
SCHLESWIG-HOLSTEIN	F 216	Howaldtswerke, Kiel	1 July 1993	8 June 1994	2 Nov 1995
BAYERN	F 217	Thyssen Nordseewerke, Emden	16 Dec 1993	30 June 1994	15 June 1996
MECKLENBURG-VORPOMMERN	F 218	Bremer Vulkan/Thyssen Nordseewerke	23 Nov 1993	8 July 1995	6 Dec 1996

Displacement, tons: 5,400 full load
Dimensions, feet (metres): 455.7 oa, 416.3 wl × 54.8 × 22.3
 (138.9; 126.9 × 16.7 × 6.8)
Main machinery: CODOG: 2 GE 7LM2500SA-ML gas turbines, 51,000 hp (38 MW) sustained; 2 MTU 20V 956 TB92 diesels; 11,070 hplm (8.14 MW) sustained; 2 shafts, Escher Wyss; cp props
Speed, knots: 29; 21 on diesels
Range, n miles: 4,000 at 18 kt
Complement: 229 (31 officers) plus 14

Missiles: SSM: 4 Aerospatiale MM 38 Exocet (2 twin) (from Type 101A); inertial cruise; active radar homing to 42 km (23 n miles) at 0.9 Mach; warhead 165 kg; sea-skimmer.
SAM: Martin Manetta VLS Mk 41 Mod 3 for 16 NATO Sea Sparrow RIM-7P; semi-active radar homing to 16 km (8.5 n miles) at 2.5 Mach; warhead 38 kg
 2 Raytheon RAM RIM-116 21 cell Mk 49 launchers; passive IR/anti-radiation homing to 9.6 km (5.2 n miles) at 2.5 Mach; warhead 9.1 kg; 42 missiles.

Guns: 1 OTO Melara 3 in (76 mm) Mk 75; 105 rds/min to 16 km (8.6 n miles) anti-surface; 12 km (6.5 n miles) anti-aircraft; weight of shell 6 kg.
 2 Rheinmetall 20 mm Rh 202 to be replaced by Mauser 27 mm.

Torpedoes: 4—324 mm Mk 32 Mod 9 (2 twin) tubes; anti-submarine. Honeywell Mk 46 Mod 2; anti-submarine; active/passive homing to 11 km (5.9 n miles); at 40 kt; warhead 44 kg. To be replaced by Eurotorp MU 90 Impact in due course

Countermeasures: Decoys: 4 Rheinmetall MASS-4L decoy launchers
ESM/ECM: EADS FL 1800S Stage II; intercept and jammers.
Combat data systems: Atlas Elektronik/Paramax SATIR action data automation with Unisys UYK 43 computer; Link 11. Link 16. SATCOM

Weapons control: Thales MWCS. 2 optical sights. STN Atlas Elektronik WBA optronic sensor.

Radars: Air search. Thales LW08; D-band. Air/surface search. Thales SMART; 3D; F-band. Fire control. 2 Thales STIR 180 trackers
Navigation: 2 Sperry Bridgemaster E; I-band.

Sonars: Atlas Elektronik DSQS-23BZ; hull-mounted; active search and attack; medium frequency
 Towed array (provision only); active; low frequency

Helicopters: 2 Westland Sea Lynx Mk 88A

Programmes: Four ordered 28 June 1989. Developed by Blohm + Voss whose design was selected in October 1988. Replaced deleted Hamburg class.

Modernisation: SCOT 3 SATCOM and STN optronic sensor fitted from 1988. All four ships are to undergo a major modernisation programme to extend service life to at least 2025. A contract was signed on 21 September 2005 for Phase 1 (2007-11), the replacement of the combat data system by the Thales SABRINA 21 system, which



BRANDENBURG

(Scale 1 : 1,200), Ian Sturton / 115348/



MECKLENBURG-VORPOMMERN

10/2004, B Sullivan / 0587753

incorporates Tacicos-NC and Sowsco-DDS technology. In Phase 2 (2008-14), ASW capabilities are to be upgraded with the installation of the Eurotorp MU 90 lightweight torpedo. Low Frequency Towed Active Sonar (LFTAS) is being trialled in Bayern from 2008-2009. Phase 2 is also likely to include upgrade of the IFF system. Phase 3 (2012-16) will improve AAW and ASUW capabilities by installation and integration of RIM-162 Evolved Sea Sparrow (ESSM) and a new surface-to-surface missile.

In a separate contract the DSQS-23BZ bow sonar is to be upgraded 2005-09.

Structure: The design is a mixture of MEKO and improved servicesability Type 122 having the same propulsion as the Type 122. Contemporary stealth features. All steel. Fin stabilisers. Space allocated for a Task Group Commander and Staff

Operational: 2nd Frigate Squadron based at Wilhelmshaven. One RIB is carried for boarding operations.



BAYERN

6/2008*, A A de Kruiff / 1353053



BRANDENBURG

9/2008, B Sullivan / 1353052



BRANDENBURG

9/2008, J Brodie / 1353047



MECKLENBURG-VORPOMMERN

5/2008, Michael Nitz / 1353054



MECKLENBURG-VORPOMMERN

9/2004, John Brodie / 058720

8 BREMEN CLASS (TYPE 122) (FFGHM)

Name	No	Builders	Laid down	Launched	Commissioned
BREMEN	F 207	Bremer Vulkan	8 July 1979	27 Sep 1979	7 May 1982
NIEDERSACHSEN	F 208	AG Weser/Bremer Vulkan	9 Nov 1979	9 June 1980	15 Oct 1982
RHEINLAND-PFALZ	F 209	Blohm + Voss/Bremer Vulkan	29 Sep 1979	3 Sep 1980	9 May 1983
EMDEN	F 210	Thyssen Nordseewerke, Emden/Bremer Vulkan	23 June 1980	17 Dec 1980	7 Oct 1983
KÖLN	F 211	Blohm + Voss/Bremer Vulkan	16 June 1980	29 May 1981	19 Oct 1984
KARLSRUHE	F 212	Howaldtswerke, Kiel/Bremer Vulkan	10 Mar 1981	8 Jan 1982	19 Apr 1984
AUGSBURG	F 213	Bremer Vulkan	4 Apr 1987	17 Sep 1987	3 Oct 1989
LÜBECK	F 214	Thyssen Nordseewerke, Emden/Bremer Vulkan	1 June 1987	15 Oct 1987	19 Mar 1990

Displacement, tons, 3,680 full load

Dimensions, feet (metres) 426.4 x 47.6 x 21.3
(138 x 14.5 x 6.5)

Main machinery: CODOG; 2 GE LM 2500 gas turbines; 51,000 hp (38 MW) sustained; 2 MTU 20V 956TB92 diesels; 11,070 hp (8.14 MW) sustained; 2 shafts; cp props

Speed, knots: 30; 20 on diesels

Range, n miles: 4,000 at 18 kt

Complement: 219 (26 officers)

Missiles: SSM: 8 McDonnell Douglas Harpoon (2 quad) launchers ●, active radar homing to 130 km (70 n miles) at 0.9 Mach; warhead 227 kg.

SAM 8 Raytheon NATO Sea Sparrow RIM-7P; Mk 29 octuple launcher ●; semi-active radar homing to 16 km (8.5 n miles) at 2.5 Mach; warhead 38 kg.

2 Raytheon RAM RIM-116 21 cell Mk 49 launchers ●; passive IR/anti-radiation homing to 9.6 km (5.2 n miles) at 2.5 Mach; warhead 9.1 kg

Guns: 1 OTO Melara 3 in (76 mm)/62 Compact ●; 108 rds/min to 16 km (8.6 n miles) anti-surface; 12 km (6.5 n miles) anti-aircraft, weight of shell 6 kg
2 Mäuser 27 mm
4—12.7 mm MGs.

Torpedoes: 4—324 mm Mk 32 (2 twin) tubes ●. 8 Honeywell Mk 46 Mod 2; anti-submarine; active/passive homing to 11 km (5.9 n miles) at 40 kt; warhead 44 kg. To be replaced by Eurotorp MU 90.

Countermeasures: Decoys: 4 Loral Hyco SRBOC ● 6-barrelled fixed Mk 36; chaff and IR flares to 4 km (2.2 n miles). SLQ-25 Nixie, towed torpedo decoy. Prairie bubble noise reduction.

ESM/ECM: EADS FL 1800 Stage II ●; intercept and jammer.

Combat data systems: SATIR action data automation, Link 11; Link 16; Matra Marconi SCOT 1A SATCOM ● (3 sets for the class)

Weapons control: Thales WM25/STIR. STN Atlas Elektronik WBA optronic sensor

Radars: Air/surface search: DASA TRS-3D/32 ●; C-band.

Navigation: Kelvin Hughes Nucleus 2 5000A; I-band

Fire control: Thales WM25 ●; I/J-band
Thales STIR ●; I/J/K-band; range 140 km (76 n miles) for 1 m² target.

Sonars: Atlas Elektronik DSQS-21BZ (BO); hull-mounted; active search and attack; medium frequency.

Helicopters: 2 Westland Sea Lynx Mk 88A ●.

Programmes: Approval given in early 1976 for first six of this class, a modification of the Netherlands Kortonaer class. Replaced the deleted Fletcher and Köln classes.



EMDEN

(Scale 1 : 1,200), Ian Sturton / 0017400



KÖLN

3/2008*, Guy Toremans / 1353057

Equipment ordered February 1986 after order placed 6 December 1985 for last pair. Hulls and some engines provided in the five building yards. Ships were then towed to the prime contractor Bremer Vulkan where weapon systems and electronics were fitted and trials conducted. The three names for F 210-212 were changed from the names of Lander to take the well known town names of the Köln class as they were paid off

Modernisation: RAM fitted from 1993-1996. Updated EW fit from 1994. 20 mm guns, taken from Type 520 LCUs, fitted aft of the bridge on each side TRS-3D/32 radar has replaced DA 08 in all ships. STN optronic sensor fitted from 1998. 27 mm guns to replace 20 mm in due course. All eight ships are to undergo a modernisation programme to extend service life to at least 2015. A contract was

signed on 21 September 2005 for the replacement of the combat data system by the Thales SABRINA 21 system, which incorporates Tacticos-NC and Sewaco-DDS technology. The work is to include integration of Link 16 which is currently being fitted throughout the class. The modernisation is also likely to include upgrade of the IFF system and installation of the Rheinmetall MSP 500 optronic director. The first ship to be refitted was Bremen, which completed in 2008. The programme will be completed when Köln returns to the fleet in 2011

Operational: Form 4th Frigate Squadron based at Wilhelmshaven. Three containerised SCOT 1A terminals acquired in 1988 and when fitted are mounted on the hangar roof.



RHEINLAND-PFALZ

3/2008*, Michael Nitz / 1353056



LÜBECK

5/2008*, Michael Nitz / 1353056

3 SACHSEN CLASS (TYPE 124) (FFGHM)

Name	No	Builders	Laid down	Launched	Commissioned
SACHSEN	F 219	Blohm + Voss, Hamburg	1 Feb 1999	1 Dec 1999	4 Nov 2004
HAMBURG	F 220	Howaldtswerke, Kiel	1 Sep 2000	18 Aug 2002	13 Dec 2004
HESSEN	F 221	Thyssen Nordseewerke, Emden	14 Sep 2002	27 Jun 2003	15 Dec 2005

Displacement, tons: 5,600 full load
Dimensions, feet (metres): 469.2 oa; 433.7 wl x 67.1 x 22.7
(143; 132.2 x 17.4 x 6.9)

Main machinery: CODAG; 1 GE LM 2500 gas turbine; 31,514 hp (23.5 MW); 2 MTU 20V 1163 TB 93 diesels; 20,128 hp (14.8 MW); 2 shafts, cp props

Speed, knots: 29

Range, n miles: 4,000 at 18 kt

Complement: 255 (39 officers)

Missiles: SSM: 4 McDonnell Douglas Harpoon Block 1D ●
2 (twin); active radar homing to 95 km (51 n miles) at 0.9 Mach; warhead 227 kg.

SAM: Mk 41 VLS (32 cells) ● 24 Raytheon Standard SM-2 Block IIIA; command/inertial guidance; semi-active radar homing to 167 km (90 n miles) at 2.5 Mach 32 Evolved Sea Sparrow RIM 162B; semi-active radar homing to 18 km (9.7 n miles) at 3.6 Mach; warhead 39 kg
2 RAM RIM-116 launchers ● 21 cell Mk 49 launchers; passive IR/anti-radiation homing to 9.6 km (5.2 n miles) at 2.5 Mach; warhead 9.1 kg. 42 missiles.

Guns: 1 Otobreda 76 mm/82 IROF ●; 108 rds/min to 16 km (8.6 n miles) anti-surface; 12 km (6.5 n miles) anti-aircraft, weight of shell 6 kg
2 Mauser 27 mm ●
4-12.7 mm MGs

Torpedoes: 6 324 mm (2 triple) Mk 32 Mod 7 tubes ●
Eurotorp Mu 90 Impact

Countermeasures: Decoys: 6 SRBOC 130 mm chaff launchers ●

ESM/ECM: EADS F1 1800S-II; intercept ● and jammer.

Combat data systems: CDS F 124; Link 11/16.

Electro-optic systems: MSP optronic director ●

Radars: Air search: SMART L ● 3D; D-band.

Air/surface search: Thales APAR phased array ● I/J-band.

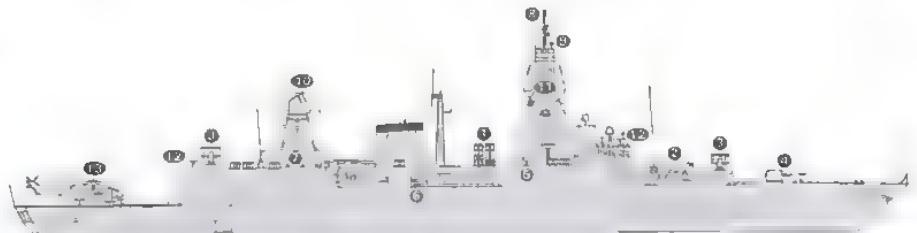
Navigation: 2 SAM 9600M ●; E/I-band.

IFF: Mk XII

Sonars: Atlas DSQS-21B (Mod), bow-mounted; active search; medium frequency

Helicopters: 2 NH90 NFH ● or 2 Lynx 88A.

Programmes: Type 124 air defence ships built to replace the Lütjens class. A collaborative design with the Netherlands. A Memorandum of Understanding (MoU) was signed in October 1993 between Blohm + Voss,



SACHSEN

(Scale 1 : 1,200), Ian Sturton / 1353058



SACHSEN

6/2007, Maritime Photographic / 1165746

Royal Schelde and Bazán shipyards. A contract to build three ships was authorised on 12 June 1998. An option for a fourth is not likely to be exercised. *Hessen* started sea trials on 21 January 2005.

Modernisation: SRBOC chaff launchers are to be replaced with MASS from 2010

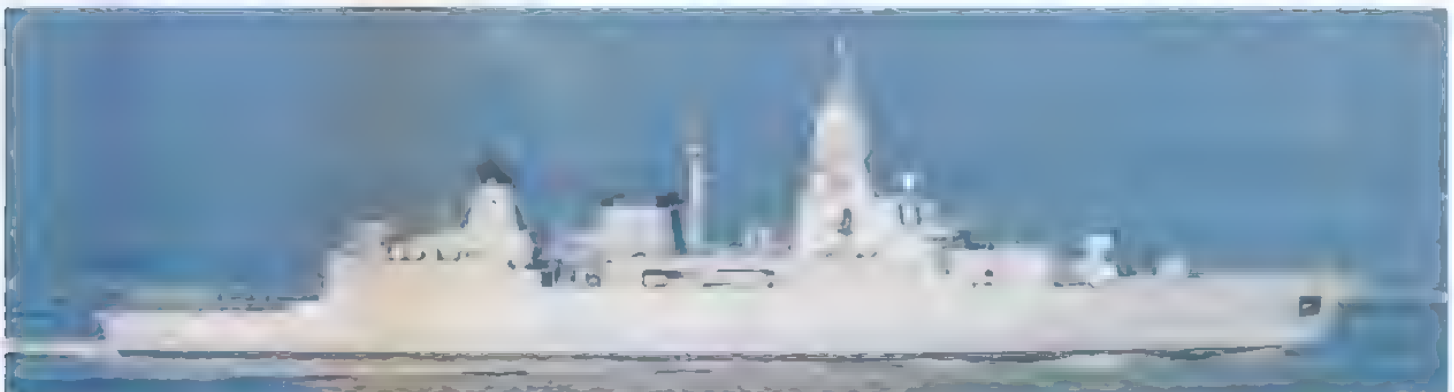
Structure: Based on the Type 123 hull with improved stealth features. MBB-FHS helo handling system.

Operational: Successful sea firings of Standard SM-2 and ESSM conducted at USN range off southern California in July/August 2004. Part of 2nd Frigate Squadron based at Wilhelmshaven.



HAMBURG

11/2007, B Sullivan / 1165751



HESSEN

10/2007, Michael Nitz / 1168732

0 + 4 BADEN-WÜRTTEMBERG (TYPE 125) CLASS (FFGHM)

Name	No	Builders	Laid down	Launched	Commissioned
BADEN-WÜRTTEMBERG	-	-	2009	2012	2014
NORDRHEIN-WESTFALEN	-	-	2010	2013	2015
-	-	-	2011	2014	2016
-	-	-	2012	2015	2017

Displacement, tons: 6,800 full load
Dimensions, feet (metres): 477.7 x 60.4 x 18.4 (145.6 x 18.4 x 5.0)
Main machinery: CODLAG: 1 gas turbine; 26,820 hp (20 MW); 4 diesels; 16,100 hp (12 MW); 2 motors; 12,100 hp (9.0 MW); 2 shafts; cp props; bow thruster
Speed, knots: 26
Range, n miles: 4,000 at 18 kt
Complement: 110 (accommodation for 130)

Missiles: SSM 8 McDonnell Douglas Harpoon ●
 SAM: 2 Raytheon RAM 21-cell Mk 49 launchers ●
Guns: 1 OTO Melara 5 in (127 mm)/64 LW ●
 2 Rheinmetall/Mauser MLG 27 mm, 5—12.7 mm remote-controlled MGs; 2—12.7 mm MGs.
Countermeasures: 4 Rheinmetall MASS decoy launchers; anti-torpedo defence system.
Combat data systems: Atlas Elektronik Links 11, 16 and 22.
Weapons control: 2 multisensor, 1 EO surveillance system ●
Radars: Air/EADSTRS 3D/NR ●; C-band.
Navigation: To be announced ●
Sonars: One diver detection (HF)

Helicopters: 2 MH 90 ●



BADEN-WÜRTTEMBERG CLASS

(Scale 1 : 1,200), Ian Sturton / 1166826

Programmes: The contract for the design and construction of four F 125 frigates was signed on 26 June 2007. The building consortium includes ThyssenKrupp Marine Systems and Lürssen Werft. The principal role of the ship is to conduct long-endurance crisis-management operations, particularly tactical naval gunfire support and support of special forces. The details of the ship are based on current planning assumptions and could change.
Structure: The ships are to be equipped with an 'innovative damage control concept'. There is to be accommodation

for up to 50 special forces for whom there will be a dedicated operations room. The ship is to carry four high speed 10 m craft. A VLS launcher may also be incorporated. A water cannon is to be fitted.
Operational: The ships will be designed to be able to deploy for up to two years without return to home-base. This will include a 50 per cent reduced manning concept featuring two crews of about 160 each (plus 20 for the aviation detachment). These would relieve each other on a regular, four-month, rotating schedule.

CORVETTES

Notes: The K 131 programme is for a medium-size surface combatant, to replace the Type 122 frigates and the Type 143A fast attack craft. Up to eight ships, built to a modular design, are likely to be required to enter service from about 2017.

5 BRAUNSCHWEIG (K130) CLASS (FSGHM)

Name	No	Builders	Laid down	Launched	Commissioned
BRAUNSCHWEIG	F 260	Blohm + Voss, Hamburg	2005	19 Apr 2006	16 Apr 2008
MAGDEBURG	F 261	Lürssen, Vegesack	2005	6 Sep 2006	22 Sep 2008
ERFURT	F 262	Thyssen Nordseewerke, Emden	2006	29 Mar 2007	Apr 2009
OLDENBURG	F 263	Blohm + Voss, Hamburg	2006	28 June 2007	Apr 2009
LUDWIGSHAFEN	F 264	Lürssen, Vegesack	2006	26 Sep 2007	May 2009

Displacement, tons: 1,840 full load
Dimensions, feet (metres): 291.3 x 43.4 x 15.7 (88.8 x 13.2 x 4.8)
Main machinery: 2 MTU diesels; total of 19,850 hp (14.8 MW); 2 shafts
Speed, knots: 26. **Range, n miles:** 2,500 at 15 kt
Complement: 58 (8 officers)

Missiles: SSM: 4 Saab RBS-15 Mk 3 ●, active radar homing to 200 km (108 n miles) at 0.9 Mach, warhead 200 kg.
 SAM: 2 Raytheon RAM RIM-116 21 cell Mk 49 launchers ●; passive IR/anti-radiation homing to 9.6 km (5.2 n miles) at 2.5 Mach; warhead 9.1 kg; 42 missiles.
Guns: 1 Otobreda 76 mm/62 ●; 108 rds/min to 16 km (8.6 n miles) anti-surface, weight of shell 6 kg; 2 Mauser 27 mm ●.
Countermeasures: Decoys: 2 Rheinmetall MASS ●; decoy launchers.
ESM/ECM: EADS UL 5000K; intercept and jammer.
Combat data systems: SEWACO; Link 11/16.
Electro-optic systems: 2 Thales Mirador Trainable Electro-Optical Observation System (TEOOS) ●
Radars: Air/surface search: EADS TRS-3D ●; C-band.
Navigation: 2 Raymarine Pathfinder/ST 34 ●; E/F/I-bands.
Fire control: EADS TRS-3D; C-band.



BRAUNSCHWEIG

(Scale 1 : 800), Ian Sturton / 1166827

Helicopters: Platform for 1 medium and for UAV (possibly Schiebel Camcopter).

Programmes: Invitations to tender accepted at the end of 1998. Blohm + Voss selected as consortium leader 18 July 2000. Consortium includes Thyssen Nordseewerke and Lürssen. Batch of five ships ordered on 14 December 2001 and first steel cut for the first of class on 19 July 2004. The bow section of the first ship was launched on 6 September 2005. All bow sections are being

constructed at Emden, the aft sections at Lürssen and the superstructure at Blohm+Voss. There will be no further ships of this class.
Modernisation: All five ships are to be fitted with bow thrusters.
Structure: Measures to reduce radar, IR (water-cooled surface exhaust system) and noise signatures have been included in the design.
Operational: The ships form the 1st Corvette Squadron based at Rostock-Warnemünde



BRAUNSCHWEIG

4/2008, Michael Nitz / 1353059



BRAUNSCHWEIG

4/2008*, Michael Nitz / 1353060



OLDENBURG

7/2008*, Michael Nitz / 1353061

SHIPBORNE AIRCRAFT

Numbers/Type: 30 NH Industries MH-90.
Operational speed: 165 kt (305 km/h).
Service ceiling: 9,720 ft (2,960 m).
Range: 430 n miles (796 km).

Role/Weapon systems: 30 MH-90 helicopters, to replace the Sea King inventory, are planned to be delivered from 2015. Sensors: ENR 90 radar, Thales FLASH dipping sonar, FLIR. Weapons: Eurotorp Mu-90 torpedoes, ASM (to be confirmed).

Numbers/Type: 21 Westland Sea King Mk 41 KWS.
Operational speed: 140 kt (260 km/h).
Service ceiling: 10,500 ft (3,200 m).
Range: 630 n miles (1,165 km).

Role/Weapon systems: Used in shipborne role for Berlin class AFSH. Land-based roles include SAR, area surveillance and transport. Sensors: Ferranti Sea Spray Mk 3 radar, FLIR, RWR, chaff and flare dispenser Weapons: 1 - 12.7 mm MG



MH 90

6/2001, NH Industries 0062373



SEA KING

6/2008*, Harald Carstens / 1353062

290 Germany/Shipborne aircraft – Patrol forces

Numbers/Type: 22 West and Super Lynx Mk 88A.

Operational speed: 125 kt (232 km/h)

Service ceiling: 12,500 ft (3,810 m)

Range: 320 n miles (593 km).

Role/Weapon systems: Shipborne ASW/ASV role. Sensors: GEC Marine Sea Spray 3000 FLIR and Bendix AQS-18 dipping sonar. Weapons: ASW; up to two Mk 46 Mod 2 (or Eurotorp MU 90 Impact in due course) torpedoes. ASV: BAe Sea Skua, 1–12.7 mm MG.



LYNX MK 88A

3/2008*, Frank Findler / 135304b

LAND-BASED MARITIME AIRCRAFT (FRONT LINE)

Numbers/Type: 8 Lockheed P-3C Orion CUP.

Operational speed: 405 kt (750 km/h).

Service ceiling: 30,000 ft (9,145 m).

Range: 4,875 n miles (9,030 km).

Role/Weapon systems: Long-range maritime reconnaissance aircraft procured from the Netherlands 2005–06 and became fully operational in 2008. Aircraft updated under CUP programme. Sensors: AN/APS-137B(V)5 radar, AAQ 22 Safire FLIR, AN/ALR 95 ESM, AN/ALE 47 chaff dispenser, AN/AAR 47 missile warning system, AN/SSQ 227 central processor, AN/ASQ-78B acoustic processor, AQS 81 MAD. Weapons: 8 Mk 46 torpedoes (or Eurotorp MU 90 Impact in due course)



P-3C

7/2006, Michael Winter / 1158960

Numbers/Type: 2 Dornier DO 228-212

Operational speed: 156 kt (290 km/h).

Service ceiling: 20,700 ft (6,300 m).

Range: 667 n miles (1,235 km).

Role/Weapon systems: Pollution control. Sensors: Weather radar, SLAR, IR/UR scanner, microwave radiometer, LLL TV camera and data downlink. Weapons: Unarmed.



DORNIER 228

3/2006, Frank Findler / 1158886

Numbers/Type: 2 Breguet Atlantic 1.

Operational speed: 355 kt (658 km/h).

Service ceiling: 32,800 ft (10,000 m).

Range: 4,850 n miles (8,990 km).

Role/Weapon systems: Long-range Sigint aircraft.



ATLANTIC

5/2006, Michael Nitz / 1164831

Numbers/Type: 50 Panavia Tornado IDS

Operational speed: Mach 2.2.

Service ceiling: 80,000 ft (24,385 m).

Range: 1,500 n miles (2,780 km).

Role/Weapon systems: Swing-wing strike and recon; shore-based for fleet tactical support (recc, ASUW, limited air defence). Former naval aircraft transferred to the German Air Force in 2005. Sensors: Texas Instruments nav/attack system, MBB/Alenia multisensor recon pod. Weapons: ASV; four Kormoran 2 missiles. Fleet AD: two 27 mm cannon, four AIM 9L Sidewinder.



TORNADO

9/2004, Frank Findler / 1044258

PATROL FORCES

Notes: Vessels in this section have an 'S' number as part of their name as well as a 'P' pennant number. The 'S' number is shown in the Pennant List at the front of this country.

10 GEPARD CLASS (TYPE 143 A) (FAST ATTACK CRAFT—MISSILE) (PGGFM)

Name	No	Builders	Launched	Commissioned
GEPARD	P 6121	AEG/Lürssen	25 Sep 1981	13 Dec 1982
PUMA	P 6122	AEG/Lürssen	8 Feb 1982	24 Feb 1983
HERMELIN	P 6123	AEG/Kröger	8 Dec 1981	5 May 1983
NERZ	P 6124	AEG/Lürssen	18 Aug 1982	14 July 1983
ZOBEL	P 6125	AEG/Kröger	30 June 1982	25 Sep 1983
FRETTCHEN	P 6126	AEG/Lürssen	26 Jan 1983	15 Dec 1983
DACHS	P 6127	AEG/Kröger	14 Dec 1982	22 Mar 1984
OZELOT	P 6128	AEG/Lürssen	7 June 1983	3 May 1984
WIESEL	P 6129	AEG/Lürssen	8 Aug 1983	12 July 1984
HYANE	P 6130	AEG/Lürssen	5 Oct 1983	13 Nov 1984

Displacement, tons: 391 full load

Dimensions, feet (metres): 190 x 25.6 x 8.5 (57.6 x 7.8 x 2.6)

Main machinery: 4 MTU MA 16V 956 SB80 diesels; 13,200 hp(m) (9.7 MW) sustained; 4 shafts

Speed, knots: 40. **Range, n miles:** 2,600 at 16 kt, 600 at 33 kt

Complement: 34 (4 officers)

Missiles: SSM: 4 Aerospatiale MM 38 Exocet; inertial cruise; active radar homing to 42 km (23 n miles) at 0.9 Mach; warhead 185 kg, sea-skimmer.

SAM: 1 Raytheon RAM RIM-116 21 cell Mk 49 launcher; passive IR/anti-radiation homing to 9.6 km (5.2 n miles) at 2.5 Mach; warhead 9.1 kg.

Guns: 1 Otobreda 3 in (76 mm)/62 compact; 85 rds/min to 16 km (8.6 n miles) anti-surface; 12 km (6.5 n miles) anti-aircraft; weight of shell 6 kg 2–12.7 mm MGs.

Mines: Can lay mines.

Countermeasures: Decoys: Buck-Wegmann Hot Dog/Silver Dog, IR/chaff dispenser.

ESM/ECM: Dasa FL 1800 Mk 2; radar intercept and jammer.

Combat data systems: AGIS with Signal update; Link 11.

Electro-optic systems: STN Atlas WBA optronic sensor

Radars: Surface search/fire control: Signal WM27, I/J-band; range 48 km (25 n miles).

Navigation: Sperry Bridgmaster; I-band.

Programmes: Ordered mid-1978 from AEG-Telefunken with subcontracting to Lürssen (P 6121, 6122, 6124–6128) and Kröger (P 6123, 6129, 6130).

Modernisation: Updated EW fit in 1994–95. RAM fitted in Puma in 1992, and to the rest from 1993–98. Combat data system update completed in 1999. Improved EW aerials fitted from 1999.

Structure: Wooden hulls on aluminium frames.

Operational: Form 7th Squadron based on the tender *Eiba* at Warnemünde. To remain in commission until 2015+.



PUMA

6/2008*, Michael Nitz / 1353063



HYANE

6/2008*, A A de Kruif / 1353065



NERZ

4/2008*, Ian Harris / 1353064

AMPHIBIOUS FORCES

Notes: Procurement of a Joint Support Ship, possibly using an LHD/LPD design, is under consideration. Up to three units may be acquired with entry into service from 2020.

2 TYPE 520 (LCU)

LACHS L 762 SCHLEI L 765

Displacement, tons: 430 full load
Dimensions, feet (metres): 131.2 × 28.9 × 7.2 (40 × 8.8 × 2.2)
Main machinery: 2 MWM 12-cyl diesels; 1,020 hp(m) (750 kW); 2 shafts
Speed, knots: 11
Complement: 17
Military lift: 150 tons
Radars: Navigation. Kelvin-Hughes, I-band.

Comment: Similar to the US LCU (Landing Craft Utility) type. Provided with bow and stern ramp. Built by Howaldtswerke, Hamburg, 1965–66. Two sold to Greece in November 1989 and six more in 1992. Based at Eckenforde. Guns have been removed.



SCHLEI 6/2008, Michael Nitz / 1353066

MINE WARFARE FORCES

9 FRANKENTHAL CLASS (TYPE 332)
(MINEHUNTERS—COASTAL) (MHC)

Name	No	Builders	Launched	Commissioned
BAD BEVENSEN	M 1063	Lürssenwerft	21 Jan 1993	9 Dec 1993
BAD RAPPENAU	M 1067	Abeking & Rasmussen	3 June 1993	19 Apr 1994
GRÖMITZ	M 1064	Krögerwerft	29 Apr 1993	23 Aug 1994
DATTELN	M 1068	Lürssenwerft	27 Jan 1994	8 Dec 1994
DILLINGEN	M 1065	Abeking & Rasmussen	26 May 1994	25 Apr 1995
HOMBURG	M 1069	Krögerwerft	21 Apr 1994	26 Sep 1995
SULZBACH-ROSENBERG	M 1062	Lürssenwerft	27 Apr 1995	23 Jan 1996
FULDA	M 1058	Abeking & Rasmussen	29 Sep 1987	16 June 1998
WEILHEIM	M 1059	Lürssenwerft	26 Feb 1988	3 Dec 1998

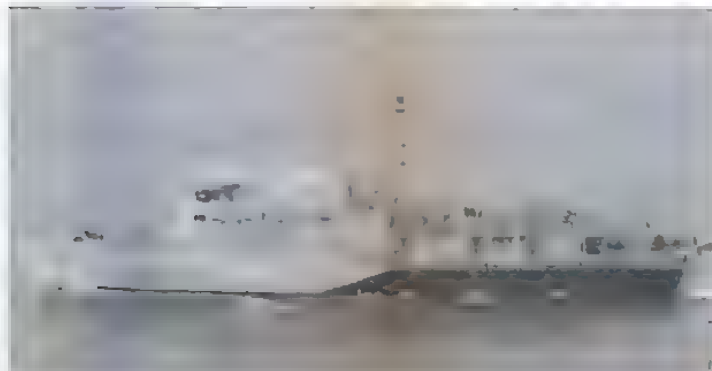
Displacement, tons: 650 full load
Dimensions, feet (metres): 178.8 × 30.2 × 8.5 (54.5 × 9.2 × 2.6)
Main machinery: 2 MTU 16V 396TB84 diesels; 5,550 hp(m) (4.08 MW) sustained; 2 shafts, cp props; 1 motor (minehunting)
Speed, knots: 18
Complement: 37 (5 officers)

Missiles: SAM: 2 Stinger quad launchers.
Guns: 1 Mauser 27 mm, 3—12.7 mm MGs.
Combat data systems: STN MWS 80-4.
Radars: Navigation. Raytheon SPS-64 or Sperry Bridgemaster; I-band.
Sonars: Atlas Elektronik DSQS-11M; hull-mounted; high frequency.

Programmes: First 10 ordered in September 1988 with STN Systemtechnik Nord as main contractor. M 1066 laid down at Lürssen 8 December 1989. Two ordered 18 October 1995.

Structure: Same hull, similar superstructure and high standardisation as Type 332 and 352. Built of amagnetic steel. Two STN Systemtechnik Nord Pinguin-B3 drones with sonar, TV cameras and two countermining charges, but not Troika control and minelaying capabilities.

Sales: Six of the class built for Turkey from late 1999. M 1060 and M 1066 decommissioned in 2006 and have been sold to the UAE. M 1061 converted to diving support role in 2007.



WEILHEIM 5/2008, Michael Nitz / 1353067

5 KULMBACH CLASS (TYPE 333)
(MINEHUNTERS—COASTAL) (MHC)

Name	No	Builders	Launched	Commissioned
ÜBERHERRN	M 1095	Abeking & Rasmussen	30 Aug 1988	19 Sep 1989
LABOE	M 1097	Krögerwerft	13 Sep 1988	7 Dec 1989
KULMBACH	M 1091	Abeking & Rasmussen	16 June 1989	24 Apr 1990
PASSAU	M 1096	Abeking & Rasmussen	1 Mar 1990	18 Dec 1990
HERTEN	M 1099	Krögerwerft	22 Dec 1989	26 Feb 1991

Displacement, tons: 635 full load
Dimensions, feet (metres): 178.5 × 30.2 × 8.2 (54.4 × 9.2 × 2.5)
Main machinery: 2 MTU 16V 538TB91 diesels; 6,140 hp(m) (4.5 MW) sustained; 2 shafts; cp props
Speed, knots: 18
Complement: 37 (4 officers)

Missiles: SAM: 2 Stinger quad launchers.
Guns: 1 Mauser 27 mm, 3—12.7 mm MGs
Mines: 60
Countermeasures: Decoys: 2 Silver Dog chaff rocket launchers (to be replaced by Rheinmetall MASS).
ESM: Thomson-CSF DR 2000 (to be replaced by SAAB Avitronic SME 100); radar warning.
Combat data systems: PALIS with Link 11.
Radars: Surface search/fire control: Signaal WM20/2; I/J-band.
Navigation: Raytheon SPS-64 or Sperry Bridgemaster; I-band.
Sonars: Atlas Elektronik DSQS-11M; hull-mounted; high frequency.

Programmes: On 3 January 1985 an STN Systemtechnik Nord-headed consortium was awarded the order. The German designation of 'Schnelles Minenkampfbboot' was changed in 1989 to 'Schnelles Minensuchboot'. After modernisation redesignated 'Minenjagdboote'.

Modernisation: Five ships of Hameln class converted to minehunters 1999–2001 and redesignated Kulmbach class (Type 333). Eight to ten disposable ROV Sea Fox I are carried for inspection and up to 30 Sea Fox C for mine disposal. It has a range of 500 m at 6 kt and uses a shaped charge.

Structure: Ships built of amagnetic steel adapted from submarine construction. Signaal M 20 System removed from the deleted Zobel class fast attack craft. PALIS active link.



LABOE 7/2008, B Präzelin / 1353044

5 ENSDORF CLASS (TYPE 352)
(MINESWEEPERS—COASTAL) (MHCD)

Name	No	Builders	Launched	Commissioned
HAMELN	M 1092	Lürssenwerft	15 Mar 1988	29 June 1989
PEGNITZ	M 1090	Lürssenwerft	13 Mar 1989	9 Mar 1990
SIEGBURG	M 1098	Krögerwerft	14 Apr 1989	17 July 1990
ENSDORF	M 1094	Lürssenwerft	8 Dec 1989	25 Sep 1990
AUERBACH	M 1093	Lürssenwerft	18 June 1990	7 May 1991

Displacement, tons: 635 full load
Dimensions, feet (metres): 178.5 × 30.2 × 8.2 (54.4 × 9.2 × 2.5)
Main machinery: 2 MTU 16V 538TB91 diesels; 6,140 hp(m) (4.5 MW) sustained; 2 shafts; cp props
Speed, knots: 18
Complement: 38 (4 officers)

Missiles: SAM: 2 Stinger quad launchers.
Guns: 1 Mauser 27 mm, 3—12.7 mm MGs.
Mines: 60
Countermeasures: Decoys: 2 Silver Dog chaff rocket launchers (to be replaced by Rheinmetall MASS).
ESM: Thomson-CSF DR 2000 (to be replaced by SAAB Avitronic SME 100); radar warning.
Combat data systems: PALIS with Link 11. STN C2 remote-control system for minesweeping drone Seehund.
Radars: Surface search/fire control: Signaal WM20/2; I/J-band.
Navigation: Raytheon SPS-64 or Sperry Bridgemaster; I-band.
Sonars: STN ADS DSQS 15A mine-avoidance; active high frequency.

Programmes: On 3 January 1985 an STN Systemtechnik Nord-headed consortium was awarded the order. The German designation of 'Schnelles Minenkampfbboot' was changed in 1989 to 'Schnelles Minensuchboot'. After modernisation redesignated 'Hohlstabenboote'.

Modernisation: Five minesweepers of Hameln class converted 2000–2001 to control up to four remotely controlled minesweeping drones (Seehund). ROV Sea Fox I carried for inspection. ROV Sea Fox C for mine disposal. Double ropesa system for mechanical sweeping.

Structure: Ships built of amagnetic steel adapted from submarine construction. Signaal M 20 System removed from the deleted Zobel class fast attack craft. PALIS active link.



ENSDORF 4/2008, Martin Mokrus / 1353045

18 SEEHUND (MINESWEEPERS—DRONES) (MSD)

SEEHUND 1–18

Displacement, tons: 95 full load
Dimensions, feet (metres): 78.1 × 15 × 6.9 (23.8 × 4.6 × 2.1)
Main machinery: 1 Deutz MWM D602 diesel; 446 hp(m) (328 kW); 1 shaft
Speed, knots: 9 **Range, n miles:** 520 at 8 kt
Complement: 3 (passage crew)

Comment: Built by MaK, Kiel and Blohm + Voss, Hamburg between August 1980 and May 1982. Modernised in conjunction with the Type 352 conversion programme 2000–2001.



SEEHUND 17 5/2008*, Michael Nitz / 1353068

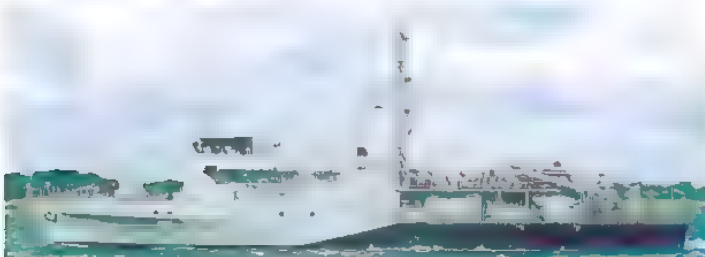
1 DIVER SUPPORT SHIP (TYPE 332B) (MCD)

Name	No	Builders	Launched	Commissioned
ROTTWEIL	M 1081	Krögerwerft	12 Mar 1982	7 July 1993

Displacement, tons: 650 full load
Dimensions, feet (metres): 178.8 × 30.2 × 8.5 (54.5 × 9.2 × 2.6)
Main machinery: 2 MTU 16V 396 TB84 diesels; 5,550 hp(m) (4.08 MW) sustained; 2 shafts, cp props; 1 motor (minehunting)
Speed, knots: 18
Complement: 27 (5 officers)

Missiles: SAM: 2 Stinger quad launchers.
Guns: 1 Maser 27 mm
Combat data systems: STN MWS 80-4.
Radars: Navigation: Sperry Bridgemaster SPS-64; I-band.
Sonars: Atlas Elektronik DSQS-11M; hull-mounted; high frequency.

Comment: Built and operated as minehunter until 2007 when it was converted to a diving support role. Carries three diving teams. Capable of laying 24 mines. Amagnetic steel construction. Based at Eckernförde.



ROTTWEIL 4/2002, H M Steele / 0068085

SURVEY AND RESEARCH SHIPS

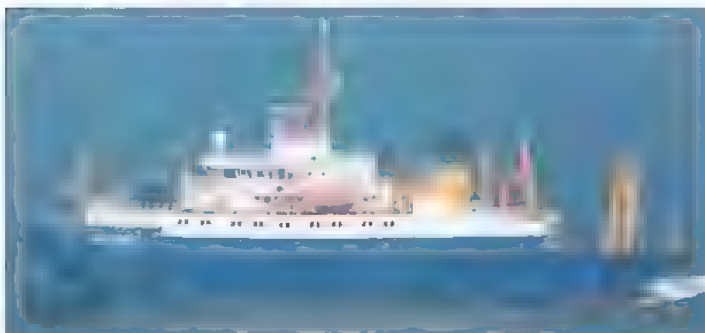
Notes: A 12 ton midget submarine *Narwal* was recommissioned in April 1996 for research. Originally built by Krupp Atlas as an SDV.

1 TYPE 751 (AGE)

Name	No	Builders	Commissioned
PLANET	A 1437	Thyssen Nordseewerke, Emden	31 May 2005

Displacement, tons: 3,500 full load
Dimensions, feet (metres): 239.5 × 89.26 × 22.3 (73 × 27.2 × 6.8)
Main machinery: Diesel electric; 2 permanent magnet motors; 6,034 hp(m) (4.5 MW); 2 shafts
Speed, knots: 15 **Range, n miles:** 5,000 at 15 kt
Complement: 25 plus 20 trials personnel

Comment: Ex-Type 752 SWATH design which replaced the old *Planet*. The roles of the ship include both research and trials. It is run by Wehrtechnische Dienststelle (WTD 71) in Eckernförde. It supports both WTD 71 and Forschungsanstalt für Wasserschall und Geophysik (FWG) in Kiel. First authorised in April 1998 and contract placed with TNSW, Emden. After a delay of over two years, firm order finally made in December 2000. Launched on 12 August 2003, the ship has a sonar well, torpedo tubes and can carry five 20 ft containers.



PLANET 3/2007, Michael Nitz / 1166735

3 SCHWEDENECK CLASS (TYPE 748) (MULTIPURPOSE) (AG)

Name	No	Builders	Commissioned
SCHWEDENECK	Y 860	Krögerwerft, Rendsburg	20 Oct 1987
KRONSORT	Y 861	Eisflether Werft	2 Dec 1987
HELMSAND	Y 862	Krögerwerft, Rendsburg	4 Mar 1988

Displacement, tons: 1,018 full load
Dimensions, feet (metres): 185.3 × 35.4 × 17 (56.5 × 10.8 × 5.2)
Main machinery: Diesel-electric; 3 MTU 6V 396 TB53 diesel generators; 1,485 kW 60 Hz sustained; 1 motor; 1 shaft
Speed, knots: 13
Range, n miles: 2,400 at 13 kt
Complement: 13 plus 10 trials parties
Radars: Navigation: 2 Raytheon; I-band

Comment: Order for first three placed in mid-1985. One more was planned after 1995 but was not funded. Based at Eckernförde.



HELMSAND 6/2007, Frank Findler / 1166806

3 STOLLERGRUND CLASS (TYPE 745) (MULTIPURPOSE) (AG)

Name	No	Builders	Commissioned
STOLLERGRUND	Y 863	Krögerwerft	31 May 1989
MITTELGRUND	Y 864	Eisflether Werft	21 Sep 1989
BREITGRUND	Y 865	Eisflether Werft	23 Feb 1990

Displacement, tons: 450 full load
Dimensions, feet (metres): 109.9 × 30.2 × 10.5 (33.5 × 9.2 × 3.2)
Main machinery: 1 Deutz-MWM SBV6M628 diesel; 1,690 hp(m) (1.24 MW) sustained; 1 shaft; bow thruster
Speed, knots: 12 **Range, n miles:** 1,000 at 12 kt
Complement: 7 plus 6 trials personnel

Comment: Five ordered from Lürssen in November 1987; two subcontracted to Eisflether. Equipment includes two I-band radars and an intercept sonar. Based at the Armed Forces Technical Centre, Eckernförde. *Bani* decommissioned in 2003 and *Kalkgrund* in 2004. Both ships transferred to Israel.



STOLLERGRUND 6/2006, A A de Kruff / 1164825

1 TRIALS SHIP (TYPE 741) (YAG)

Name	No	Builders	Commissioned
WILHELM PULLWER	A 1409 (ex-Y 838)	Schürenstadt, Bardenfleth	18 July 1967

Displacement, tons: 180 full load
Dimensions, feet (metres): 103.3 × 24.6 × 7.2 (31.5 × 7.5 × 2.2)
Main machinery: 2 MTU MB diesels; 700 hp(m) (514 kW); 2 Voith-Schneider props
Speed, knots: 12.5
Complement: 17

Comment: Wooden hulled trials ship for barrage systems. To be decommissioned in 2012.



WILHELM PULLWER 9/2004, Hartmut Ehlers / 1044760

1 TRIALS BOAT (TYPE 740) (YAG)

Name	No	Builders	Commissioned
BUMS	Y 1689	Howaldtswerke, Kiel	16 Feb 1970

Dimensions, feet (metres): 86.6 × 22.3 × 4.9 (26.4 × 6.8 × 1.5)

Comment: Single diesel engine. Has a 3 ton crane. Based at Eckornförde To be decommissioned in 2012



BUMS 8/1997, N Sifferlinger / 0012437

INTELLIGENCE VESSELS**3 OSTE CLASS (TYPE 423) (AGI)**

Name	No	Builders	Commissioned
ALSTER	A 50	Schiffsbaugesellschaft, Flensburg	5 Oct 1989
OSTE	A 52	Schiffsbaugesellschaft, Flensburg	30 June 1988
OKER	A 53	Schiffsbaugesellschaft, Flensburg	10 Nov 1988

Displacement, tons: 3,200 full load
 Dimensions, feet (metres): 273.9 × 47.9 × 13.8 (83.5 × 14.6 × 4.2)
 Main machinery: 2 Deutz-MWM BV16M628 diesels; 8,980 hp(m) (6.6 MW) sustained, 2 shafts; 2 motors (for slow speed)
 Speed, knots: 21 (diesels); 8 (motors)
 Complement: 36 plus 40 specialists or 51 plus 36 specialists
 Missiles: SAM: 2 Stinger launchers.
 Guns: 2—12.7 mm Mauser MGs.

Comment: Ordered in March 1985 and December 1986 and replaced the Radar Trials Ships of the same name (old Oker and Alster transferred to Greece and Turkey respectively) Oste launched 15 May 1987, Oker 24 September 1987, Alster 4 November 1988. Carry Atlas Elektronik passive sonar and optical ELAM and electronic surveillance equipment. Particular attention given to accommodation standards. Fitted for but not with light armaments.



ALSTER 6/2008*, Harald Carstens / 13030369

TRAINING SHIPS

Notes: In addition to the one listed below there are 54 other sail training vessels (Types 910-915)

1 SAIL TRAINING SHIP (AXS)

Name	No	Builders	Commissioned
GORCH FOCK	A 60	Blohm + Voss, Hamburg	17 Dec 1958

Displacement, tons: 2,006 full load
 Dimensions, feet (metres): 293 × 39.2 × 16.1 (89.3 × 12 × 4.9)
 Main machinery: Auxiliary 1 Deutz MWM BV6M628 diesel; 1,690 hp(m) (1.24 MW) sustained, 1 shaft; Kamewa cp prop
 Speed, knots: 11 power; 15 sail. Range, n miles: 1,990 at 10 kt
 Complement: 206 (10 officers, 140 cadets)

Comment: Sail training ship of the improved Horst Wessel type Barque rig. Launched on 23 August 1958. Sail area, 21,141 sq ft. Major modernisation in 1985 at Howaldtswerke. Second major refit in 1991 at Motorenwerke, Bremerhaven included a new propulsion engine and three diesel generators, which increased displacement. Third major refit at Elsfleth-Werft in 2000-2001 included modernisation of electrical distribution system.



GORCH FOCK 5/2008*, Michael Nitz / 13530370

AUXILIARIES**2 + 1 BERLIN CLASS (TYPE 702) (AFSH)**

Name	No	Builders	Launched	Commissioned
BERLIN	A 1411	Flensburger	30 Apr 1999	11 Apr 2001
FRANKFURT AM MAIN	A 1412	Flensburger	5 Jan 2001	27 May 2002

Displacement, tons: 20,240 full load
 Dimensions, feet (metres): 570.8 oa; 527.6 wl × 79.7 × 24.3 (174.0; 160.8 × 24.3 × 7.4)
 Main machinery: 2 MAN 12V 32/40 diesels; 14,388 hp(m) (10.58 MW) sustained; 2 shafts; cp props, bow thruster; 1,000 hp(m) (735 kW)
 Speed, knots: 20
 Complement: 139 (12 officers) plus 94 for embarked staff
 Cargo capacity: 9,540 tons fuel, 450 tons water, 280 tons cargo; 160 tons ammunition
 Missiles: SAM. 2 RAM launchers fitted for but not with
 Guns: 4 Mauser 27 mm, 4—12.7 mm MGs.
 Radars: Navigation; and aircraft control: Sperry Bridgemaster; E/F/I-bands.
 Helicopters: 2 Sea King Mk 41.

Comment: First ship ordered 15 October 1997, and second 3 July 1998. Hulls built by FSG, superstructure by Kröger and electronics by Lürssen MBB-FHS helo handling system. Two RAS beam stations and stern refuelling. Two portable SAM launchers are carried. EW equipment may be fitted. These ships are designed to support UN type operations abroad. Trials with the Finnish 14 m Jurmo class landing craft were conducted in A 1412 during 2007. There can be 26 containers mounted in two layers on the upper deck. This could include a containerised hospital unit for 50. A 1411 based at Wilhelmshaven and A 1412 at Kiel. Approval for construction of a third ship, to enter service in 2012, was given on 3 December 2008. The ship will incorporate improvements based on experience of the first two ships. These include increased power and accommodation.



FRANKFURT AM MAIN 5/2008*, Michael Nitz / 13530371



FRANKFURT AM MAIN 3/2007, A A de Kruif / 1166749

6 ELBE CLASS (TYPE 404) (TENDERS) (ARLHM)

Name	No	Builders	Launched	Commissioned
ELBE	A 511	Bremer Vulkan	24 June 1992	28 Jan 1993
MOSEL	A 512	Bremer Vulkan	22 Apr 1993	22 July 1993
RHEIN	A 513	Flensburger Schiffbau	11 Mar 1993	22 Sep 1993
WERRA	A 514	Flensburger Schiffbau	17 June 1993	9 Dec 1993
MAIN	A 515	Lürssen/Krögerwerft	15 June 1993	23 June 1994
DONAU	A 516	Lürssen/Krögerwerft	24 Mar 1994	22 Nov 1994

Displacement, tons: 3,114 full load
 Dimensions, feet (metres): 329.7 oa; 295.3 wl × 50.5 × 13.5 (100.5, 90.0 × 15.4 × 4.1)
 Main machinery: 1 Deutz MWM 8V 12M 628 diesel; 3,335 hp(m) (2.45 MW); 1 shaft; bow thruster
 Speed, knots: 15. Range, n miles: 2,000 at 15 kt
 Complement: 40 (4 officers) plus 12 squadron staff plus 38 maintainers
 Cargo capacity: 450 tons fuel, 150 tons water; 11 tons luboil; 130 tons ammunition
 Missiles: SAM: 2 Stinger (Fliegerfaust 2) quad launchers.
 Guns: 2 Mauser 27 mm, 4 12.7 mm MGs
 Radars: Navigation; I-band.
 Helicopters: Platform for 1 Sea King.

Comment: Funds released in November 1990 for the construction of six ships to replace the Rhein class. Containers for maintenance and repairs, spare parts and supplies for fast attack craft and minesweepers. Waste disposal capacity: 270 m³ liquids, 60 m³ solids. Allocated as follows: Elbe to 7th Squadron FFBs, Mosel to 5th Squadron MSC, Rhein and Werra to 3rd Squadron MSC, Donau to 1st Squadron corvettes. Main underwent conversion to submarine depot ship from November 2006 to November 2007. Mauser 27 mm guns are fitted at the break of the forecastle. Converted with helicopter refuelling facilities from July 1996 to July 1997.



DONAU 6/2008*, Frank Findler / 1353043

2 REPLENISHMENT TANKERS (TYPE 704) (AOL)

Name	No	Builders	Commissioned
SPESSART (ex-Okapi)	A 1442	Kroger, Rendsburg	1974
RHÖN (ex-Okene)	A 1443	Kröger, Rendsburg	1974

Displacement, tons: 14,169 full load
 Measurement, tons: 6,103 grt; 10,800 dwt
 Dimensions, feet (metres): 427.1 × 63.3 × 28.5 (139.2 × 19.3 × 8.7)
 Main machinery: 1 MaK 12-cyl diesel; 8,000 hp(m) (5.88 MW); 1 shaft; cp prop
 Speed, knots: 16
 Range, n miles: 3,250 at 12 kt
 Complement: 42
 Cargo capacity: 11,000 m³ fuel; 400 m³ water
 Radars: Navigation: Sperry Bridgemaster; E/F/I-bands.

Comment: Completed for Terkol Group as tankers. Acquired in 1976 for conversion (Spessart at Bremerhaven, Rhön at Kröger). The former commissioned for naval service on 5 September 1977 and the latter on 23 September 1977. Has two portable SAM positions. Civilian manned.



SPESSART

6/2008*, Michael Nitz / 1353072

2 WALCHENSEE CLASS (TYPE 703) (REPLENISHMENT TANKERS) (AOL)

Name	No	Builders	Commissioned
AMMERSEE	A 1425	Lindenu, Kiel	2 Mar 1967
TEGERNSEE	A 1426	Lindenu, Kiel	23 Mar 1967

Displacement, tons: 2,174 full load
 Dimensions, feet (metres): 235.9 × 36.7 × 13.8 (71.9 × 11.2 × 4.2)
 Main machinery: 2 MWM 12-cyl diesels; 1,370 hp(m) (1 MW); 1 Kamewa prop
 Speed, knots: 12
 Range, n miles: 3,250 at 12 kt
 Complement: 21
 Radars: Navigation: Sperry Bridgemaster; E/F/I-bands.

Comment: Civilian manned



TEGERNSEE

10/2007, Michael Nitz / 1166745

1 KNURRHAHN CLASS (TYPE 730) (APB)

Name	No	Builders	Commissioned
KNURRHAHN	Y 811	Sietas, Hamburg	Nov 1989

Displacement, tons: 1,424 full load
 Dimensions, feet (metres): 157.6 × 45.9 × 5.9 (48 × 14 × 1.8)

Comment: Accommodation for 200 people.



KNURRHAHN

4/2008*, Michael Nitz / 1353073

1 WESTERWALD CLASS (TYPE 760) (AMMUNITION TRANSPORT) (AEL)

Name	No	Builders	Commissioned
WESTERWALD	A 1435	Orenstein and Koppel, Lübeck	11 Feb 1967

Displacement, tons: 3,460 standard; 4,032 full load
 Dimensions, feet (metres): 344.4 × 48 × 15.5 (105 × 14 × 4.7)
 Main machinery: 2 MD 16V 872 TB90 diesels; 6,000 hp(m) (4.1 MW) sustained; 2 shafts; cp props; bow thruster
 Speed, knots: 16
 Range, n miles: 3,500 at 17 kt
 Complement: 63
 Cargo capacity: 1,080 tons ammunition
 Guns: 2 Bofors 40 mm (cocooned)
 Countermessures: Decoys: 2 Breda SCLAR 105 mm chaff launchers are carried in A 1438.
 Radars: Navigation: Sperry Bridgemaster; I-band.

Comment: Based at Wilhelmshaven. Civilian manned. Odenwald transferred to Egypt in 2003.



WESTERWALD

8/2003, Martin Mokrus / 0570617

2 OHRE CLASS (ACCOMMODATION SHIPS) (APB)

ALTMARK Y 891 (ex-H 11)	WISCHE (ex-Harz) Y 895 (ex-H 31)
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Displacement, tons: 1,320 full load
 Dimensions, feet (metres): 231 × 39.4 × 5 (70.4 × 12 × 1.6)

Comment: Ex-GDR Type 162 built by Peenewerft, Wolgast. One hydraulic 8 ton crane fitted. First commissioned 1985. Classified as 'Schwimmende Stuetzpunkte'. Propulsion and armament has been removed and they are used as non-self propelled accommodation ships for crews of vessels in refit. Civilian manned. Both modernised at Wilhelmshaven and to remain in service until further notice. Two others paid off in 2000 later than expected.



ALTMARK

9/2006, Frank Findler / 1159915

6 LAUNCHES (TYPE 946/945) (YFL)

AK 1 Y 1671	MA 3 Y 1677	ASCHAU Y 1685
MA 2 Y 1676	MA 1 Y 1678	BORBY Y 1687

Dimensions, feet (metres): 39.4 × 12.8 × 6.2 (12.0 × 3.9 × 1.9)
 Main machinery: 1 MAN D2540MTE diesel; 366 hp(m) (269 kW); 1 shaft

Comment: Built by Hans Boost, Trier. All completed in 1985 except MA 1 and Aschau which are larger at 16.2 m and completed in 1992. AK prefix indicates Kiel, and MA Wilhelmshaven and Neustadt.



AK 1

6/2008*, Frank Findler / 1353037

5 LAUNCHES (TYPES 743, 744, 744A, 1344) (YFL)

AM 7 Y 1679 AK 2 Y 1686 WARNOW A 41
 AM 8 Y 1675 AK 6 Y 1683

Dimensions, feet (metres): 62.3 x 13.1 x 3.9 (19 x 4 x 1.2) approx
 Main machinery: 1 or 2 diesels

Comment: For personnel transport and trials work. Types 744 (AK 6) and 744A (AK 2) are radio calibration craft. AM prefix indicates Eckernförde, and AK Kiel. Warnow A 41 is a former GDR tug (Type 1344) used as a diving boat at Warnemünde.



WARNOW 5/2007, Michael Nitz / 1165738

4 RANGE SAFETY CRAFT (TYPE 905) (YFRT)

Name	No	Builders	Commissioned
TODENDORF	Y 835	Lürssen, Vegesack	25 Nov 1993
PÜTLDS	Y 836	Lürssen, Vegesack	24 Feb 1994
BAUMHOLDER	Y 837	Lürssen, Vegesack	30 Mar 1994
MUNSTER	Y 838	Lürssen, Vegesack	14 July 1994

Displacement, tons: 126 full load
 Dimensions, feet (metres): 91.2 x 19.7 x 4.6 (278 x 6 x 1.4)
 Main machinery: 2 KHDTBD 234 diesels, 2,054 hp(m) (1.51 MW); 2 shafts
 Speed, knots: 16
 Complement: 6

Comment: Replaced previous Types 389 and 909 craft. Funded by the Army and civilian manned.



TODENDORF 3/2008*, Martin Mokrus / 1353039

2 OIL RECOVERY SHIPS (TYPE 738) (YPC)

Name	No	Builders	Commissioned
BOTTSAND	Y 1643	Lühring, Brake	24 Jan 1985
EVERSAND	Y 1644	Lühring, Brake	11 June 1988

Measurement, tons: 500 gross; 650 dwt
 Dimensions, feet (metres): 151.9 x 39.4 (137.8, bow opened) x 10.2 (46.3 x 12; 42 x 3.1)
 Main machinery: 1 Deutz BA12M816 diesel; 1,000 hp(m) (759 kW) sustained; 2 shafts
 Speed, knots: 10
 Complement: 6

Comment: Built with two hulls which are connected with a hinge in the stern. During pollution clearance the bow is opened. Ordered by Ministry of Transport but taken over by West German Navy. Normally used as tank cleaning vessels and harbour oilers. Civilian manned. Bottsand based at Warnemünde, Eversand at Wilhelmshaven. A third of class Thor belongs to the Ministry of Transport.



EVERSAND 6/2008*, Martin Mokrus / 1353040

21 PERSONNEL TENDERS (TYPES 934 AND GDR 407) (YFL)

V 3-8 V 10-20 B 11 B 33-34 B 83

Comment: V 3-20 built in 1987-88 by Hatecke. The B series are ex-GDR craft built by Yachtwerft, Berlin.



V 18 6/2008*, Michael Winter / 1353039

FLOATING REPAIR FACILITIES

5 FLOATING REPAIR FACILITIES

Schwimmdock 3 Y 842	DOCK A	GRIEP Y 876
DRUCKDOCK (DOCK C)	HIEV Y 875	

Comment: There are three floating docks: Schwimmdock 3 is 8,000 tons while Dock C is used for submarine pressure tests. Dock A is 1,000 tons and is to be replaced by a new Dock B in 2009. Y 875 and Y 876 are self-propelled floating cranes with a 100 ton crane.



DOCK 3 7/2008*, Frank Findler / 1353041

TUGS

1 HELGOLAND CLASS (TYPE 720B) (ATR)

Name	No	Builders	Commissioned
FEHMARN	A 1458	Unterweser, Bremerhaven	1 Feb 1967

Displacement, tons: 1,310 standard, 1,643 full load
 Dimensions, feet (metres): 223.1 x 41.7 x 14.4 (68 x 12.7 x 4.4)
 Main machinery: Diesel-electric; 4 MWM 12-cyl diesel generators; 2 motors; 3,300 hp(m) (2.43 MW); 2 shafts
 Speed, knots: 17
 Range, n miles: 6,400 at 16 kt
 Complement: 34
 Mines: Laying capacity.
 Radars: Navigation: Raytheon; I-band.
 Sonars: High definition, hull-mounted for wreck search.

Comment: Launched on 9 April 1965. Carry firefighting equipment and has an ice-strengthened hull. Employed as safety ship for the submarine training group. Twin 40 mm guns removed. One of the class to Uruguay in 1998.



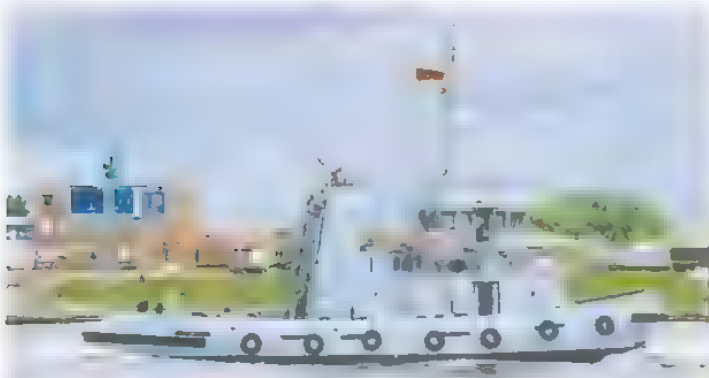
FEHMARN 5/2008*, Michael Nitz / 1353075

8 HARBOUR TUGS (TYPES 725, 724, 660) (YTM)

Name	No	Builders	Commissioned
VOGELSAND	Y 816	Orenstein und Koppel, Lübeck	14 Apr 1987
NORDSTRAND	Y 817	Orenstein und Koppel, Lübeck	20 Jan 1987
LANGENESS	Y 819	Orenstein und Koppel, Lübeck	5 Mar 1987
LÜTJE HÖRN	Y 812	Husumer Schiffswerft	31 May 1990
KNECHTSAND	Y 814	Husumer Schiffswerft	16 Nov 1990
SCHARHÖRN	Y 815	Husumer Schiffswerft	1 Oct 1990
WUSTROW (ex-Zander)	Y 1658	VEB Yachtwerft, Berlin	25 May 1989
DRANSKE (ex-Kormoran)	Y 1658	VEB Yachtwerft, Berlin	12 Dec 1989

Displacement, tons: 445 full load
 Dimensions, feet (metres): 99.3 × 29.8 × 8.5 (30.3 × 9.1 × 2.6)
 Main machinery: 2 Deutz MWM SBV6M628 diesels; 3,360 hp(m) (2.47 MW) sustained;
 2 Voith-Schneider props
 Speed, knots: 12
 Complement: 4

Comment: Details given are for the Type 725 (Y 812-819) which have a bollard pull of 23 tons. Y 1656 and Y 1658 are Type 660 former GDR vessels of 320 tons. Y 823 to Greece in 1998.



SCHARHÖRN

6/2008*, Frank Findler / 1353042



WUSTROW

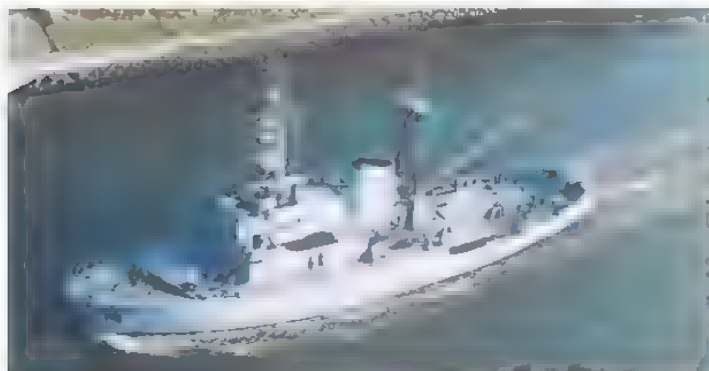
6/2008*, Michael Nitz / 1353074

5 WANGEROOGE CLASS (3 TYPE 722 AND 3 TYPE 754) (ATS/YDT)

Name	No	Builders	Commissioned
WANGEROOGE	A 1451	Schichau, Bremerhaven	9 Apr 1968
SPIEKEROOG	A 1452	Schichau, Bremerhaven	14 Aug 1968
BALTRUM	A 1439	Schichau, Bremerhaven	8 Oct 1968
JUIST	A 1440	Schichau, Bremerhaven	1 Oct 1971
LANGEBOG	A 1441	Schichau, Bremerhaven	14 Aug 1968

Displacement, tons: 854 standard; 1,024 full load
 Dimensions, feet (metres): 170.6 × 39.4 × 12.8 (52.1 × 12.1 × 3.9)
 Main machinery: Diesel-electric; 4 MWM 16-cyl diesel generators; 2 motors; 2,400 hp(m) (1.76 MW); 2 shafts
 Speed, knots: 14
 Range, n miles: 5,000 at 10 kt
 Complement: 24 plus 33 trainees (A 1439-1441)
 Guns: 1 Bofors 40 mm/70 (cocooned in some, not fitted in all).

Comment: First two are salvage tugs with firefighting equipment and ice-strengthened hulls. Wangerooge sometimes used for pilot training and Spiekeroog as submarine safety ship. The other three were converted 1974-78 to training ships with Baltrum and Juist being used as diving training vessels at Neustadt, with recompression chambers and civilian crews. A 1455 sold to Uruguay in 2002.



SPIEKEROOG

4/2007*, Frank Findler / 1168801

COAST GUARD (KÜSTENWACHE)

Notes: The Coast Guard was formed on 1 July 1974 and is a loose affiliation of the forces of several organisations including: seagoing units of the Border Guard (Bundespolizei), Fishery Protection (Fischereischutz); Maritime Police (Wasserschutzpolizei); Water and Navigation Board (Schiffahrtspolizei); Customs (Zoll). These organisations have responsibility for the operation and maintenance of their own craft but all have the inscription Küstenwache on the side.

BORDER GUARD (Bundespolizei)

Notes: (1) The force consists of about 600 men. Headquarters at Neustadt and bases at Warnemünde and Cuxhaven. There are three flotillas; one each at Neustadt, Cuxhaven and Warnemünde. The name of the force was changed from Bundesgrenzschutz-See to Bundespolizei on 1 July 2005.

(2) The force is augmented by a maritime section of the anti-terrorist force GSG 9.
 (3) Craft have dark blue hulls and white superstructures with a black, red and yellow diagonal stripe and the inscription Küstenwache painted on the ship's side and Bundespolizei insignia.

(4) There is a total of some 60 helicopters including 13 Eurocopter EC 155, 9 EC 135, 13 Bell UH-1D, 8 Bell 212, 17 BO-105 and a number of AS 330 Puma

(5) All 40 mm guns removed in 1997.

3 BAD BRAMSTEDT CLASS (WPSO)

Name	No	Builders	Commissioned
BAD BRAMSTEDT	BP 24 (ex-BG 24)	Abeking and Rasmussen, Lemwerder	8 Nov 2002
BAYREUTH	BP 25 (ex-BG 25)	Abeking and Rasmussen, Lemwerder	2 May 2003
ESCHWEGE	BP 26 (ex-BG 26)	Abeking and Rasmussen, Lemwerder	16 Dec 2003

Displacement, tons: 800 standard
 Dimensions, feet (metres): 216.3 × 34.8 × 10.5 (65.9 × 10.6 × 3.2)
 Main machinery: 1 MTU 16V 1163 diesel, 7,000 hp(m) (5.2 MW); 1 shaft; fixed propeller
 Speed, knots: 21.5
 Complement: 14 + 10 in temporary accommodation
 Radars: Surface search I-band.
 Navigation: I-band.
 Helicopters: Platform for 1 light.

Comment: Contract awarded in 2000 to Prime Contractor Abeking and Rasmussen for three craft to replace six ships of Neustadt class. Hulls constructed by Yantar, Kaliningrad and completed at Lemwerder. Steel hull with aluminium superstructure. The Russian Federal Border Guard Sprut class offshore patrol vessels is based on this design.



ESCHWEGE

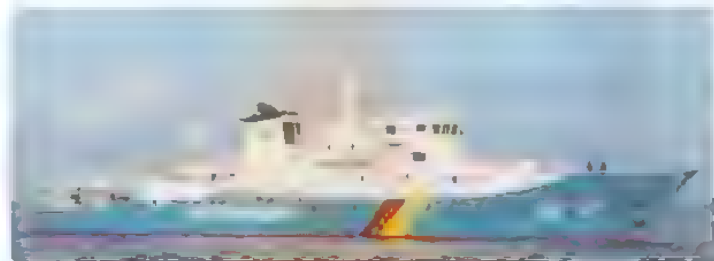
7/2008*, Maritime Photographic / 1353076

1 BREDSTEDT CLASS (TYPE PB 60) (WPSO)

Name	No	Builders	Commissioned
BREDSTEDT	BP 21 (ex-BG 21)	Eisflether Werft	24 May 1989

Displacement, tons: 673 full load
 Dimensions, feet (metres): 214.6 × 30.2 × 10.5 (65.4 × 9.2 × 3.2)
 Main machinery: 1 MTU 20V 1163 TB93 diesel; 8,325 hp(m) (6.12 MW) sustained; 1 shaft; bow thruster; 1 auxiliary diesel generator; 1 motor
 Speed, knots: 25 (12 on motor). Range, n miles: 2,000 at 25 kt; 7,000 at 10 kt
 Complement: 17 plus 4 spare
 Guns: 1—40 mm MGs
 Radars: Surface search Racal AC 2690 BT; I-band.
 Navigation: 2 Racal ARPA; I-band.
 Helicopters: Platform for 1 light.

Comment: Ordered 27 November 1987, laid down 3 March 1988 and launched 18 December 1988. An Avon Searider rigid inflatable craft can be lowered by a stern ramp. A second RIB on the port side is launched by crane. Based at Cuxhaven.



BREDSTEDT

11/2008*, Michael Nitz / 1353011

3 EUROPA CLASS (WPBR)

EUROPA 1-3
 Displacement, tons: 10
 Dimensions, feet (metres): 47.2 × 12.5 × 3.1 (14.4 × 3.8 × 0.9)
 Main machinery: 2 MAN diesels; 240 hp(m) (180 kW)
 Speed, knots: 22
 Radars: Kelvin Hughes, I-band

Comment: River patrol craft built by Schless Werft in 1975.

2 SASSNITZ CLASS (TYPE PB 50 ex-TYPE 153) (WPBO)

Name	No	Builders	Commissioned
NEUSTRELITZ (ex-Sassnitz)	BP 22 (ex-BG 22, ex-P 6165, ex-591)	Peenewerft, Wolgast	31 July 1990
BAD DÜBEN (ex-Binz)	BP 23 (ex-BG 23, ex-593)	Peenewerft, Wolgast	23 Dec 1990

Displacement, tons: 369 full load
Dimensions, feet (metres): 160.4 oa, 147.6 wl x 28.5 x 7.2 (48.9; 45 x 8.7 x 2.2)
Main machinery: 2 MTU 12V 595 TE90 diesels; 8,800 hp(m) (6.48 MW) sustained; 2 shafts
Speed, knots: 26. Range, n miles: 2,400 at 20 kt
Complement: 33 (7 officers)
Guns: 2—7.62 mm MGs.
Radars: Surface search: Racal AC 2690 BT; I-band (BG 22 and 23)
Navigation: Racal ARPA; I-band (BG 22 and 23).

Comment: Ex-GDR designated Balcom 10 and seen for the first time in the Baltic in August 1988. The original intention was to build up to 50 for the USSR, Poland and the GDR. In 1991 the first three were transferred to the Border Guard, based at Neustadt. *Neustrelitz* fitted with German engines and electronics in 1992-93 and accommodation improved. *Bad Düben* similarly modified at Peenewerft in 1995-96. The original design had the SS-N-25 SSM and three engines. The third of class, *Sellin*, had been on loan to WTD 71 (weapons trials) at Eckernförde but was sold in 1999.



BAD DÜBEN (old number) 4/2003, Frank Findler / 05/0608

4 SCHWEDT CLASS (WPBR)

SCHWEDT BP 42 (ex-BG 42)	FRANKFURT/ODER BP 43 (ex-BG 43)
KUSTRIN-KIEZ BP 41 (ex-BG 41)	AURITH BP 44 (ex-BG 44)

Displacement, tons: 6 full load
Dimensions, feet (metres): 33.5 x 10.5 x 2.6 (10.2 x 3.2 x 0.8)
Main machinery: 2 Volvo Penta TAMD 42 VVJ; 462 hp(m) (340 kW); 2 Hamilton 211 waterjets
Speed, knots: 32 Range, n miles: 200 at 25 kt
Complement: 3
Guns: 1—7.62 mm MG
Radars: Navigation: I-band

Comment: River patrol craft which belong to the BGSAMT-Frankfurt/Oder since 1994.



FRANKFURT/ODER (old number) 12/1998, BGSAMT / 0056996

4 TYPE SAB 12 (WPB)

VOGTLAND BP 51 (ex-BG 51, ex-G 56, ex-GS 17)	SPREEWALD BP 53 (ex-BG 53, ex-G 51, ex-GS 16)
RHÖN BP 52 (ex-BG 52, ex-G 53, ex-GS 26)	ODERBRUCH BP 54 (ex-BG 54)

Displacement, tons: 14 full load
Dimensions, feet (metres): 41.3 x 13.1 x 3.6 (12.6 x 4 x 1.1)
Main machinery: 2 Volvo Penta diesels; 539 hp(m) (396 kW); 2 shafts
Speed, knots: 16
Complement: 5

Comment: Ex-GDR MAB 12 craft based at Karnin, Stralsund and Frankfurt/Oder. Five sold to Cyprus in 1992. Belong to BGSAMT-Rostock.



SPREEWALD 4/2007, Hartmut Ehlers / 1166788

5 PRIGNITZ CLASS (WPB)

PRIGNITZ BP 61	UCKERMARK BP 62	ALTMARK BP 63	BÖRDE BP 64	RHOEN BP 65
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Displacement, tons: 38 full load
Dimensions, feet (metres): 68.9 x 17.0 x 8.5 (21.0 x 5.2 x 2.6)
Main machinery: 2 diesels; 1,580 hp(m) (1.2 MW); 1 shaft; fixed propeller
Speed, knots: 23

Comment: Built by Schiffs-und-Entwicklungsgesellschaft 2006-08.



PRIGNITZ 11/2008*, Michael Nitz / 1353078

FISHERY PROTECTION SHIPS (Fischereischutz)

Notes: Operated by Ministry of Food and Agriculture.

3 PATROL SHIPS

MEERKATZE 77 m vessel of 2,250 tons and 15 kt. Completed December 1977
 SEEFALKE 83 m vessel of 2,400 tons and 20 kt. Completed August 1981
 SEEADLER 72 m vessel of 2,000 tons and 19 kt. Completed 2000

Comment: Fishery Protection Ships. Black hulls with grey superstructure and black, red and yellow diagonal stripes. An order for two 72 m vessels to replace *Seefalke* and *Meerkatze* was made in December 2006. Being built by Peenewerft, they are to be delivered in 2009.



SEEADLER 7/2008*, Maritime Photographic / 1353079

MARITIME POLICE (Wasserschutzpolizei)

Notes: (1) Under the control of regional governments. Most have Küstenwache markings but colours vary from region to region.
 (2) There are 14 seaward patrol craft: *WSP 1, 4, 5 and 7, Bremen 3 and 6, Helgoland, Sylt, Fehmarn, Birknack, Eider, Falshöft, Bürgermeister Brauer* and *Bürgermeister Weichmann*.
 (3) Harbour craft include *Stegnitz, Greif, Glucksburg, Stoltera, Schwansen, Vossbrook, Brunswick, Treve, Wagnien, Bussard, Habicht, Gernsheim, Hoben, Koblenz* and *Breitling*.



BÜRGERMEISTER BRAUER 5/2008*, Frank Findler / 1353035



BREMEN 3 8/2008*, Frank Findler / 1353038

CUSTOMS (Zoll)

Notes. (1) Operated by Ministry of Finance with a total of over 100 craft. Green hulls with grey superstructure and sometimes carry machine guns. Some have Küstenwache markings.
 (2) Seaward patrol craft include *Usedom, Hamburg, Bremerhaven, Schleswig-Holstein, Emden, Hohwacht, Glückstadt, Hiddensee, Rügen, Kalkgrund* and *Priwall*.



SCHLESWIG-HOLSTEIN

5/2008*, Michael Nitz / 1353080

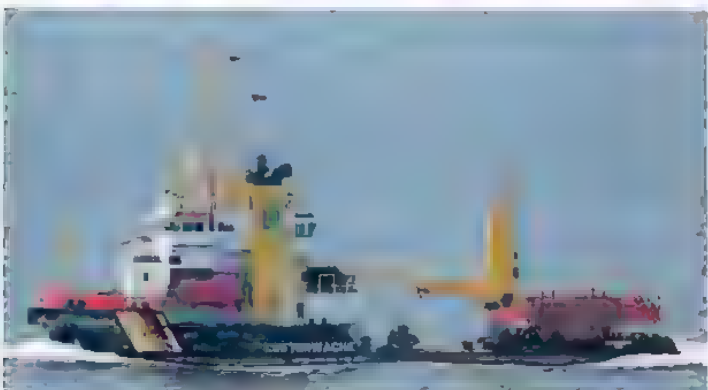
WATER AND NAVIGATION BOARD (SCHIFFAHRTPOLIZEI)

Notes. (1) Comes under the Ministry of Transport. Most ships have black hulls with black/red/yellow stripes. Some have Küstenwache markings.
 (2) Eight buoy tenders: *Gustav Meyer, Bruno Illing, Norden, Baumrönne, Vilm, Knechtsand, Strelasund, Triton*.
 (3) Five oil recovery ships: *Scharhorn, Arkona, Nordsee, Mellum, Neuwerk*.
 (4) Two SKB 64 and 601 types (ex-GDR): *Vogelsand, Ranzow*.
 (5) One launch: *Friedrich Voss*.



NORDSEE

5/2008*, Frank Findler / 1353034



SCHARHÖRN

5/2008*, Michael Nitz / 1353081

CIVILIAN SURVEY AND RESEARCH SHIPS

Notes: The following ships operate for the Bundesamt für Seeschifffahrt und Hydrographie (BSH), either under the Ministry of Transport or the Ministry of Research and Technology (*Polarstern, Meteor, Poseidon, Sonne* and *Alkor*).

KOMET (survey and research) 1,590 tons completed by Krögerwerft in October 1998
ATAIR (survey), **DENEK** (survey), **WEGA** (survey) 1,050 tons, diesel-electric, 11.5 kt. Complement 16 plus 6 scientists. Built by Krögerwerft and Peenewerft (*Deneb*), completed 3 August 1987, 24 November 1994 and 26 October 1990 respectively.
METEOR (research) 3,500 tons, diesel-electric, 14 kt, range 10,000 n miles. Complement 33 plus 29 research staff. Completed by Schlichting, Travemünde 15 March 1986.
WALTHER HERWIG III 2,400 tons. Completed 1993.
CAPELLA 455 tons. Completed by Fassmerwerft in 2003.
POLARSTERN (polar research) 10,878 grt. Completed 1982
SONNE (research) 1,200 grt. Completed by Rickmerswerft 1990.
ALKOR and **HEINKE** 1,200 tons. Completed 1990.
SOLEA 770 tons. Completed by Fassmer 2004.
MARIA S MERIAN 6,050 tons. Completed by Kröger in 2005.
POSEIDON 1,700 tons. Completed by Schichau in 1976.



WALTER HERWIG III

12/2006, Frank Findler / 1166799



KOMET

4/2007, Frank Findler / 1166800



POSEIDON

6/2008*, Michael Nitz / 1353082



ALKOR

6/2008*, Michael Nitz / 1353083



Ghana

Country Overview

Formerly a British colony known as the Gold Coast, Ghana gained independence in 1957. Located in west Africa, the country has an area of 92,100 square miles and a 292 n mile coastline with the Gulf of Guinea. It is bordered to the east by Togo and to the west by Ivory Coast. The capital and largest city is Accra which has links to a deep-water port at Tema. There is a second port at Sekondi-Takoradi. Territorial seas (12 n miles) are claimed. A 200 n mile Exclusive Economic Zone (EEZ) has been claimed but the limits are not defined.

Headquarters Appointments

Commander, Navy: Rear Admiral A R S Nuno
Eastern Naval Command: Commodore M Quashie
Western Naval Command: Commodore F Daley

Personnel

(a) 2009: 2,100 (150 officers)
 (b) Voluntary service

Bases

Burma Camp, Accra (Headquarters)
 Sekondi (Western Naval Command)
 Tema (near Accra) (Eastern Naval Command)

Maritime Aircraft

Two Fokker F27 are operated for Coastal Surveillance, SAR and shipping control.

PATROL FORCES

2 BALSAM CLASS (PBO)

Name	No	Builders	Commissioned
ANZONE (ex-Woodrush)	P 30 (ex-WLB 407)	Duluth Shipyard, Minnesota	22 Sep 1944
BONSU (ex-Swoetbrier)	P 31 (ex-WLB 405)	Duluth Shipyard, Minnesota	26 July 1944

Displacement, tons: 935 standard; 1,025 full load
Dimensions, feet (metres): 190 x 37 x 12 (54.9 x 11.3 x 3.8)
Main machinery: Diesel electric; 2 diesels; 1,710 hp (1.28 MW); 1 motor; 1,200 hp (895 kW); 1 shaft; bow thruster
Speed, knots: 13. **Range, n miles:** 8,000 at 12 kt
Complement: 60 (5 officers)
Guns: 1—14.5 mm.
Radars: Navigation: Raytheon SPS-64(V)1.

Comment: Formed USCG buoy tenders. *Anzone* transferred from the US Coast Guard on 4 May 2001 and *Bonsu* on 27 August 2001. Both received new engines 1988–91. Employed on EEZ patrol, fishery protection and troop support duties.



BONSU 6/2007, Ghana Navy / 1335248

2 LÜRSSEN FPB 45 CLASS (FAST ATTACK CRAFT—GUN) (PBO)

Name	No	Builders	Commissioned
DZATA	P 26	Lürssen, Vegesack	4 Dec 1979
SEBO	P 27	Lürssen, Vegesack	2 May 1980

Displacement, tons: 269 full load
Dimensions, feet (metres): 147.3 x 23 x 8.9 (44.9 x 7 x 2.7)
Main machinery: 2 MTU 16V 538T891 diesels; 6,140 hp(m) (4.5 MW); sustained; 2 shafts
Speed, knots: 27. **Range, n miles:** 1,800 at 16 kt; 700 at 25 kt
Complement: 45 (5 officers)
Guns: 2 Breda 40 mm/70; 300 rds/min to 12.5 km (6.8 n miles); weight of shell 0.96 kg.
Radars: Surface search: Decca Type 978; I-band

Comment: Ordered in 1976. *Dzata* completed a major overhaul at Swan Hunter's Wallsend, Tyneside yard on 8 May 1989. *Sebo* started a similar refit at CMN Cherbourg in May 1991 which completed in August 1992. Employed in Fishery Protection role.



DZATA 5/2002 / 0533316

2 LÜRSSEN PB 57 CLASS (FAST ATTACK CRAFT—GUN) (PG)

Name	No	Builders	Commissioned
ACHIMOTA	P 28	Lürssen, Vegesack	27 Mar 1981
YOGAGA	P 29	Lürssen, Vegesack	27 Mar 1981

Displacement, tons: 389 full load
Dimensions, feet (metres): 190.6 x 25 x 9.2 (58.1 x 7.6 x 2.8)
Main machinery: 3 MTU 16V 538 T891 diesels; 9,210 hp(m) (6.78 MW) sustained; 3 shafts
Speed, knots: 30
Complement: 56 (5 officers)
Guns: 1 OTO Melara 3 in (76 mm) compact; 85 rds/min to 16 km (8.6 n miles) anti-surface; 12 km (6.5 n miles) anti-air; weight of shell 6 kg, 250 rounds.
 1 Breda 40 mm/70; 300 rds/min to 12.5 km (6.8 n miles) anti-surface; weight of shell 0.96 kg
Weapons control: LIOD optronic director.
Radars: Surface search/fire control Thomson-CSF Canopus A, I/J-band.
Navigation: Decca TM 1226C; I-band.

Comment: Ordered in 1977. *Yogaga* completed a major overhaul at Swan Hunter's Wallsend, Tyneside yard 8 May 1989. *Achimota* started a similar refit at CMN Cherbourg in May 1991 and was joined by *Yogaga* for repairs in late 1991. Both completed by August 1992. Employed on Fishery Protection duties.



ACHIMOTA 6/2007, Ghana Navy / 1167861

1 INSHORE PATROL CRAFT (PBI)

DAVID HANSEN P 32

Displacement, tons: 315 (light); 41.25 full load
Dimensions, feet (metres): 64.9 x 18.0 x 5.9 (19.8 x 5.5 x 1.8)
Main machinery: 3 Detroit 8V 71 diesel; 690 hp (515 kW) sustained; 3 shafts
Speed, knots: 28. **Range, n miles:** 450 at 26 kt
Complement: 10 (1 officer)
Guns: 1—14.5 mm MG

Comment: Ex-US Navy PB Mk III Series built by Paterson Builders, Wisconsin in 1975–76. Aluminium construction. The design includes a pilot house offset to starboard to provide space to port for the installation of additional weapons. Transferred to the Ghana Navy in 2001 and employed on harbour and anchorage surveillance and security patrols.



DAVID HANSEN 6/2007, Ghana Navy / 1167890

Greece

HELLENIC NAVY



Country Overview

The Hellenic Republic is situated in south-eastern Europe and occupies the southernmost part of the Balkan Peninsula. It includes more than 3,000 islands, most of which are in the Aegean Sea. With an area of 50,949 square miles, it has borders to north-west with Albania, to the north with the Former Yugoslav Republic of Macedonia and with Bulgaria and to the north-east with Turkey. It has a 7,387 n mile coastline with the Aegean, Mediterranean and Ionian Seas. The capital and largest city is Athens whose seaport, Piraeus, is also the largest. Other major ports include Thessaloniki, Patras and Iraklion. Territorial seas (6 n miles) are claimed but an EEZ is not claimed.

Headquarters Appointments

Chief of the Hellenic Navy:
Vice Admiral G Karamaliks
Deputy Chief of Staff:
Rear Admiral N Vazaios
Commander, Navy Training Command:
Rear Admiral D Papagiannidis
Inspector General:
Rear Admiral E Mitrou

Fleet Command

Commander of the Fleet:
Vice Admiral K Karaiskos
Deputy Commander of the Fleet:
Rear Admiral G Dimitriadis

Personnel

(a) 2008: 20,200 (4,200 officers) including 3,800 conscripts
 (b) 12 months' national service

Bases

Salamis and Souda Bay

Naval Commands

Commander of the Fleet has under his flag all combatant ships. Navy Logistic Command is responsible for the bases at Salamis and Souda Bay, the Supply Centre and

all auxiliary ships. Navy Training Command is in charge of the Petty Officers' School, the naval staff and commanding officers course and two training centres.

Naval Districts

Aegean, Ionian and Northern Greece

Naval Aviation

Alouette III helicopters (Training)
 AB Z12ASW helicopters (No 1 Squadron).
 S-70B-6 Seahawk (No 2 Squadron).
 P-38 Onions are operated under naval command by mixed Air Force and Navy crews

Prefix to Ships' Names

HS (Hellenic Ship)

Strength of the Fleet

Type	Active	Building (Planned)
Patrol Submarines	8	4
Frigates	14	—
Corvettes	3	—
Fast Attack Craft—Missile	18	2
Offshore Patrol Craft	8	—
Coastal Patrol Craft	8	—
LST/LSD/LSM	5	—
LCU/LCM	4	—

Strength of the Fleet—continued

Type	Active	Building (Planned)
Hovercraft	4	—
Minesweepers—Coastal	8	—
Survey and Research Ships	4	—
Support Ships	2	—
Training Ships	5	—
Tankers	6	—
Auxiliary Transports	4	—
Ammunition Ship	1	—

DELETIONS

Notes: Some of the deleted ships are in unmaintained reserve in anchorages.

Mine Warfare Forces

2008 *Klio, Erato*

PENNANT LIST

Submarines		P 24	Simeoforos Kavaloudis	L 170	Folegandros	A 411	Adamastor
S 110	Glavkos	P 26	Ypopoliarchos Degiannis	L 173	Chios	A 412	Aias
S 111	Nereus	P 27	Simeoforos Xenos	L 174	Samos	A 413	Pilos
S 112	Triton	P 28	Simeoforos Simitzopoulos	L 175	Karia	A 415	Evros
S 113	Proteus	P 29	Simeoforos Starakis	L 176	Lesbos	A 416	Douranos
S 116	Poseidon	P 57	Kasos	L 177	Rodos	A 417	Hyporion
S 117	Amphitrite	P 61	Polemistis	L 178	Naxos	A 418	Pandora
S 118	Okeanos	P 62	Niki	L 179	Paros	A 420	Pandrosos
S 119	Pontos	P 63	Doxa	L 180	Kefallinia	A 422	Kadmos
S 120	Papanikolis	P 64	Eleftheria	L 181	Ikaki	A 423	Heraklia
S 121	Pipinos (bidg)	P 67	Ypopoliarchos Roussen	L 182	Kerkira	A 424	Iason
S 122	Matrozos (bidg)	P 68	Ypopoliarchos Daniolos	L 183	Zakynthos	A 425	Odiseus
S 123	Katsonis (bidg)	P 69	Ypopoliarchos Kristallidis	L 185	Serifos	A 428	Nestor
		P 70	Ypopoliarchos Gngoropoulos (bidg)			A 429	Perseus
		P 71	Anthypoliarchos Ritsos (bidg)			A 432	Gigas
		P 72	Ypopoliarchos Votsis			A 433	Kerkini
F 450	Eli	P 73	Anthypoliarchos Pezopoulos	M 61	Evniki	A 434	Prespa
F 451	Limnos	P 74	Plotarchis Vlahavas	M 62	Evropi	A 435	Kekrops
F 452	Hydra	P 75	Plotarchis Mandakas	M 63	Kallisto	A 436	Minos
F 453	Spetsai	P 76	Ypopoliarchos Tourmas	M 64	Calypso	A 437	Pelias
F 454	Psara	P 77	Plotarchis Sekipis	M 211	Alkyon	A 438	Aegeus
F 455	Salamis	P 196	Andromeda	M 214	Avra	A 439	Atrats
F 459	Adrias	P 198	Kyknos	M 240	Aidon	A 440	Diomidis
F 460	Aegeon	P 198	Pigastos	M 241	Kichli	A 441	Theseus
F 461	Navarinon	P 228	Toxotis	M 242	Kissa	A 442	Romaios
F 462	Kountouriotis	P 229	Tolmi	M 248	Peleas	A 460	Evrotas
F 463	Bouboulina	P 230	Ormi			A 461	Arachthos
F 464	Kanaris	P 266	Mechitis			A 463	Nastos
F 465	Themistocles	P 267	Nikiforos			A 464	Axios
F 466	Nikiforos Fokas	P 268	Antitos			A 466	Trichonis
		P 269	Krateos	A 233	Malistros	A 467	Doirani
		P 286	Diopos Antoniou	A 234	Sorokos	A 468	Kalliroe
		P 287	Kelefatis Stemoi	A 238	Zefiros	A 469	Stimfalia
				A 307	Thatis	A 470	Aliakmon
				A 359	Ostria	A 474	Pytheas
				A 373	Gregos	A 476	Strabon
				A 374	Prometheus	A 478	Nastilos
				A 375	Zeus	A 479	I Karavoyiannos
				A 376	Orion		Theophilopoulos
				A 410	Atromitos	A 481	St Lykoudis

SUBMARINES

8 + 2 GLAVKOS CLASS (TYPE 209/1100/1200) (SSK)

Name	No	Builders	Laid down	Launched	Commissioned
GLAVKOS	S 110	Howaldtswerke, Kiel	1 Sep 1968	15 Sep 1970	6 Sep 1971
NEREUS	S 111	Howaldtswerke, Kiel	15 Jan 1969	7 June 1971	10 Feb 1972
TRITON	S 112	Howaldtswerke, Kiel	1 June 1969	14 Oct 1971	8 Aug 1972
PROTEUS	S 113	Howaldtswerke, Kiel	1 Oct 1969	1 Feb 1972	8 Aug 1972
POSEIDON	S 116	Howaldtswerke, Kiel	15 Jan 1976	21 Mar 1978	22 Mar 1979
AMPHITRITE	S 117	Howaldtswerke, Kiel	26 Apr 1976	14 June 1978	14 Sep 1979
OKEANOS	S 118	Howaldtswerke, Kiel	1 Oct 1976	16 Nov 1978	15 Nov 1979
PONTOS	S 119	Howaldtswerke, Kiel	25 Jan 1977	21 Mar 1979	29 Apr 1980

Displacement, tons: 1,125 surfaced; 1,235 dived (S 110-113); 1,200 surfaced; 1,285 dived (S 116, 117, 119); 1,430 (approx) (S 118)

Dimensions, feet (metres): 179.5 × 20.3 × 18.5 (54.4 × 6.2 × 5.6) (S 110-113)

183.4 × 20.3 × 18.8 (55.9 × 6.2 × 5.7) (S 116, 117, 119)

204.7 × 20.3 × 18.8 (62.4 × 6.2 × 5.7) (S 118)

Main machinery: Diesel-electric; 4 MTU 12V 493 A2B0 diesels, 2,400 hp(m) (1.76 MW) sustained; 4 Siemens alternators, 1.7 MW; 1 Siemens motor; 4,600 hp(m) (3.38 MW) sustained; 1 shaft; 2 HDW PEM fuel cells (S 118); 240 kW

Speed, knots: 11 surfaced; 21.5 dived

Complement: 38 (6 officers)

Missiles: McDonnell Douglas Sub Harpoon; active radar homing to 130 km (70 n miles) at 0.8 Mach; warhead 258 kg. Can be discharged from 4 tubes only (S 110-113).

Torpedoes: 8—21 in (533 mm) bow tubes. 14AEG SUT Mod 0, wire-guided; active/passive homing to 12 km (8.5 n miles) at 35 kt; warhead 250 kg. Swim-out discharge.

Countermeasures: ESM: Argos AR-700-S5; radar warning (S 110-113).

Thomson Ariel DR 2000; radar warning (S 116-119).

Weapons control: Signal Sinbads (S 116, 117, 119). Atlas Elektronik ISUS-90 (S 118). Unisys/Kanaris with UYK-44 computers (S 110-113).

Radars: Surface search: Thomson-CSF Calypso II (S 116-119) Thomson MILNAV (S 110-113); 1-band.

Sonars: Atlas Elektronik CSU 83-90 (DBQS-21); (S 110-113); Atlas Elektronik CSU 3-4 (S 116-119); hull-mounted, active/passive search and attack; medium frequency. Atlas Elektronik PRS-3-4; passive ranging. STN Atlas flank array (S 118); passive low frequency.



POSEIDON

11/2005, M Declerck / 1184522

Programmes: Designed by Ingenieurkontor, Lübeck for construction by Howaldtswerke, Kiel and sale by Ferrostaal, Essen all acting as a consortium.

Modernisation: Contract signed 5 May 1989 with HDW and Ferrostaal to implement a Neptune I update programme to bring first four up to an improved standard and along the same lines as the German S 206A class. Included Sub Harpoon, flank array sonar, Unisys FCS, Sperry Mk 29 Mod 3 inertial navigation system, GPS and Argos ESM. Triton completed refit at Kiel in May 1993, Proteus at Salamis in December 1995, Glavkos in November 1997, and Nereus in March 2000. A contract signed 31 May 2002 with Hellenic Shipyards (main sub-contractor HDW) for a Neptune II modernisation programme for S 117-119. S 116 is not to be modernised. Okeanos started refit in December 2004 and was completed in 2009.

A 'plug-in' extension of 6.5 m was required to incorporate AIP (Siemens PEM fuel cell system). In addition an STN Atlas ISUS-90 combat management system, flank array sonar, electro-optic mast, SATCOM, Link II and Sub Harpoon were fitted. Plans to upgrade Pontos and Amphitrite, have been superseded by plans to build two new Type 209/1400 class.

Structure: A single-hull design with two ballast tanks and forward and after trim tanks. Fitted with snort and remote machinery control. The single screw is slow revving. Very high-capacity batteries with GRP lead-acid cells and battery cooling by Wilh Hagen and VARTA. Diving depth, 250 m (820 ft). Fitted with two periscopes.

Operational: Endurance, 50 days. A mining capability is reported but not confirmed. The four Type 209/1100 boats are likely to be decommissioned as the new Type 214 boats enter service.

1 + 3 PAPANIKOLIS (TYPE 214) CLASS (SSK)

Name	No	Builders	Laid down	Launched	Commissioned
PAPANIKOLIS	S 120	Howaldtswerke, Kiel	27 Feb 2001	22 Apr 2004	2009
PIPINOS	S 121	Hellenic Shipyards, Skaramanga	15 Oct 2002	Apr 2007	2009
MATROZOS	S 122	Hellenic Shipyards, Skaramanga	1 Apr 2003	Mar 2008	2009
KATSONIS	S 123	Hellenic Shipyards, Skaramanga	1 Apr 2004	Dec 2008	2010

Displacement, tons: 1,700 (surfaced); 1,800 (dived)

Dimensions, feet (metres): 213.3 × 20.7 × 21.6
(65 × 6.3 × 6.6)

Main machinery: 2 MTU 16V 396 diesels; 5,600 hp(m)
(4.17 MW); 1 Siemens Permasyn motor; 1 shaft; 2 HDW
PEM fuel cells; 240 kW

Speed, knots: 20 dived; 11 surfaced

Complement: 40 (6 officers)

Missiles: SSM: Boeing Sub Harpoon.

Torpedoes: 8 21 in (533 mm) bow tubes (4 fitted for Sub
Harpoon discharge); Atlas Elektronik DM2A4 torpedoes.

wire-guided; active/passive homing to 50 km (27 n miles)

at 50 kt; warhead 250 kg. Total of 16 weapons.

Countermeasures: Decoys. CIRCE torpedo countermeasures.
ESM EIBitTIMNEX II.

Weapons control: STN Atlas ISUS-90.

Radars: Surface search: Thales Sphynx; I-band.

Sonars: Bow and flank arrays. To be fitted for but not with
towed array.

Programmes: Decision taken on 24 July 1998 and
announced on 9 October to order three HDW designed
submarines with an option for a fourth. The first of class

is being built at Kiel and subsequent hulls at Hellenic
Shipyards. Contracts to build signed 15 February 2000
and the fourth was ordered in 2002. Acceptance of
the first of class was declined in November 2006 due
to contractual disagreements. The implications for
the other three boats and the timescale of the overall
programme are not known.

Structure: Diving depth 400 m (1,300 ft). To be equipped
with Zeiss optronic mast and SATCOM.

Operational: Papanikolis started initial sea trials on
2 February 2005 and further trials were completed in
September 2008.



PAPANIKOLIS

6/2008*, Michael Winter / 1335464



PAPANIKOLIS

7/2008*, A A de Kruijf / 1335377

For details of the latest updates to *Jane's Fighting Ships* online and to discover the additional information available exclusively to online subscribers please visit
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FRIGATES

Notes. Procurement of a class of up to six multipurpose frigates is a high priority and a decision on the way ahead is expected in 2009. The requirement is for an air-defence capable ship with additional ASW and ASUW roles. Competing designs are likely to include: FREMM (DCNS), MEKO D (Hellenic Shipyards), LCF (Royal Schelde), F-100 (Navantia)

4 HYDRA CLASS (MEKO 200 HN) (FFGH)

Name	No	Builders	Laid down	Launched	Commissioned
HYDRA	F 452	Blohm + Voss, Hamburg	17 Dec 1980	25 June 1991	15 Oct 1992
SPETSAI	F 453	Hellenic Shipyards, Skaramanga	11 Aug 1992	9 Dec 1993	24 Oct 1996
PSARA	F 454	Hellenic Shipyards, Skaramanga	12 Dec 1993	20 Dec 1994	30 Apr 1998
SALAMIS	F 455	Hellenic Shipyards, Skaramanga	20 Dec 1994	15 May 1997	16 Dec 1998

Displacement, tons: 2,710 light; 3,350 full load
Dimensions, feet (metres): 383.9; 357.8 (wl) × 48.6 × 19.7
 (117, 109 × 14.8 × 6)
Main machinery: CODOG; 2 GE LM 2500 gas turbines; 60,000 hp (44.76 MW) sustained; 2 MTU 20V 956 TB82 diesels, 10,420 hp(m) (7.66 MW) sustained; 2 shafts; cp props
Speed, knots: 31 gas; 20 diesel
Range, n miles: 4,100 at 16 kt
Complement: 199 (27 officers) plus 16 flag staff



HYDRA

(Scale 1 : 1,200), Ian Sturton / 0052/76

Missiles: SSM: 8 McDonnell Douglas Harpoon Block 1C; 2 quad launchers; active radar homing to 130 km (70 n miles) at 0.9 Mach, warhead 227 kg.
SAM: Raytheon NATO Sea Sparrow RIM-7P (F 452, 453, 454) Mk 48 Mod 2 vertical launcher; 16 missiles; semi-active radar homing to 16 km (8.5 n miles) at 2.6 Mach; warhead 38 kg. Raytheon ESSM RIM-162 (F 455); Mk 38 Mod 5 launcher; 16 missiles; semi-active radar homing to 18.5 km (10 n miles) at 3.6 Mach, warhead 38 kg.
Guns: 1 FMC 5 in (127 mm)/54 Mk 45 Mod 2A; 20 rds/min to 24 km (13 n miles) anti-surface; 14 km (7.7 n miles) anti-aircraft, weight of shell 32 kg.
 2 GD/GE Vulcan Phalanx 20 mm Mk 15 Mod 12; 6 barrels per mounting, 3,000 rds/m combined to 1.5 km
Torpedoes: 6–324 mm Mk 32 Mod 5 (2 triple) tubes; Honeywell Mk 46 Mod 5, anti-submarine, active/passive homing to 11 km (5.9 n miles) at 40 kt; warhead 44 kg.
Countermeasures: Decoys: 4 Mk 38 Mod 2 SRBOC chaff launchers; SLQ-25 Nixie; torpedo decoy
ESM: Argo AR 700; Telegon 10; intercept
ECM: Argo APECS II; jammer.
Combat data systems: Signaal STACOS Mod 2; Links 11 and 14.
Weapons control: 2 Signaal Mk 73 Mod 1 (for SAM) Vesta Helo transponder with datalink for OTH. SAR-8 IR search. SWG 1 A(V) Harpoon LCS
Radars: Air search: Signaal MW08; 3D, F/G band. Air/surface search: Signaal/Magnavox, DA08; G-band. Navigation: Racal Decca 2690 BT; ARPA, I-band
Fire Control: 2 Signaal STIR; I/J/K-band.
IFF: Mk XII Mod 4.
Sonars: Raytheon SQS-56/DE 1169; hull-mounted and VDS



PSARA

10/2008*, M Declerck / 1335/01

Helicopters: 1 Sikorsky S-70B-6 Aegean Hawk

Programmes: Decision to buy four Meko 200 HN announced on 18 April 1988. The first ship ordered 10 February 1989 built by Blohm + Voss, Hamburg and the remainder ordered 10 May 1989 at Hellenic Shipyards, Skaramanga. Programme was delayed by financial problems at Hellenic Shipyards in 1992 and some of the prefabrication of *Spetsai* was done in Hamburg.
Modernisation: A mid-life upgrade programme is planned 2010–14. Enhancements are to include upgrades and

replacement of sensors and trackers in addition to platform improvements. As a separate programme Mk 48 launcher systems are being upgraded to Mod 5 to accommodate ESSM. This programme is to be completed by late 2009.

Structure: The design follows the Portuguese Vasco da Gama class. All steel fin stabilisers

Operational: Aegean Hawk carried from 1995. *Hydra* and *Salamis* are part of the 1st Frigate Squadron and *Spetsai* and *Psara* part of the 2nd Frigate Squadron.



HYDRA

6/2005, Michael Winter / 1133492



SALAMIS

6/2006, Marco Ghiglino / 1164520

10 ELLI (KORTENAER) CLASS (FFGH)

Name	No	Builders	Laid down	Launched	Commissioned
ELLI (ex <i>Pieter Florisz</i>)	F 450 (ex-F 812)	Koninklijke Maatschappij de Schelde, Flushing	1 July 1977	15 Dec 1979	10 Oct 1981
LIMNOS (ex <i>Witta de With</i>)	F 451 (ex-F 813)	Koninklijke Maatschappij de Schelde, Flushing	13 June 1978	27 Oct 1979	18 Sep 1982
AEGEON (ex <i>Banckert</i>)	F 460 (ex-F 810)	Koninklijke Maatschappij de Schelde, Flushing	25 Feb 1978	13 July 1978	29 Oct 1980
ADRIAS (ex <i>Callenburgh</i>)	F 459 (ex-F 808)	Koninklijke Maatschappij de Schelde, Flushing	30 June 1975	12 Mar 1977	26 July 1979
NAVARINON (ex <i>Van Kinsbergen</i>)	F 461 (ex-F 809)	Koninklijke Maatschappij de Schelde, Flushing	2 Sep 1975	16 Apr 1977	24 Apr 1980
KOUNTURIOTIS (ex <i>Kortenaer</i>)	F 462 (ex-F 807)	Koninklijke Maatschappij de Schelde, Flushing	8 Apr 1975	18 Dec 1978	28 Oct 1978
BOUBOULINA (ex <i>Pieter Florisz</i> , ex <i>Willem van der Zaan</i>)	F 463 (ex-F 828)	Koninklijke Maatschappij de Schelde, Flushing	21 Jan 1981	8 May 1982	1 Oct 1983
KANARIS (ex <i>Jan van Brakel</i>)	F 464 (ex-F 825)	Koninklijke Maatschappij de Schelde, Flushing	16 Nov 1979	16 May 1981	14 Apr 1983
THEMISTOCLES (ex <i>Philips Van Almonde</i>)	F 465 (ex-F 823)	Dok en Werfmaatschappij-Fijenoord	3 Oct 1977	11 Aug 1979	2 Dec 1981
NIKIFOROS FOKAS (ex <i>Blays van Treslong</i>)	F 466 (ex-F 824)	Dok en Werfmaatschappij-Fijenoord	27 Apr 1978	15 Nov 1980	25 Nov 1982

Displacement, tons: 3,050 standard; 3,630 full load
Dimensions, feet (metres): 428 × 47.9 × 20.3 (screws)
(130.5 × 14.6 × 6.2)

Main machinery: COGOG; 2 RR Olympus TM3B gas turbines; 50,880 hp (38.7 MW) sustained; 2 RR Tyne RM1C gas turbines, 9,900 hp (7.4 MW) sustained, 2 shafts; LIPS up props

Speed, knots: 30
Range, n miles: 4,700 at 16 kt
Complement: 172 (26 officers)

Missiles: SSM: 8 McDonnell Douglas Harpoon (2 quad) launchers; active radar homing to 130 km (70 n miles) at 0.9 Mach; warhead 227 kg.

SAM: Raytheon NATO Sea Sparrow RIM-7P; Mk 29 octuple launcher; 8 missiles; semi-active radar homing to 16 km (8.5 n miles) at 2.5 Mach; warhead 38 kg. Portable Redeye; shoulder-launched, short range.

Guns: 1 (F 459-466) or 2 (F 450, 451) OTO Melara 3 in (76 mm)/62 compact; 85 rds/min to 16 km (8.6 n miles) anti-surface; 12 km (6.5 n miles) anti-aircraft; weight of shell 6 kg
1 (F 459, 460, 461, 462) or 2 (F 450, 451) GE/GD Vulcan Phalanx 20 mm Mk 15 6-barrelled; 3,000 rds/min combined to 15 km.

Torpedoes: 4-324 mm Mk 32 (2 twin) tubes; 16 Honeywell Mk 46 Mod 5; anti-submarine; active/passive homing to 11 km (5.9 n miles) at 40 kt; warhead 44 kg. Can be fitted.

Countermeasures: Decoys: 2 Loral Hycoor Mk 36 SRBOC chaff launchers (Sippican ALEX in F 459, F 461, F 462)

ESM: Eletttronika Sphinx and MEL Scimitar; intercept. EDO CS-3701 (F 459, F 461, F 462), intercept.

ECM ELT 715; jammer.

Combat data systems: Signaal SEWACO II action data automation; Thales Tactics (F 459, F 461, F 462), Links 10, 11 and 14, SHF Satcom.

Electro-optic systems: Thales Mirador Trainable Electrical-Optical Observation System (TEOOS) (F 459, F 461, F 462)

Radars: Air search: Signaal LW08; D-band; range 264 km (145 n miles) for 2 m² target.

Surface search: Signaal ZW06; Thales Scout Mk 2 (F 459, F 461, F 462); I-band

Fire control: Signaal WM25; I/J-band; range 46 km (25 n miles).

Signaal STIR; V/J/K-band; range 39 km (21 n miles) for 1 m² target.

Sonars: Canadian Westinghouse SQS-505, hull-mounted, active search and attack; 7 kHz

Helicopters: 2 AB 212ASW

Programmes. A contract was signed with the Netherlands on 15 September 1980 for the purchase of *Elli*, a Kortenaer class, building for the Netherlands' Navy. An option for a second ship *Limnos* was exercised on 7 June 1981. On 9 November 1992, agreement was reached to transfer further ships of the class from the Netherlands Navy: *Aegeon* recommissioned on 14 May 1993. *Adrias* on 30 March 1994, *Navarinon* on 1 March 1995 and *Kountouriotis* on 15 December 1997. The first four ships are known as Batch I and the next two as Batch II. Four Batch III ships were later acquired on decommissioning from the Netherlands Navy: *Bouboulina* recommissioned on 14 December 2001, *Kanaris*, on 29 November 2002, *Themistocles* on 24 October 2003 and *Nikiforos Fokas* on 17 December 2003.

Modernisation: Mid-life modernisation programme (MLM) is planned for the six Batch I and II ships to extend life to 2020. The upgrade is being undertaken by Hellenic Shipyards with Thales Nederland acting as main subcontractor. The MLM includes replacement of the combat data system with Tactics, replacement of ZW06 surface search radar with Scout, improvements to the tracking performance of LW08 and WM25/STIR and installation of the Mirador optronic director. Upgrades to the EW capability are to include EDO CS-3701 ESM receiver and upgrade of SRBOC. Upgrade of the Sea Sparrow system



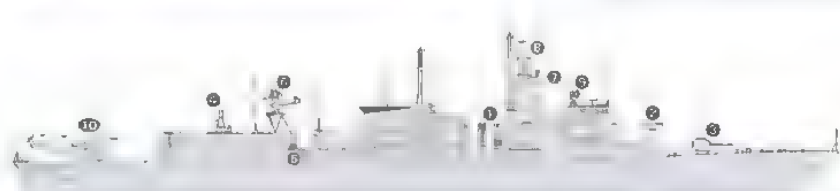
KANARIS

(Scale 1 : 1,200), Ian Sturton / 1044255



ELLI

(Scale 1 : 1,200), Ian Sturton / 0176346



KOUNTURIOTIS

(Scale 1 : 1,200), Ian Sturton / 1335461



ELLI

2/2007, Camil Busquets i Vilanova / 1170148



KOUNTURIOTIS

6/2008, Giorgio Ghigliano / 1335463

to RIM 162 ESSM has been postponed indefinitely. *Kountouriotis*, the first modernised frigate, was handed back to the Hellenic Navy on 12 September 2006 the second, *Adrias*, in February 2007 and the third *Navarinon* in late 2007. *Limnos* is to be completed in 2009 and *Elli* and *Aegeon* in 2010.

Structure: Hanger is 2 m longer than in the original Netherlands-designed ships to accommodate AB 212ASW helicopters.

Operational: Assignments; 1st FS (*Elli*, *Adrias*, *Kountouriotis*, *Bouboulina*, *Themistocles*), 2nd FS (*Limnos*, *Aegeon*, *Navarinon*, *Kanaris*, *Nikiforos Fokas*).



NIKIFOROS FOKAS

8/2007, Michael Nitz / 1170145

SHIPBORNE AIRCRAFT

Notes: There are also two Alouette IIIs used for SAR and training.

Numbers/Type: 11 Sikorsky S-70B-6 Aegean Hawk.
Operational speed: 135 kt (250 km/h).
Service ceiling: 10,000 ft (3,050 m).
Range: 600 n miles (1,110 km).

Role/Weapon systems: Five ordered 17 August 1991. First one delivered 14 October 1994, remainder in July 1995. The option was taken up on three more of which one was delivered in 1997, and two more in 1998. Three further more modern aircraft ordered June 2000, all of which have been delivered (differences are indicated in brackets). All of the original eight aircraft are to be similarly upgraded. Sensors: Telephonics APS 143(V)3 search radar and AAQ-22 (or AAS 44) FLIR, AlliedSignal AQS18(V)3 (or Ocean Systems HELRAS) dipping sonar, MAD, Litton ALR 606(V)2 (or LR 100) ESM, Litton ASN 150(V) tactical data system with CD22 or Link 11. Weapons: ASV; Kongsberg Penguin Mk 2 Mod 7, two AS 12 (or four AGM-114K Hellfire). ASW; two (or three) Mk 46 torpedoes.



AEGEAN HAWK

10/2001, Diego Quevedo / 0126292

Numbers/Type: 8 Agusta AB 212ASW
Operational speed: 106 kt (196 km/h).
Service ceiling: 14,200 ft (4,330 m).
Range: 230 n miles (425 km).

Role/Weapon systems: Shipborne ASW and surface search role from escorts. Sensors: Selenia APS-705 radar, AlliedSignal AQS-18 dipping sonar (ASW version). Weapons: ASV; two AS 12. ASW: two Mk 46 or two A244/S homing torpedoes.



AB 212ASW

6/2003, Adolfo Ortigueira GH / 0568865

LAND-BASED MARITIME AIRCRAFT

Notes: (1) A squadron of Air Force Mirage 2000 EG fighters is assigned to the naval strike role using Exocet AM 39 ASMs.
 (2) Replacement of the six P-3B Orions is under consideration. Options include the Embraer P-99, ATR 72/500, EADS CASA CN-235 and Beriev Be-200.

Numbers/Type: 6 Lockheed P-3B Orion.
Operational speed: 410 kt (760 km/h).
Service ceiling: 28,300 ft (8,625 m).
Range: 4,000 n miles (7,410 km).

Role/Weapon systems: Four P-3A transferred from the USN in 1992-93 as part of the Defence Co-operation. Four P-3B acquired in 1996 plus two more P-3A. Two more P-3B in 1997. The six P-3B are operational; two P-3A are used for ground training only and the remainder for spares. Sensors: APS 80 radar; sonobuoys; ESM. Weapons: ASW; Mk 46 torpedoes, depth bombs and mines.



ORION

6/1997, Hellenic Navy / 0012458

PATROL FORCES

Notes: Eight coastal patrol craft ordered on 24 September 2002 from Motomarine Shipyards. The first was planned to enter service in 2003. Eight further craft ordered by the Hellenic Coast Guard and delivered in 2004.

3 + 4 ROUSSEN (SUPERVITA) CLASS
(FAST ATTACK CRAFT—MISSILE) (PGG)

Name	No	Builders	Commissioned
YPOPLOIARCHOS ROUSSEN	P 67	Elefsis Shipyard	20 Dec 2005
YPOPLOIARCHOS DANILOLOS	P 68	Elefsis Shipyard	22 Feb 2006
YPOPLOIARCHOS KRISTALLIDIS	P 69	Elefsis Shipyard	8 May 2006
YPOPLOIARCHOS GRIGOROPOULOS	P 70	Elefsis Shipyard	2009
ANTHYPOPLOIARCHOS RITSOS	P 71	Elefsis Shipyard	2010
-	-	Elefsis Shipyard	2012
-	-	Elefsis Shipyard	2012

Displacement, tons: 660 full load
Dimensions, feet (metres): 203.1 x 31.2 x 9.5 (61.9 x 9.5 x 2.6)
Main machinery: 4 MTU 16V 595TE 90 diesels; 23,170 hp (17.3 MW); 4 shafts
Speed, knots: 34
Range, n miles: 1,800 at 12 kt
Complement: 45 (8 officers)

Missiles: SSM. 8 MBDA Exocet MM 40 Block 2 (Block 3 in P 70 and P 71) ●; inertial cruise: active radar homing to 70 km (40 n miles) at 0.9 Mach; warhead 165 kg, sea skimmer. SAM: 1 RAM RIM-116 ●; Mk 49 launcher; passive IR/anti-radiation homing to 9.6 km (5.2 n miles) at 2.5 Mach, warhead 9.1 kg
Guns: 1 Oto Melara 76 mm/62 Super Rapid ●; 120 rds/min to 16 km (8.7 n miles); weight of shell 6 kg.
 2 Otobreda 30 mm ●
Countmeasures: Decoys: 2 Loral Hycor Mk 36 SRBOC chaff launchers ●
 ESM, Thales DR 3000 ●; intercept.
Combat data systems: Thales Tacticos. Link 11.
Electro-optic systems: Thales Mirador Trainable Electro-Optical Observation System (TEOOS) ●
Radars: Air/surface search: Thales MW-08 ●; G-band.
 Surface search: Thales Scout Mk 2 LPI; I-band.
Navigation: Litton Marine Bridgemaster, I band
Fire control: Thales Sting ●; I/J-band.
 IFF Mk XII.

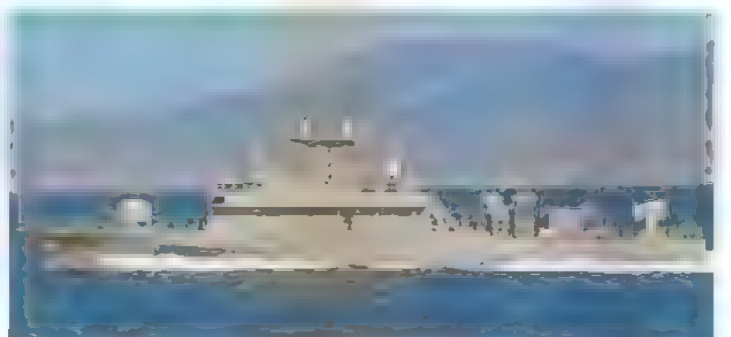
Programmes: Design selected 21 September 1999 based on Vosper Thornycroft Vita corvettes in service in Qatar. Contract signed 7 January 2000 for the building of first three vessels which started in March 2000. *Rousсен* launched on 13 November 2002, *Daniolos* on 8 July 2003, *Kristallidis* on 5 April 2004. A contract for the construction of two further ships was signed on 23 August 2003. *Grigoropoulos* was launched on 20 December 2005 and *Ritsos* on 9 October 2006. The contract for the sixth and seventh vessels was signed on 25 September 2008

Structure: A rigid inflatable boat is carried amidships.



YPOPLOIARCHOS ROUSSEN

(Scale 1 : 900), Ian Sturton / 0176344



DANILOLOS

7/2006, Richard Scott / 1159225



ROUSSEN

6/2006 / 1164517

9 LASKOS (LA COMBATTANTE III) CLASS
(FAST ATTACK CRAFT—MISSILE) (PGGF/PGG)

Name	No	Builders	Commissioned
ANTHYPOLOIARCHOS LASKOS	P 20	CMN Cherbourg	20 Apr 1977
PLOTARCHIS BLESSAS	P 21	CMN Cherbourg	7 July 1977
YPOLOIARCHOS MIKONIOS	P 22	CMN Cherbourg	10 Feb 1978
YPOLOIARCHOS TROUPAKIS	P 23	CMN Cherbourg	8 Nov 1977
SIMEOFOROS KAVALOUDIS	P 24	Hellenic Shipyards, Skaramanga	14 July 1980
YPOLOIARCHOS DEGIANNIS	P 26	Hellenic Shipyards, Skaramanga	Dec 1980
SIMEOFOROS XENOS	P 27	Hellenic Shipyards, Skaramanga	31 Mar 1981
SIMEOFOROS SIMITZOPOULOS	P 28	Hellenic Shipyards, Skaramanga	June 1981
SIMEOFOROS STARAKIS	P 29	Hellenic Shipyards, Skaramanga	12 Oct 1981

Displacement, tons: 359 standard; 425 full load (P 20-23)
329 standard; 429 full load (P 24-29)
Dimensions, feet (metres): 184 x 26.2 x 7 (56.2 x 8 x 2.1)
Main machinery: 4 MTU 20V 538TB92 diesels, 17,060 hp(m) (12.54 MW) sustained; 4 shafts (P 20-23)
4 MTU 20V 538TB91 diesels; 15,360 hp(m) (11.29 MW) sustained; 4 shafts (P 24-29)
Speed, knots: 36 (P 20-23); 32.5 (P 24-29)
Range, n miles: 700 at 32 kt; 2,700 at 15 kt
Complement: 43 (6 officers)

Missiles: SSM: 4 Aerospatiale MM 38 Exocet (P 20-P 23); inertial cruise; active radar homing to 42 km (23 n miles) at 0.9 Mach; warhead 165 kg
6 Kongsberg Penguin Mk 2 Mod 3 (P 24-P 29); inertial/IR homing to 27 km (15 n miles) at 0.8 Mach; warhead 120 kg
Guns: 2 OTO Melara 3 in (76 mm)/62 compact, 85 rds/min to 16 km (8.6 n miles) anti-surface; 12 km (6.5 n miles) anti-aircraft; weight of shell 6 kg
4 Emerson Electric 30 mm (2 twin); multipurpose; 1,200 rds/min combined to 6 km (3.2 n miles); weight of shell 0.35 kg.
Torpedoes: 2—21 in (533 mm) aft tubes. AEG SST-4; anti-surface; wire-guided; active homing to 12 km (6.5 n miles) at 35 kt; passive homing to 28 km (15 n miles) at 23 kt; warhead 250 kg.
Countermeasures: Decoys: Wegmann chaff launchers.
ESM: Thomson CSF DR 2000S (P 20-23); intercept.
Combat data systems: Taciticos (P 20-23); Link 11 (P 20-23).
Weapons control: 2 CSEE Panda optical directors for 30 mm guns. Mirador optronic director (P 20-P 23) NFT PFCS-2 (P 24-P 29)
Radars: Surface search: Thomson-CSF Triton (P 24-29); Thales Variant (P 20-23); G-band Thales Scout (P 20 23); I-band.
Navigation: Decca 1226C (P 24-29); I-band.
Sperry Bridgemaster (P 20-23); E/I/I-band.
Fire control: Thomson-CSF Castor II; I/J-band
Thomson-CSF Pollux; I/J-band

Programmes: First four ordered in September 1974. Second group of six ordered 1978.
Modernisation: P 24-29 upgraded to fire Penguin Mk 2 Mod 3 missiles. A contract for the upgrade of P 20-23 was signed on 31 October 2003. Modernisation began in 2005 and is to be completed in 2009. The programme includes installation of the Taciticos Combat Management System, the MIRADOR optronic director, SRBOC launchers, Thales DR 3000 ESM, Link 11 and Variant, Scout Mk 2 and Bridgemaster radars. P 20 was completed in April 2008 and P 22 in September 2008. P 21 and P 23 are to be completed in February 2009 and August 2009 respectively.
Structure: First four fitted with SSM Exocet; remainder have Penguin.
Operational: P 25 sunk after collision with a ferry in November 1996.



SIMEOFOROS SIMITZOPOULOS (with Penguin) 9/2000, A Sharma / 0126333



PLOTARCHIS BLESSAS (with Exocet) 7/2006, Marco Ghiglino / 1164515



SIMEOFOROS STARAKIS 11/2008, M Declerck / 1335380

6 VOTSIS (LA COMBATTANTE IIA) (TYPE 148) CLASS
(FAST ATTACK CRAFT—MISSILE) (PGFG)

Name	No	Builders	Commissioned
YPOLOIARCHOS VOTSIS (ex-Itlis)	P 72 (ex-P 51)	CMN, Cherbourg	8 Jan 1973
ANTHYPOLOIARCHOS PEZOPOULOS (ex-Storch)	P 73 (ex-P 30)	CMN, Cherbourg	17 July 1974
PLOTARCHIS VLAHAVAS (ex-Marder)	P 74	CMN, Cherbourg	14 June 1973
PLOTARCHIS MARIDAKIS (ex-Häher)	P 75	CMN, Cherbourg	12 June 1974
YPOLOIARCHOS TOURNAS (ex-Leopard)	P 76	CMN, Cherbourg	21 Aug 1973
PLOTARCHIS SAKIPIS (ex-Jaguar)	P 77	CMN, Cherbourg	13 Nov 1973

Displacement, tons: 265 full load
Dimensions, feet (metres): 154.2 x 23 x 8.9 (47 x 7 x 2.7)
Main machinery: 4 MTU MD 16V 538TB90 diesels; 12,000 hp(m) (8.82 MW) sustained; 4 shafts
Speed, knots: 36
Range, n miles: 570 at 30 kt; 1,600 at 15 kt
Complement: 41 (6 officers)

Missiles: SSM: 4 Aerospatiale MM 38 Exocet (2 twin launchers (P 72-73 and P 76-77); inertial cruise; active radar homing to 42 km (23 n miles) at 0.9 Mach; warhead 166 kg, sea-skimmer
4 McDonnell Douglas Harpoon (2 twin launchers (P 74-75); active radar homing to 130 km (70 n miles) at 0.9 Mach; warhead 227 kg
Guns: 1 OTO Melara 3 in (76 mm)/62 compact; 85 rds/min to 16 km (8.6 n miles) anti-surface; 12 km (6.5 n miles) anti-aircraft; weight of shell 6 kg
1 Bofors 40 mm/70, 330 rds/min to 12 km (6.5 n miles) anti-surface; 4 km (2.2 n miles) anti-aircraft; weight of shell 0.96 kg; fitted with GRP dome (1984).
Mines: Laying capability.
Countermeasures: Decoys; Wolke chaff launcher.
ESM Thomson-CSF DR 2000S; intercept
Combat data systems: PALIS and Link 11.
Weapons control: CSEE Panda optical director. Thomson-CSF Vega PCET system, controlling missiles and guns
Radars: Air/surface search: Thomson-CSF Triton; G-band; range 33 km (18 n miles) for 2 m² target.
Navigation: SMA 3 RM 20; I-band.
Fire control: Thomson-CSF Castor; I/J-band.

Programmes: First pair transferred from Germany in September 1993 and recommissioned 17 February 1994. Two more transferred 16 March 1995 and recommissioned 30 June 1995. Third pair transferred from Germany and recommissioned on 27 October 2000.
Modernisation: Mid-life updates in 1980s. P 74-75 fitted with Harpoon. New ESM fitted after transfer P 76-77 modernised at Lamda Shipyards in 2003-2004.
Structure: Steel hulls. Similar to Combattante II class. Spray rails have been fitted to improve hydrodynamic performance.



YPOLOIARCHOS TOURNAS 11/2004, M Declerck / 1133495

4 NASTY CLASS (PATROL CRAFT) (PB)

Name	No	Builders	Commissioned
ANDROMEDA	P 196	Mandal, Norway	Nov 1966
KYKNOS	P 198	Mandal, Norway	Feb 1967
PIGASOS	P 199	Mandal, Norway	Apr 1967
TOXOTIS	P 228	Mandal, Norway	May 1967

Displacement, tons: 72 full load
Dimensions, feet (metres): 80.4 x 24.6 x 6.9 (24.5 x 7.5 x 2.1)
Main machinery: 2 MTU 12V 331 TC92 diesels; 2,660 hp(m) (1.96 MW) sustained; 2 shafts
Speed, knots: 25
Range, n miles: 676 at 17 kt
Complement: 20 (2 officers)
Guns: 1 Bofors 40 mm/70. 1 Rheinmetall 20 mm.
Radars: Surface search: Decca 1226; I-band.

Comment: Six of the class acquired from Norway in 1967 and paid off into reserve in the early 1980s. Four re-engined and brought back into service in 1988. These craft continue to be active although top speed has been markedly reduced. Torpedo tubes have been removed.



PIGASOS 7/2004, C D Ynyll / 0587756

2 ARMATOLOS (OSPREY 55) CLASS (LARGE PATROL CRAFT) (PG)

Name	No	Builders	Commissioned
ARMATOLOS	P 18	Hellenic Shipyards, Skaramanga	27 Mar 1990
NAVMACHOS	P 19	Hellenic Shipyards, Skaramanga	15 July 1990

Displacement, tons: 555 full load
Dimensions, feet (metres): 179.8; 166.7 (wl) × 34.4 × 8.5 (54.8; 50.8 × 10.5 × 2.6)
Main machinery: 2 MTU 16V 1163TB63 diesels; 10,000 hp(m) (7.3 MW) sustained; 2 shafts, Kamewa cp props
Speed, knots: 25
Range, n miles: 500 at 25 kt, 2,800 at 12 kt
Complement: 48 (7 officers)
Guns: 1 OTO Melara 3 in (76 mm)/62 compact; 85 rds/min to 16 km (8.6 n miles) anti-surface; 12 km (6.6 n miles) anti-aircraft; weight of shell 6 kg
 1 Bofors 40 mm/70.
Mines: Rails
Countermeasures: Decoys: 2 chaff launchers.
ESM Thomson-CSF DR 2000S, intercept
Weapons control: Selenia Eltag NA 21.
Radars: Surface search: Thomson-CSF Triton; G-band.
Fire control: Selenia RTNX; I/J-band.

Comment: Built in co-operation with Danyard A/S. Ordered in March 1988. First one laid down 8 May 1989 and launched 19 December 1989. Second laid down 9 November 1989 and launched 16 May 1990. Armament is of modular design and therefore can be changed. 76 mm guns replaced the forward Bofors 40 mm in 1995, after being taken from decommissioned Gearing-class destroyers. Options on more of the class were shelved in favour of the Hellenic 56 design.



NAVMACHOS

7/2002, Pital / 05258/1

2 KASOS (HELLENIC 56) CLASS (BATCH 1) (LARGE PATROL CRAFT) (PG)

Name	No	Builders	Commissioned
KASOS (ex-Pyrpolitis)	P 57	Hellenic Shipyard, Skaramanga	4 May 1993
POLEMISTIS	P 61	Hellenic Shipyard, Skaramanga	16 June 1994

Displacement, tons: 555 full load
Dimensions, feet (metres): 185.4 × 32.8 × 8.9 (56.5 × 10 × 2.7)
Main machinery: 2 Wärtsilä Nohab 16V25 diesels; 9,200 hp(m) (6.76 MW) sustained; 2 shafts
Speed, knots: 24
Range, n miles: 2,470 at 15 kt; 900 at 24 kt
Complement: 48 (7 officers)
Guns: 1 OTO Melara 3 in (76 mm)/62 compact; 85 rds/min to 16 km (8.6 n miles) anti-surface; 12 km (6.6 n miles) anti-aircraft; weight of shell 6 kg.
 1 Bofors 40 mm/70. 2 Rheinmetall 20 mm
Mines: 2 rails
Countermeasures: ESM Thomson-CSF DR 2000S; intercept.
Weapons control: Selenia Eltag NA 21.
Radars: Surface search: Thomson-CSF Triton; I-band

Comment: First pair ordered 20 February 1990. This is a design by the Hellenic Navy which uses the modular concept so that weapons and sensors can be changed as required. Appearance is similar to Osprey 55 class. First of class *Pyrpolitis* (renamed *Kasos* in 2006) launched 16 September 1992, *Polemistis* 21 June 1993. Completion delayed by the shipyard's financial problems. Alternative guns and Harpoon SSM can be fitted. 25 fully equipped troops can be carried. Engines are resiliently mounted.



POLEMISTIS

5/2004, Martin Mokrus / 05117/5



POLEMISTIS

8/2000, van Ginderen Collection / 0104560

4 MACHITIS CLASS (LARGE PATROL CRAFT) (PG)

Name	No	Builders	Commissioned
MACHITIS	P 266	Hellenic Shipyards, Skaramanga	29 Oct 2003
NIKIFOROS	P 267	Hellenic Shipyards, Skaramanga	30 Mar 2004
AITTITOS	P 268	Hellenic Shipyards, Skaramanga	5 Aug 2004
KRATEOS	P 269	Hellenic Shipyards, Skaramanga	20 Oct 2005

Displacement, tons: 575 full load
Dimensions, feet (metres): 185.4 × 32.8 × 8.9 (56.5 × 10 × 2.7)
Main machinery: 2 Wärtsilä Nohab 16V25 diesels; 9,200 hp(m) (6.76 MW) sustained; 2 shafts
Speed, knots: 24. **Range, n miles:** 2,000 at 15 kt; 900 at 24 kt
Complement: 49 (8 officers)
Guns: 1 Otobreda 3 in (76 mm)/62 compact; 85 rds/min to 16 km (8.6 n miles) anti-surface; 12 km (6.6 n miles) anti-aircraft; weight of shell 6 kg.
 1 Otobreda 40 mm/70-520R. 2 Rheinmetall 20 mm
Mines: 2 rails.
Countermeasures: ESM Thomson-CSF DR 3000
Combat data systems: TACTICOS with Link 11.
Weapons control: Thalios Lirod Mk 2.
Radars: Air/surface search: Signal Variant, E/F-band.
 Surface search: Thalios Scout Mk 2, I-band
Fire control: Thalios Lirod Mk 2; K-band
Navigation: Bridgmaster I-band

Comment: Contract to build four improved *Pyrpolitis* class given to Hellenic Shipyard on 21 December 1999. Building started in February 2000. *Machitis* launched in June 2002, *Nikiforos* on 13 December 2002, *Aittitos* on 26 February 2003 and *Krateos* on 30 October 2003. An option for a fifth vessel is unlikely to be exercised.



MACHITIS

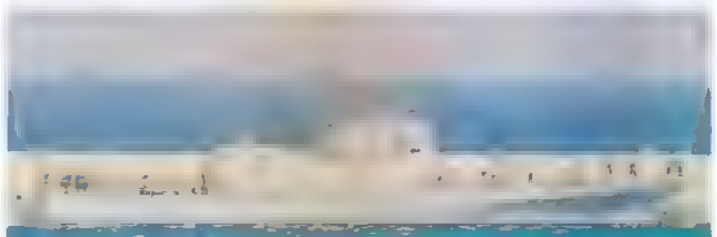
12/2004, Marco Ghiglino / 1170145

2 TOLMI (ASHEVILLE) CLASS (LARGE PATROL CRAFT) (PG)

Name	No	Builders	Commissioned
TOLMI (ex-Green Bay)	P 229	Peterson, Wisconsin	5 Dec 1969
ORMI (ex-Beacon)	P 230	Peterson, Wisconsin	21 Nov 1969

Displacement, tons: 225 standard; 245 full load
Dimensions, feet (metres): 164.5 × 23.8 × 9.5 (50.7 × 7.3 × 2.9)
Main machinery: 2 MTU 12V 596TE94 diesels; 4,500 hp (3.3 MW); 2 shafts
Speed, knots: 20. **Range, n miles:** 1,700 at 16 kt
Complement: 32 (6 officers)
Guns: 2 Bofors 40 mm/70 Mk 10. 4–12.7 mm (2 twin) MGs.
Weapons control: Mk 63 GFCS
Radars: Surface search: Sperry SPS-53, I/J-band
Fire control: Western Electric SPG-50, I/J-band

Comment: Transferred from the USA in mid-1990 after a refit and recommissioned 18 June 1991. Both were in reserve from April 1977 having originally been built for the Cuban crisis. Similar craft in Turkish, Colombian and South Korean navies. Original gas-turbine propulsion engine was removed prior to transfer and both craft reported re-engined in 2004.



TOLMI

8/2006, Marco Ghiglino / 1184516

2 ANTONIOU CLASS (PB)

Name	No	Builders	Commissioned
DIOPOS ANTONIOU	P 286	Ch N de l'Esteral	4 Dec 1975
KELEFSTIS STAMOU	P 287	Ch N de l'Esteral	28 July 1975

Displacement, tons: 115 full load
Dimensions, feet (metres): 105 × 19 × 5.3 (32 × 5.8 × 1.6)
Main machinery: 2 MTU 12V 331 TC81 diesels; 2,610 hp(m) (1.92 MW) sustained; 2 shafts
Speed, knots: 30. **Range, n miles:** 1,500 at 15 kt
Complement: 20 (2 officers)
Guns: 1 Rheinmetall 20 mm, 1–12.7 mm MG
Radars: Surface search: Decca 1226, I-band

Comment: Originally ordered for Cyprus, later transferred to Greece. Wooden hulls. Fast RIB carried on the stern. Surface-to-surface missiles no longer carried



DIOPOS ANTONIOU

7/2007, A A de Kruijff / 1170144

11 SPECIAL WARFARE CRAFT (PBF)

SAP 1-11

Displacement, tons: 8.6 full load
 Dimensions, feet (metres): 44.3 x 11.6 x 2.3 (13.2 x 3.55 x 0.7)
 Main machinery: 2 Caterpillar; 840 hp (625 kW); surface-piercing propeller
 Speed, knots: 60+
 Complement: 4
 Guns: 1—12.7 mm MG. 2—7.62 mm MGs.

Comment: Details are for SAP 7-9, donated by Angelopoulos family to Hellenic Navy for use by special forces. RIB42SC rigid inflatable monohull with removable synthetic armour panels. Built by Italian shipyard Fabio Buzzì.



SPECIAL WARFARE CRAFT 6/2006 / 1164514

3 NIKI (THETIS) (TYPE 420) CLASS (PATROL SHIPS) (PG)

Name	No	Launched	Commissioned
NIKI (ex-Thetis)	P 62 (ex-P 6052)	1 July 1961	6 Sep 1991
DOXA (ex-Najade)	P 63 (ex-P 6054)	12 May 1962	6 Sep 1991
ELEFThERIA (ex-Triton)	P 64 (ex-P 6055)	10 Nov 1962	7 Sep 1992

Displacement, tons: 575 standard; 732 full load
 Dimensions, feet (metres): 229.7 x 26.9 x 8.6 (70 x 8.2 x 2.7)
 Main machinery: 2 MAN V84V diesels; 6,800 hp(m) (5 MW); 2 shafts
 Speed, knots: 19.5
 Range, n miles: 2,760 at 15 kt
 Complement: 65 (7 officers)

Guns: 4 Breda 40 mm/70 (2 twin), 300 rds/min to 12.5 km (6.7 n miles); weight of shell 0.96 kg. 2 Rheinmetall 20 mm.
 Torpedoes: 6—324 mm Mk 32 (2 triple) tubes; 6 Honeywell Mk 46 Mod 5; active/passive homing to 11 km (5.9 n miles) at 40 kt; warhead 44 kg.
 Depth charges: 2 rails
 Countermeasures: ESM: Thomson-CSF DR 2000S; intercept.
 Weapons control: Signaal Mk 9TFCS
 Radars: Surface search: Thomson-CSF TRS 3001 E/F-band
 Navigation: Decca BM-E; I-band
 Sonars: Atlas Elektronik ELAC 1 BV; hull-mounted; active search and attack; high frequency.

Programmes: All built by Rolandwerft, Bremen and transferred from Germany.
 Modernisation: The A/S mortars have been replaced by a second 40 mm gun and single torpedo tubes by triple mountings (to be confirmed). Upgrades started in 2000 and completed in 2002 included new diesel generators, two Rheinmetall 20 mm guns to replace the MGs and a new navigation suite.
 Structure: Doxa has a deckhouse before bridge for sick bay



ELEFThERIA 7/2006, Marco Ghiglino / 1164518

AMPHIBIOUS FORCES

Notes: (1) There is a number of paid off LSTs and LSMs in unmaintained reserve at Salamis.
 (2) Procurement of a landing platform dock is under consideration.

59 LANDING CRAFT

Displacement, tons: 56 full load
 Dimensions, feet (metres): 56 x 14.4 x 3.9 (17 x 4.4 x 1.2)
 Main machinery: 2 Gray Marine 64 HN9 diesels; 330 hp (264 kW); 2 shafts
 Speed, knots: 10
 Range, n miles: 130 at 10 kt
 Military lift: 30 tons

Comment: Details given are for the 11 LCMs transferred from the USA in 1956-58. Twenty-nine LCVPs were also transferred from the USA 1956-71 and the remainder (12 LCPs and 7 LCAs) were built in Greece from 1977.

5 CHIOS (JASON) CLASS (LSTH)

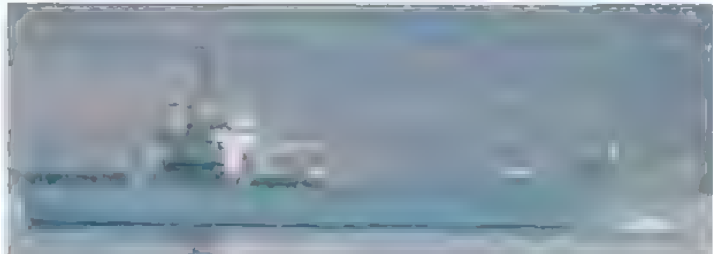
Name	No	Builders	Launched	Commissioned
CHIOS	L 173	Eleusis Shipyard	16 Dec 1988	30 May 1996
SAMOS	L 174	Eleusis Shipyard	6 Apr 1989	20 May 1994
LESBOS	L 176	Eleusis Shipyard	5 July 1990	25 Feb 1999
KARIA	L 175	Eleusis Shipyard	22 Oct 1988	6 Oct 1999
RODOS	L 177	Eleusis Shipyard	6 Oct 1989	30 May 2000

Displacement, tons: 4,400 full load
 Dimensions, feet (metres): 380.5 x 50.2 x 11.3 (116 x 15.3 x 3.4)
 Main machinery: 2 Wärtsilä Nohab 16V25 diesels, 9,200 hp(m) (6.76 MW) sustained, 2 shafts
 Speed, knots: 16
 Complement: 112 (12 officers)
 Military lift: 300 troops plus vehicles; 4 LCVPs
 Guns: 1 OTO Melara 76 mm/62 Mod 9 compact; 100 rds/min to 16 km (8.6 n miles) anti-surface; 12 km (6.5 n miles) anti-aircraft; weight of shell 6 kg. 2 Breda 40 mm/70, 300 rds/min to 12 km (6.5 n miles); weight of shell 0.96 kg. 4 Rheinmetall 20 mm (2 twin).
 Weapons control: 1 CSEE Panda optical director Thomson-CSF Canopus GFCS.
 Radars: Thomson-CSF Triton; G-band.
 Fire control: Thomson-CSF Pollux; I/J-band.
 Navigation: Kelvin Hughes Type 1007; I-band.
 Helicopters: Platform for one medium.

Comment: Contract for construction of five LSTs by Eleusis Shipyard signed 15 May 1986. Bow and stern ramps, drive through design. First laid down 18 April 1987, second in September 1987, third in May 1988, fourth April 1989 and fifth November 1989. Completion of all five and in particular the last three, severely delayed by shipyard financial problems which were later overcome, following privatisation. Combat data system is a refurbished German system.



SAMOS 9/2003, Schaeffer/Marsan / 0568865



LESBOS 11/2005, M Declerck / 1164513

4 KEFALLINIA (ZUBR) CLASS (PROJECT 1232) (HOVERCRAFT) (LCUJ)

Name	No	Builders	Commissioned
KEFALLINIA	L 180 (ex-717)	Almaz, St Petersburg	22 Jan 2001
ITHAKI	L 181 (ex-U 421)	Morye Shipyard, Ukraine	2 Mar 2001
ZAKYNTHOS	L 183	Almaz, St Petersburg	5 Oct 2001
KERKIRA	L 182	Almaz, St Petersburg	4 Jan 2005

Displacement, tons: 550 full load
 Dimensions, feet (metres): 189 x 84 (57.6 x 25.6)
 Main machinery: 5 Type DP-71L gas-turbines; 2 for lift, 20,000 hp(m) (14.7 MW) nominal; 3 for drive, 30,000 hp(m) (22.1 MW) nominal
 Speed, knots: 60
 Range, n miles: 300 at 55 kt
 Complement: 40 (5 officers)
 Military lift: 3 MBT or 10 APC plus 230 (troops (total 130 tons)
 Guns: 2—30 mm/65 AK 630; 6 barrels per mounting
 2 retractable 122 mm rocket launchers.
 Mines: 2 rails can be carried for 80
 Countermeasures: ESM, intercept.
 Weapons control: Optronic director.
 Radars: Air/surface search: Cross Dome; I-band.
 Fire control: BassTilt; H/I-band.

Comment: Two ordered from Russia and two from Ukraine on 24 January 2000. First delivered late December 2000, the remainder in 2001. L 180 was second-hand, L 181 was completion of a half-built vessel and L 183 was new build. The second Ukrainian ship was not accepted into service and a replacement (L 182) was ordered from Russia on 30 September 2002 and launched on 24 June 2004. There are no plans for further craft.



KEFALLINIA 1/2001, T L Valmes / 0034713

6 TYPE 520 (LCU)

NAXOS (ex-Renke) L 178 SERIFOS (ex-Rochen) L 195 IRAKLEIA (ex-Farella) L 169
PAROS (ex-Salm) L 179 IOS (ex-Barbel) L 167 FOLEGANDROS (ex-Delphin) L 170

Displacement, tons: 430 full load
Dimensions, feet (metres): 131.2 x 28.9 x 7.2 (40 x 8.8 x 2.2)
Main machinery: 2 MWM 12-cyl diesels, 1,020 hp(m) (750 kW); 2 shafts
Speed, knots: 11 Range, n miles: 1,200 at 11 kt
Complement: 17
Military lift: 150 tons
Guns: 2 Rheinmetall 20 mm (not all fitted).
Radars: Navigation: Kelvin Hughes; I-band.

Comment: First two transferred from Germany 16 November 1989, remainder on 31 January 1992. Built by HDW, Hamburg in 1966. Bow and stern ramps similar to US Type. One other (ex-Muranel) used for spares. Both L 178 and L 195 modified to act as auxiliary transport.



PAROS

7/2007, Bob Fildes / 1170143



FOLEGANDROS

11/2004, M Declerck / 1133499

MINE WARFARE FORCES**6 ALKYON (MSC 294) CLASS
(MINESWEEPERS—COASTAL) (MSC)**

Name	No	Builders	Commissioned
ALKYON (ex-MSK 319)	M 211	Peterson Builders	3 Dec 1968
AVRA (ex-MSK 318)	M 214	Peterson Builders	3 Oct 1968
AIDON (ex-MSK 314)	M 240	Peterson Builders	22 June 1967
KICHLI (ex-MSK 308)	M 241	Peterson Builders	14 July 1964
KISSA (ex-MSK 309)	M 242	Peterson Builders	1 Sep 1964
PLEIAS (ex-MSK 310)	M 248	Peterson Builders	13 Oct 1964

Displacement, tons: 320 standard; 370 full load
Dimensions, feet (metres): 144 x 28 x 8.2 (43.3 x 8.5 x 2.5)
Main machinery: 2 GM-268A diesels; 1,780 hp (1.3 MW); 2 shafts
Speed, knots: 13
Range, n miles: 2,500 at 10 kt
Complement: 37 (6 officers)
Guns: 2 Oerlikon 20 mm (twin).
Radars: Navigation: Decca; I-band.
Sonars: UQS-1D; active, high frequency.

Comment: Built in the USA for Greece, wooden hulls. Modernisation programme from 1990 to 1995 with replacement main engines and navigation radar. Two decommissioned in 2005 and 2008 respectively.



AVRA

7/2006, Marco Ghigliino / 1184512

**2 + (3) EVNIKI (OSPREY) CLASS
(MINEHUNTERS—COASTAL) (MHC)**

Name	No	Builders	Launched	Commissioned
EVNIKI (ex-Pelican)	M 61 (ex-MHC 53)	Avondale Industries	27 Feb 1993	18 Nov 1995
CALYPSO (ex-Heron)	M 64 (ex MHC 52)	Intermarine, Savannah	21 Mar 1992	6 Aug 1994

Displacement, tons: 930 full load
Dimensions, feet (metres): 187.8 x 35.9 x 9.5 (57.2 x 11 x 2.9)
Main machinery: 2 Isotta Fraschini ID 36 SS BV AM diesels; 1,600 hp(m) (1.18 MW) sustained; 2 Voith Schneider props; 3 Isotta Fraschini ID 36 diesel generators, 984 kW
Speed, knots: 10. Range, n miles: 1,500 at 10 kt
Complement: 49 (9 officers)

Guns: 2—12.7 mm MGs
Countermeasures: MCM: Alliant SLO-48 mine neutralisation system ROV (with 1,070 m cable). Degaussing DGM-4.
Combat data systems: Unisys SYQ 13 and SYQ 109; integrated combat and machinery control system. USQ-119E(V), UHF Dama, and OTC-XS provide GCCS connectivity
Radars: Surface search Raytheon SPS-64(V)9, I-band
Navigation: R41XX; I-band.
Sonars: Raytheon/Thomson Sintra SQQ-32(V)3; VDS; active minehunting, high frequency.

Programmes: Original design contract for Lerici class minehunters was awarded in August 1986 to Intermarine USA which built eight of the 12 ships of the class for the US Navy. Ex-Heron transferred free of charge and ex-Pelican acquired through FMS funding. Both recommissioned on 16 March 2007. The procurement of three further ships is under consideration.

Structure: Construction is of monocoque GRP throughout hull, with frames eliminated. Main machinery is mounted on GRP cradles and provided with acoustic enclosures. SQQ-32 is deployed from a central well forward. Fitted with Voith cycloidal propellers which eliminate need for forward thrusters during station keeping.



OSPREY CLASS (US colours)

4/2004, US Navy / 1043630

2 EVROPI (HUNT) CLASS (MHSC)

Name	No	Builders	Commissioned
EVROPI (ex-Bicester)	M 62 (ex-M 36)	Vosper Thornycroft	20 Mar 1986
KALLISTO (ex-Berkeley)	M 63 (ex-M 40)	Vosper Thornycroft	14 Jan 1988

Displacement, tons: 750 full load
Dimensions, feet (metres): 197 x 34.1 x 10.5 (60 x 10.4 x 3.2)
Main machinery: 2 MTU diesels; 1,900 hp (1.42 MW); 1 Deltic Type 9-55B diesel for pulse generator and auxiliary drive; 780 hp (582 kW); 2 shafts; bow thruster
Speed, knots: 15 diesels; 8 hydraulic drive
Range, n miles: 1,500 at 12 kt
Complement: 46 (9 officers)
Guns: 1 DES/MSI DS 30B 30 mm/75; 650 rds/min to 10 km (5.4 n miles) anti-surface; 3 km (11.6 n miles) anti-aircraft; weight of shell 0.36 kg
Countermeasures: MCM: 2 PAP 104 remotely controlled submersibles, MS 14 magnetic loop, Sperry MSSA Mk 1 Towed Acoustic Generator and conventional Mk 8 Oropesa sweeps.
ESM: MEL Matilda UAR 1.
Combat data systems: CAAIS DBA 4 action data automation.
Radars: Navigation: Kelvin Hughes Type 1006; I-band
Sonars: Plessey 193M Mod 1; hull-mounted; minehunting; 100/300 kHz. Mil Cross mine avoidance sonar; hull-mounted; active; high frequency Type 2059 to track PAP 104.

Comment: First one transferred from UK 31 July 2000, second one 28 February 2001. Main machinery replaced by MTU units between May 2004 and January 2005. There are no further plans for upgrades.



EVROPI

2/2007, Adolfo Ortigueira Gil / 1170142

SURVEY AND RESEARCH SHIPS

1 SURVEY SHIP (AGS)

Name	No	Builders	Commissioned
NAFTILOS	A 478	Annastadiades Tsortanides, Perama	3 Apr 1976

Displacement, tons: 1,470 full load
Dimensions, feet (metres): 207 × 36 × 13.8 (63.1 × 11.6 × 4.2)
Main machinery: 2 Burmeister & Wain SS28LM diesels; 2,640 hp(m) (1.94 MW); 2 shafts
Speed, knots: 15
Complement: 43 (6 officers)

Comment: Launched 19 November 1975. Of similar design to the two lighthouse tenders.



NAFTILOS 9/1999, van Ginderen Collection / 0079497

1 RESEARCH SHIP (AGOR)

Name	No	Builders	Commissioned
PYTHEAS	A 474	Annastadiades Tsortanides, Perama	15 Dec 1983

Displacement, tons: 670 standard, 840 full load
Dimensions, feet (metres): 164.7 × 31.5 × 21.6 (50.2 × 9.6 × 6.6)
Main machinery: 2 Detroit 12V-92TA diesels; 1,020 hp (760 kW) sustained; 2 shafts
Speed, knots: 14
Complement: 43 (6 officers)

Comment: *Pythess* ordered in May 1982. Launched 19 September 1983. A similar ship, *Aegeon*, was constructed to Navy specification in 1984 but now belongs to the Maritime Research Institute



PYTHEAS 7/2007, A A de Kruif / 1170141

1 HISTORIC SHIP (YXR)

OLYMPIAS
Dimensions, feet (metres): 121.4 × 17.1 × 4.9 (37 × 5.2 × 1.5)
Main machinery: 170 oars (85 each side in three rows)
Speed, knots: 8
Complement: 180

Comment: Construction started in 1985 and completed in 1987. Made of Oregon pine. Built for historic research and as a reminder of the naval hegemony of ancient Greeks. Part of the Hellenic Navy. Refit in 1992–93.



OLYMPIAS 6/1996, Hellenic Navy / 0079500

1 SURVEY SHIP (AGSC)

Name	No	Builders	Commissioned
STRABON	A 476	Emanuil-Mairis, Perama	27 Feb 1989

Displacement, tons: 252 full load
Dimensions, feet (metres): 107.3 × 20 × 8.2 (32.7 × 6.1 × 2.5)
Main machinery: 1 MAN D2842LE; 571 hp(m) (420 kW) sustained; 1 shaft
Speed, knots: 12.5
Complement: 27 (4 officers)

Comment: Ordered in 1987, launched September 1988. Used as coastal survey vessel.



STRABON 6/2000, Hellenic Navy / 0104567

TRAINING SHIPS

5 SAIL TRAINING SHIPS (AXS)

MAISTROS A 233	ZEFIROS A 238	GREGOS A 373
SOROKOS A 234	OSTRIA A 359	

Displacement, tons: 12 full load (A 233 and 234)
Dimensions, feet (metres): 48.6 × 12.8 × 6.9 (14.8 × 3.9 × 2.1)

Comment: Sail training ships acquired in 1983–84 (A 233–234) and 1989 (A 359). A 359 is slightly smaller at 12.1 × 3.6 m. There are two further craft A 238 and A 373.

AUXILIARIES

Notes: Procurement of a submarine rescue ship is under consideration.

7 FLOATING REPAIR FACILITIES

Comment: There are two floating docks. One is 45 m (1476 ft) in length and has a 6,000 ton lift. Built at Eleusis with Swedish assistance and launched 5 May 1988, delivered 1989. The second is the ex-US AFDM 2 transferred in 1999. This dock was built in 1942 and has a 12,000 ton lift. There are five floating cranes that were all built in Greece

1 PROMETHEUS (ETNA) CLASS (AORH/MCCS)

Name	No	Builders	Commissioned
PROMETHEUS	A 374	Elefsis Shipyard	4 July 2003

Displacement, tons: 13,400 full load
Dimensions, feet (metres): 480.6 × 68.9 × 24.3 (146.5 × 21 × 7.4)
Flight deck, feet (metres): 91.9 × 68.9 (28 × 21)
Main machinery: 2 Sulzer 12 ZAV 40S diesels; 22,400 hp(m) (16.46 MW) sustained; 2 shafts; cp props; bow thruster
Speed, knots: 21
Range, n miles: 7,600 at 18 kt
Complement: 140 (19 officers) plus 119 spare including flag staff

Cargo capacity: 6,360 tons gas oil; 1,200 tons JP6; 2,100 m³ ammunition and stores
Missiles: SAM; 2 Stinger mountings.
Guns: 1 GD/GE Vulcan Phalanx 20 mm; 6 barrels per mounting; 3,000 rds/min combined to 1 km.
 4–20 mm guns.
Countermeasures: SLO-25 Nixie; torpedo decoy.
Radars: Surface search: Raytheon SPS-10D, G-band.
Navigation: GEM LD-1825, I-band.
Helicopters: Aegean Hawk or AB 212

Comment: Ordered in August 1999 from Fincantieri and from Elefsis on 7 January 2000. First steel cut July 2000, launched 18 February 2002. Almost identical to the Italian Etna class. One Phalanx CIWS has been fitted. There is one RAS station on each side and one astern station. Has a secondary role as a mine countermeasures command and support ship.



PROMETHEUS 8/2007, Michael Nitz / 1170140

310 Greece/Auxiliaries

2 AXIOS (LÜNEBURG) (TYPE 701) CLASS (SUPPORT SHIPS) (ARL/AOR/MCCS)

Name	No	Builders	Commissioned	Recommissioned
AXIOS (ex-Coburg)	A 464 (ex-A 1412)	Bremer Vulcan	9 July 1968	30 Sep 1991
ALIAKMON (ex-Saarburg)	A 470 (ex-A 1415)	Blohm + Voss	30 July 1968	19 Oct 1994

Displacement, tons: 3,709 full load
Dimensions, feet (metres): 374.9 × 43.3 × 13.8 (114.3 × 13.2 × 4.2)
Main machinery: 2 MTU MD 18V 538 TB90 diesels; 6,000 hp(m) (4.41 MW) sustained;
 2 shafts; cp props; bow thruster
Speed, knots: 17. **Range, n miles:** 3,200 at 14 kt
Complement: 89 (12 officers)
Cargo capacity: 1,400 tons fuel, 200 tons ammunition; 130 tons water
Guns: 4 Bofors 40 mm/70 (2 twin); 300 rds/min to 12 km (6.5 n miles); weight of shell 0.96 kg.
Radars: Navigation, Decca, I-band.

Comment: Both ships converted to Fleet oilers by Hellenic Shipyards. Contract signed 21 December 1959. *Axios* completed September 2000 and *Aliakmon* in December 2002. Have secondary role as mine countermeasures and support ships.



AXIOS 4/2006, B Prézeln / 1104324

4 OURANOS CLASS (AOTL)

Name	No	Builders	Commissioned
OURANOS	A 416	Kinosoura Shipyard	27 Jan 1977
HYPERION	A 417	Kinosoura Shipyard	27 Apr 1977
ZEUS	A 375 (ex-A 490)	Hellenic Shipyards	21 Feb 1989
ORION	A 376	Hellenic Shipyards	5 May 1989

Displacement, tons: 2,100 full load
Dimensions, feet (metres): 219.8, 198.2 (wl) × 32.8 × 13.8 (67, 60.4 × 10 × 4.2)
Main machinery: 1 MAN-Burmeister & Wain 12V 20/27 diesel; 1,632 hp(m) (1.2 MW) sustained; 1 shaft
Speed, knots: 11
Complement: 33 (5 officers)
Cargo capacity: 1,300 tons oil or petrol
Guns: 2 Rheinmetall 20 mm

Comment: First two are oil tankers. The others were ordered from Hellenic Shipyards, Skaramanga in December 1986 and are used as petrol tankers. There are some minor superstructure differences between the first two and the last two which have a forward crane instead of kingposts.



OURANOS 7/2006, Marco Ghigino / 1164907



HYPERION 9/2001, A Sharma / 0126326

6 WATER TANKERS (YW)

KERKINI (ex-German FW 3) A 433	TRICHONIS (ex-German FW 6) A 466	KALLIROE A 468
PRESPA A 434	DOIRANI A 467	STIMFALIA A 469

Comment: All built between 1964 and 1990. Capacity, 600 tons except A 433 and A 466 which can carry 300 tons and A 469 which can carry 1,000 tons. Three in reserve. *Stimfalia* is similar to *Ouranos*. A 433 damaged in collision on 16 April 2002.



KALLIROE 11/2004, M Declerck / 1133497

1 NETTENDER (YNT)

Name	No	Builders	Commissioned
THETIS (ex-AN 103)	A 307	Kröger, Rendsburg	Apr 1960

Displacement, tons: 680 standard, 805 full load
Dimensions, feet (metres): 169.5 × 33.5 × 11.8 (51.7 × 10.2 × 3.6)
Main machinery: Diesel-electric; 1 MAN GTV-40/60 diesel generator; 1 motor; 1,470 hp(m) (1.08 MW); 1 shaft
Speed, knots: 12. **Range, n miles:** 6,500 at 10 kt
Complement: 58 (4 officers)
Guns: 1 Bofors 40 mm/60, 3 Rheinmetall 20 mm.
Radars: Navigation; Decca; I-band.

Comment: US offshore order. Launched in 1959. Some guns not always embarked.



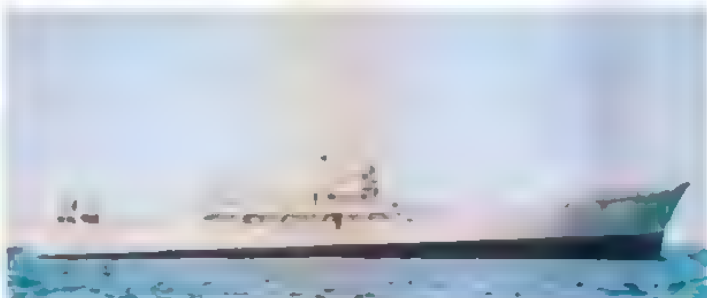
THETIS 8/1998, A Sharma / 0057305

1 AMMUNITION SHIP (AEL)

Name	No	Builders	Commissioned
EVROS (ex-Schwarzwald, ex-Amalthee)	A 415	Ch Dubigeon Nantes	7 June 1956

Displacement, tons: 2,400 full load
Measurement, tons: 1,667 gross
Dimensions, feet (metres): 263.1 × 39 × 15.1 (80.2 × 11.9 × 4.6)
Main machinery: 1 Sulzer 6SD60 diesel; 3,000 hp(m) (2.2 MW); 1 shaft
Speed, knots: 15. **Range, n miles:** 4,500 at 15 kt
Complement: 55 (7 officers)
Guns: 4 Bofors 40 mm/60

Comment: Bought by FDR from Societe Navale Caennaise in February 1960. Transferred to Greece 6 June 1976.



EVROS 6/2005, Hellenic Navy / 1133500

2 AUXILIARY TRANSPORTS (AP)

Name	No	Builders	Commissioned
PANDORA	A 419	Perama Shipyard	26 Oct 1973
FANDROSOS	A 420	Perama Shipyard	1 Dec 1973

Displacement, tons: 390 full load
Dimensions, feet (metres): 153.5 × 27.2 × 6.2 (46.8 × 8.3 × 1.9)
Main machinery: 2 diesels; 2 shafts
Speed, knots: 12
Military lift: 500 troops
Radars: Navigation, Racal Decca; I-band.

Comment: Launched 1972 and 1973



PANDORA 10/2007, Martin Mokrus / 1335462

3 TYPE 430A (TORPEDO RECOVERY CRAFT) (YPT)

EVROTAS (ex-TF 106) A 460 (ex-Y 872)
 ARACHTHOS (ex-TF 108) A 461 (ex-Y 874)
 NESTOS (ex-TF 4) A 463 (ex-Y 854)

Comment: First two acquired from Germany on 16 November 1989, second pair on 5 March 1991. Of about 56 tons with stern ramps for torpedo recovery. Built in 1966. A 461 ran aground on 20 June 2002.



TYPE 430A (German colours)

6/1998, Michael Nitz / UUS225b

2 BUOY TENDERS (ABUH)

Name	No	Builders	Commissioned
I KARAVOYIANNOS	A 479	Perama Shipyard	17 Mar 1976
THEOPHILOPOULOS			
ST LYKOUDIS	A 481	Perama Shipyard	2 Jan 1976

Displacement, tons: 1,450 full load
Dimensions, feet (metres): 207.3 x 38 x 13.1 (63.2 x 11.6 x 4)
Main machinery: 1 Deutz MWM TB D5008UD diesel; 2,400 hptm (1.76 MW); 1 shaft
Speed, knots: 15
Complement: 53 (6 officers)
Radars: Navigation: Racal Decca; I-band.
Helicopters: Platform for 1 light.

Comment: Similar to *Neftios*, the survey ship.



ST LYKOUDIS

8/2006, Marco Ghigino / 1164503

TUGS**19 HARBOUR TUGS (YTM/YTL)**

Name	No	Commissioned
ATROMITOS	A 410	1968
ADAMASTOS	A 411	1968
AIAS (ex-Ankachak YTM 767)	A 412	1972
PILEFS (ex-Lütje Horn)	A 413	1991
KADMOS	A 422	1989
HERAKLIS	A 423	1978
JASON	A 424	1978
ODISSEUS	A 425	1978
NESTOR (ex-Wahpaton)	A 428	1989
PERSEUS	A 429	1989
GIGAS	A 432	1961
KEKROPS	A 435	1989
MINOS (ex-Mellum)	A 436	1991
PELIAS (ex-Knechtsand)	A 437	1991
AEGEUS (ex-Schärhorn)	A 438	1991
ATREFS (ex-Ellerbek)	A 439	1971
DIOMIDIS (ex-Nauwerk)	A 440	1963
THESEUS (ex-Heppens)	A 441	2000
ROMALEOS	A 442	2000

Comment: Some may be armed



GIGAS

11/2005, M Declerck / 1164501



PELIAS

1/2002, M Declerck / 0575884

COAST GUARD (LIMENIKON SOMA)**Senior Officers**

Commander-in-Chief:
 Vice Admiral Theodoros Rentzopoulos
Deputy Commander-in-Chief:
 Rear Admiral Athanasios Bouskos
Inspector General:
 Rear Admiral Galanis Panagiotis

Personnel

2009: 4,000 (1,055 officers)

HQ: Piraeus
Main bases: Piraeus, Eieusis, Thessalonika, Volos, Patra, Corfu, Rhodes, Mytilene, Heraklion (Crete), Chios, Kavala, Chalcis, Igoumenitsa, Rafina
Minor bases: Every port and island of Greece

Ships and Craft

In general very similar in appearance to naval ships, being painted grey. Since 1990 pennant numbers have been

painted white and on both sides of the hull they carry a blue and white band with two crossed anchors. From 1993 ships have been given grey hulls and white superstructures.

General

This force consists of about 150 patrol craft and anti-pollution vessels including 24 inflatables for the 48 man Underwater Missions Squad and 12 anti-pollution vessels. Administration in peacetime is by the Ministry of Merchant Marine. In wartime it would be transferred to naval command.

Officers are trained at the Naval Academy and ratings at two special schools

The pennant numbers are all preceded as in the accompanying photographs by Greek 'Lambda Sigma' for Limenikon Soma.

Duties

The policing of all Greek harbours, coasts and territorial waters, navigational safety, SAR operations, anti-pollution

surveillance and operations, supervision of port authorities, merchant navy training, inspection of Greek merchant ships worldwide.

Coast Guard Air Service

In October 1981 the Coast Guard acquired two Casna Cutlass 172 RG aircraft and in July 1988 two Socata TB 20s. Maintenance and training by the Air Force. Based at Dekelia air base. Four Eurocopter Super Pumas AS 322C1 ordered in August 1998. First pair delivered in December 1999, second pair in May 2000. Being operated by mixed Air Force and Coast Guard crews. Bendix radar fitted. Three Reims Cassna Vigilant maritime patrol aircraft ordered in July 1999. First (F 406) delivered on 7 March 2001 and the other two in 2002. Six AS 365N3 Dauphin 2 helicopters were delivered in mid-2004.

Notes: (1) Three 8 m Boston Whalers were donated by the US government on 26 June 2004.

(2) A tender for an offshore patrol vessel was issued on 3 April 2007. The ship is to be of about 60 m and capable of operating a Dauphin 2 helicopter.

312 Greece/Coast guard

3 + (1) SAAR 4 CLASS (LARGE PATROL CRAFT) (PB)

FOURNOI LS 060 RO LS 070 AGIOS EFSTATHIOS LS 080

Displacement, tons: 415 standard; 450 full load
Dimensions, feet (metres): 190.6 × 26 × 8 (58.0 × 7.8 × 2.4)
Main machinery: 4 MTU 16V956 TB91 diesels; 15,000 hp(m) (11.03 MW) sustained; 4 shafts
Speed, knots: 32
Range, n miles: 1,650 at 30 kt; 4,000 at 17.5 kt
Complement: 30
Guns: 1—30 mm. 2—12.7 mm MGs.
Weapons control: Rafael DAFCO.
Radars: Air/surface search. SIGNAAL variant; E/F-band.
Navigation: Bridgemaster; I-band.

Comment: Three vessels ordered in November 2002. The first two (probably ex-Israeli Navy) built at Israel Shipyards while the third assembled at Hellenic Shipyards, Skaramanga. The first vessel delivered 23 December 2003, the second in February 2004 and the third in April 2004. A fourth vessel may be ordered. The ships are named after Greek islands.



AGIOS EFSTATHIOS

7/2004, C D Yaylali / 0583669



RO

4/2005, P Marsan / 1164375

1 VOSPER EUROPATROL 250 MK 1 (PBF)

LS 050

Displacement, tons: 240 full load
Dimensions, feet (metres): 155.2 × 24.6 × 7.9 (47.3 × 7.5 × 2.4)
Main machinery: 3 GEC/Paxman Valenta 16CM diesels; 13,328 hp(m) (9.8 MW); 3 shafts
Speed, knots: 40
Range, n miles: 2,000 at 16 kt
Complement: 21
Radars: Surface search: Racal Decca, I-band.

Comment: Ordered from McTay Marine, Bromborough in July 1993 and completed in November 1994. This is a Vosper International design with a steel hull and aluminium superstructure. Replenishment at sea facilities are provided by light jackstay and the ship carries a 45 kt RIB with water-jet propulsion. A continuous patrol speed of 4 kt is achievable using the centre shaft. Air conditioned accommodation. Similar craft built for the Bahamas. Fitted for a 40 mm gun but this is not carried. Transferred to the Coast Guard in 2004.



LS 050

5/2004, Martin Mokrus / 0587767

7 DILOS CLASS (WPB)

LS 010 LS 015 LS 020 LS 025 LS 030 LS 035 LS 040

Displacement, tons: 86 full load
Dimensions, feet (metres): 95.1 × 16.2 × 5.6 (29 × 5 × 1.7)
Main machinery: 2 MTU 12V 331 TC92 diesels; 2,660 hp(m) (1.96 MW) sustained; 2 shafts
Speed, knots: 27. **Range, n miles:** 1,600 at 24 kt
Complement: 18
Guns: 2 Rheinmetall 20 mm.
Radars: Surface search: Racal Decca 1226C; I-band.

Comment: Same Abeking and Rasmussen design as the three naval craft and built at Hellenic Shipyards in the early 1980s. Three former Customs craft transferred to the Coast Guard in 2004.



LS 040

7/2007, A A de Kruijf / 1170139

14 GUARDIAN 53 CRAFT (WPB)

LS 114-119 LS 121-123 LS 125-128 LS 133

Displacement, tons: 24 full load
Dimensions, feet (metres): 54.1 × 15.4 × 4.6 (16.5 × 4.7 × 1.4)
Main machinery: 2 MAN D2840 LE 401 diesels; 1,644 hp(m) (1.21 MW) sustained; 2 shafts
Speed, knots: 34. **Range, n miles:** 500 at 25 kt
Complement: 5 (1 officer)
Guns: 1—12.7 mm MG. 1—7.62 mm MG
Radars: Surface search: Raytheon; I-band.

Comment: Ordered from Colvic Craft, Colchester in 1993. Shipped to Motomarine, Glifada for engine and electronics installation. Completed in mid-1994. GRP hulls with a stern platform for recovery of divers.



LS 119

11/2004, M Declerck / 1133490

3 COMBATBOAT 90HEX (WPBF)

LS 134-136

Displacement, tons: 19 full load
Dimensions, feet (metres): 52.2 × 12.6 × 2.6 (15.9 × 3.8 × 0.8)
Main machinery: 2 Volvo Penta TAMD 163P diesels; 1,500 hp(m) (1.1 MW); 2 waterjets
Speed, knots: 45
Range, n miles: 240 at 30 kt
Complement: 3
Guns: 3—12.7 mm MGs.
Radars: Surface search I-band

Comment: Built by Dockstarvarvet in Sweden and delivered 6 July 1998. Same design as Swedish naval craft but with more powerful engines. GRP construction with armoured protection for cockpit.



LS 136

7/2004, A Campanera I Rovira / 0587761

4 INTERMARINE CRAFT (WPB)

LS 129-132

Displacement, tons: 25 full load
Dimensions, feet (metres): 53.8 × 14.8 × 7.5 (16.4 × 4.5 × 2.3)
Main machinery: 2 MAN diesels; 2,000 hp(m) (1.47 MW) sustained; 2 shafts
Speed, knots: 36

Comment: Constructed by Intermarine, La Spezia and delivered 1996-97.

16 OL 44 CLASS (WPB)

LS 55	LS 84-88	LS 97	LS 103	LS 109-110
LS 65	LS 95	LS 101	LS 106-107	LS 112

Displacement, tons: 14 full load
Dimensions, feet (metres): 44.9 × 14.4 × 2 (13.7 × 4.4 × 0.6)
Main machinery: 2 diesels; 630 hp(m) (463 kW); 2 shafts
Speed, knots: 23
Complement: 4
Guns: 1—7.62 mm MG.
Radars: Surface search JRC, I-band

Comment: Built by Olympic Marine GRP hulls



LS 101 5/2000, van Ginderen Collection / 0104571

15 MOTOMARINE PANTHER 57 MK II CRAFT (WPB)

LS 601-615

Displacement, tons: 27
Dimensions, feet (metres): 63.0 × 15.4 × 3.0 (19.2 × 4.7 × 0.9)
Main machinery: 2 MTU 12V2000 M 91 diesels; 2 surface piercing propellers
Speed, knots: 50

Comment: Constructed by Motomarine, Koropi, Greece. LS 601 delivered November 2003 and remainder by August 2004. LS 609-615 delivered between February 2005 and March 2006



LS 601 7/2007, Bob Fildes / 1170137

16 LS 51 CLASS (WPB)

LS 51-52 LS 155-157 +11

Displacement, tons: 13 full load
Dimensions, feet (metres): 44 × 11.5 × 3.3 (13.4 × 3.5 × 1)
Main machinery: 2 diesels; 630 hp(m) (463 kW); 2 shafts
Speed, knots: 25
Range, n miles: 400 at 18 kt
Complement: 4
Guns: 1—7.62 mm MG.
Radars: Surface search: Racal Decca, I-band.

Comment: Built by Olympic Marine. GRP hulls

jfs.janes.com

82 COASTAL CRAFT

Comment: Included in the total are 20 of 8.2 m, 17 of 7.9 m, 26 of 5.8 m and 19 ex-US Criss craft. In addition the Coast Guard operates 24 inflatable craft, and 10 SAR craft (LS 509-518).



LS 130 10/2002, E & M Laursen / 0533991



LS 214 7/2004, C D Yaylali / 0587760

4 POLLUTION CONTROL SHIPS (YPC)

LS 401 LS 413-415

Displacement, tons: 230 full load
Dimensions, feet (metres): 95.1 × 20.3 × 8.2 (29 × 6.2 × 2.5)
Main machinery: 2 CAT 3512 DITA diesels, 2,560 hp(m) (1.88 MW) sustained; 2 shafts
Speed, knots: 15
Range, n miles: 500 at 13 kt
Complement: 12
Radars: Navigation: Furuno; I-band.

Comment: Details given are for LS 413-415. Built by Astilleros Gondan, Spain in collaboration with Motomarine. Delivered in 1993-94. LS 401 is an older pollution control ship.



LS 414 11/2005, M Declercq / 1164499

10 ARUN 60 CLASS (LIFEBOATS) (SAR)

SAR 12-14 SAR 17-19 SAR 511 SAR 515-516 SAR 520

Displacement, tons: 34 full load
Dimensions, feet (metres): 59.0 × 17.4 × 4.9 (18.0 × 5.3 × 1.5)
Main machinery: 2 Caterpillar 3408 diesels; 2 shafts
Speed, knots: 18
Complement: 5

Comment: Built by Motomarine, Koropi, Greece. GRP hull moulded by Halmatic, UK. A stretched version of the lifeboat used in the UK and Canada. Entered service 1997-98.



SAR 516 5/2006, Marco Ghigino / 1164498

35 MOTOMARINE PANTHER 57 MK 1 CRAFT (WPB)

LS 137-172

Displacement, tons: 28 full load
Dimensions, feet (metres): 59.7 × 15.3 × 3.0 (18.2 × 4.68 × 0.92)
Main machinery: 2 MAN diesels; 2 shafts
Speed, knots: 44
Guns: 1—12.7 mm MG.

Comment: A development of the Guardian class. Constructed by Motomarine and delivered between about 1997 and 2006



CUSTOMS

Notes: The Customs service also operates large numbers of coastal and inshore patrol. The craft have a distinctive Alpha Lambda (A/GL) on the hull and are sometimes armed with 7.62 mm MGs.



AL 20

6/2002, C D Yoyfall / 0525874

LS 149
 5/2008*, Jurg Kürsener
 1335378



Grenada

Country Overview

Grenada gained independence in 1974; the British monarch, represented by a governor-general, is the head of state. The southernmost of the Windward

Islands in the Lesser Antilles chain, the country comprises the island of Grenada (311 square miles) and some of the southern Grenadines including Carriacou and Petit Martinique. The capital, largest town, and main port is St George's. Territorial seas

(12 n miles) are claimed. A 200 n mile Exclusive Economic Zone (EEZ) has been claimed but the limits are not defined. The Coast Guard craft are operated under the direction of the Commissioner of Police.

Personnel
 2009: 30
Bases
 Prickly Bay

COAST GUARD

Notes: A 920 Zodiac RHIB, donated by the US government, entered service in 2004

1 GUARDIAN CLASS (COASTAL PATROL CRAFT) (PB)

Name	No	Builders	Commissioned
TYRREL BAY	PB 01	Lantana, Florida	21 Nov 1984

Displacement, tons: 90 full load
Dimensions, feet (metres): 105 × 20.6 × 7 (32 × 6.3 × 2.1)
Main machinery: 3 Detroit 12V-71TA diesels; 1,260 hp (939 kW) sustained; 3 shafts
Speed, knots: 24
Range, n miles: 1,500 at 18 kt
Complement: 15 (2 officers)
Guns: 2—12.7 mm MGs. 2—7.62 mm MGs
Radars: Furuno 1411 Mk II, I-band

Comment: Similar to Jamaican and Honduras vessels. Aluminium construction. Refit in 1995/96



TYRREL BAY

11/1990, Bob Hanlon / 0064691

1 DAUNTLESS CLASS (PB)

Name	No	Builders	Commissioned
LEVERA	PB 02	SeaArk Marine	8 Sep 1995

Displacement, tons: 11 full load
Dimensions, feet (metres): 40 × 14 × 4.3 (12.2 × 4.3 × 1.3)
Main machinery: 2 Caterpillar 3208TA diesels; 870 hp (650 kW) sustained; 2 shafts
Speed, knots: 27
Range, n miles: 600 at 18 kt
Complement: 5
Guns: 1—7.62 mm MG.
Radars: Raytheon R40X, I-band.

Comment: One of many of this type, provided by the US, throughout the Caribbean navies. Aluminium construction.



LEVERA

9/1995, SeaArk Marine / 0064683

2 BOSTON WHALERS (PB)

Displacement, tons: 1.3 full load
Dimensions, feet (metres): 22.3 × 7.4 × 1.2 (6.7 × 2.3 × 0.4)
Main machinery: 2 outboards; 240 hp (179 kW)
Speed, knots: 40+
Complement: 4
Guns: 1—12.7 mm MG

Comment: Acquired in 1988-89.



BOSTON WHALER

11/1990, Bob Hanlon / 0064682

Guatemala



Country Overview

The Republic of Guatemala is situated in Central America between Mexico to the north, Belize to the east and Honduras and El Salvador to the south-east. With an area of 42,042 square miles, it has an 83 n mile coastline with the Caribbean and a 133 n mile coastline with the Pacific Ocean. The capital city is Guatemala City while the principal Caribbean ports are Puerto Barrios and Santo Tomás de Castilla and Pacific ports are Puerto Quetzal, San José and Champerico. Territorial seas (12 n miles) are

claimed. A 200 n mile EEZ has been claimed but the limits are not defined.

Headquarters Appointments

Commander of the Navy:
Rear Admiral Carlos Roberto Campos Sanchez
Commander Caribbean Naval Region:
Captain Luis Alfredo Monterroso de la Mora
Commander Pacific Naval Region:
Captain Rafael Alfonso Renau Franco

Personnel

- (a) 2009: 1,250 (130 officers) including 500 Marines (2 battalions) (mostly volunteers)
(b) 2½ years' national service

Bases

Pacific: Puerto Quetzal (HQ), Puerto San José, Champerico
Atlantic: Santo Tomás de Castilla (HQ), Puerto Barrios, Livingston

PATROL FORCES

- Notes:** (1) There is also a naval manned Ferry *15 de Enero* (T 691) and a 69 ft launch *Orca* which was built locally in 1996/97
(2) Three sail training craft, *Mendieta*, *Margarita* and *Ostuncalco* are based at Santo Tomás de Castilla.
(3) Two launches were reported donated by the Guatemalan government and the US Embassy in 2005
(4) There are two 11 m personnel landing craft *Picuda* D 361 and *Barracuda* D 362
(5) The acquisition of 10 small patrol craft from Brazil was announced in April 2008.

1 BROADSWORD CLASS (COASTAL PATROL CRAFT) (PB)

Name	No	Builders	Commissioned
KUKULKÁN	GC 1051 (ex-P 1051)	Halter Marine	4 Aug 1976

Displacement, tons: 90.5 standard; 110 full load
Dimensions, feet (metres): 105 × 20.4 × 6.3 (32 × 6.2 × 1.9)
Main machinery: 2 Detroit 8V 92TA Model 91; 1,300 hp (970 kW); 2 shafts
Speed, knots: 22
Range, n miles: 1,150 at 20 kt
Complement: 20 (5 officers)
Guns: 2 Oerlikon GAM/204 GK 20 mm. 2—7.62 mm MGs.
Radars: Surface search: Furuno; I-band.

Comment: As the flagship she used to rotate between Pacific and Atlantic bases every two years but has remained in the Pacific since 1989. Rearmed with 20 mm guns in 1989. These were replaced by GAM guns in 1990–91 when the ship received a new radar. Refitted again in 1996 with new engines.



12/2004, Julio Montes / 112955

2 SEWART CLASS (COASTAL PATROL CRAFT) (PB)

Name	No	Builders	Commissioned
UTATLAN	GC 851 (ex-P 851)	Sewart, Louisiana	May 1967
SUBTENIENTE OSORIO SARAVIA	GC 852 (ex-P 852)	Sewart, Louisiana	Nov 1972

Displacement, tons: 54 full load
Dimensions, feet (metres): 85 × 18.7 × 7.2 (26.9 × 5.7 × 2.2)
Main machinery: 2 Detroit 8V 92TA Model 91; 1,300 hp (970 kW); 2 shafts
Speed, knots: 22
Range, n miles: 400 at 12 kt
Complement: 17 (4 officers)
Guns: 1 Oerlikon GAM/204 GK 20 mm. 2—7.62 mm MGs.
Radars: Surface search: Furuno; I-band.

Comment: Aluminium superstructure. Both rearmed with 20 mm guns, and 75 mm recoilless removed in 1990. P 851 is based in the Atlantic; P 852 in the Pacific. Refitted in 1995–96 with new engines.



12/2004, Julio Montes / 112956

6 CUTLASS CLASS

(5 COASTAL PATROL CRAFT AND 1 SURVEY CRAFT) (PB)

Name	No	Builders	Commissioned
YECUN UMAN	GC 651 (ex-P 651)	Halter Marine	26 Nov 1971
KAIBIL BALAN	GC 652 (ex-P 652)	Halter Marine	8 Feb 1972
AZUMANCHE	GC 653 (ex-P 653)	Halter Marine	8 Feb 1972
TZACOL	GC 654 (ex-P 654)	Halter Marine	10 Mar 1976
BITOL	GC 655 (ex-P 655)	Halter Marine	4 Aug 1976
GUCUMAZ	BH 656 (ex-GC 656)	Halter Marine	15 May 1981

Displacement, tons: 45 full load
Dimensions, feet (metres): 64.5 × 17 × 3 (19.7 × 5.2 × 0.9)
Main machinery: 2 Detroit 8V 92TA Model 91 diesels; 1,300 hp (970 kW); 2 shafts
Speed, knots: 25. **Range, n miles:** 400 at 15 kt
Complement: 10 (2 officers)
Guns: 2 Oerlikon GAM/204 GK 20 mm. 2 or 3—12.7 mm MGs.
Radars: Surface search: Furuno; I-band.

Comment: First five rearmed with 20 mm guns in 1991. P 651, 654 and 655 are in the Atlantic, remainder in the Pacific. Aluminium hulls. *Gucumaz* was used as a survey craft but by 1996 was again serving as a patrol craft with three MGs. Reverted to survey craft in 2004. 654 and 656 refitted in 1994–95, remainder in 1995–87. New engines fitted.



12/2004, Julio Montes / 112958



12/2004, Julio Montes / 112957

1 DAUNTLESS CLASS (PB)

IXIMCHE

Displacement, tons: 11 full load
Dimensions, feet (metres): 40 × 12.66 × 2.3 (12.19 × 3.86 × 0.69)
Main machinery: 2 Caterpillar 3208TA diesels, 850 hp (635 kW); 2 shafts
Speed, knots: 28. **Range, n miles:** 400 at 22 kt
Complement: 5
Guns: 1—7.62 mm MG.
Radars: Surface search: Raytheon R40X; I-band.

Comment: Built by SeaArk, Monticello, of aluminium construction. Donated by US government as foreign aid in 1997.



6/2001, RCIS / 0121306

6 VIGILANTE CLASS (PBI)

GC 271-276

Displacement, tons: 3.5 full load
 Dimensions, feet (metres): 26.6 x 10 x 1.8 (8.1 x 3 x 0.5)
 Main machinery: 2 Evinrude outboards; 600 hp (448 kW)
 Speed, knots: 40+
 Complement: 4
 Guns: 1—12.7 mm MG
 Radars: Surface search: Furuno; I-band.

Comment: Ordered in 1993 from Boston Whaler. Delivered in 1994 and divided three to each coast



GC 275

12/1999 / 0104574

20 RIVER PATROL CRAFT (PBR)

Group A
 DENEZ
 SIRIUS
 PROCYON
 VEGA
 POLLUX
 SPICA
 STELLA MARIS

Group B
 LAGO DE ATITLAN
 MAZATENANGO
 RETALHULEU
 ESCUINTLA

Group C
 CHOCHAB
 ALIOTH
 MIRFA
 SCHEDAR
 COMAMEFA

Group D
 MERO
 SARDINA
 PAMPANA
 MAVRO-I

Comment: Group A are wooden hull craft with a speed of 19 kt. Group B have aluminum hulls and a speed of 28 kt. Group C are probably of Israeli design and Group D are commercial craft caught smuggling and confiscated. All can be armed with 7.62 mm MGs and are used by Marine battalions as well as the Navy.



CHOCHAB AND COMAMEFA

2/1996, Julio Montes / 0064886



Guinea

Country Overview

A former French colony, The Republic of Guinea became independent in 1958. Located in west Africa, the country has an area of 94,926 square miles, a 173 n mile coastline with the Atlantic Ocean and includes the Iles de Los. It is bordered to the north by Guinea-Bissau and Senegal and to the south by Liberia and Sierra Leone. The capital, largest city and principal port is Conakry. Territorial seas (12 n miles) are claimed. A 200 n mile Exclusive Economic Zone (EEZ) has been claimed but the limits have not been

formally agreed. Fishery Protection may be provided by civilian contractors.

Personnel

- (a) 2009: 400 officers and men
- (b) 2 years' conscript service

Bases

Conakry, Kakanda

Notes: (1) A number of craft, including two Zhuk, two Bogomol, two Stinger and two Swiftships (*Vigilante* P 300 and *Intrepide* P 328) are laid up alongside. Some of these might be resurrected to combat piracy problems in the region. A Damen 13 m patrol boat, *Matakang*, is reported to have been delivered in 1999 and there are two MonArk 8 m Stinger craft, P 30 and P 35, which were delivered in 1985.
 (2) Development of the port of Conakry is under consideration.



Guinea-Bissau

Country Overview

A former Portuguese colony, The Republic of Guinea-Bissau gained independence in 1974. Located in west Africa, the country has an area of 13,948 square miles, a 189 n mile coastline with the Atlantic Ocean and includes about 60 offshore islands, among them the Bijagos (Bissagos) Islands. It is bordered to the north by Senegal and to the south by Guinea. The capital, largest city and principal port is Bissau. Other ports include Cacheu and Bolama. Territorial seas (12 n miles) are claimed. A 200 n mile

Exclusive Economic Zone (EEZ) has been claimed and has been partially defined by boundary agreements.

Headquarters Appointments

Head of Navy: Commander Americo Bubo Na Tchute

Personnel

- (a) 2009: 310 officers and men
- (b) Voluntary service

Base

Bissau

Maritime Aircraft

A Cessna 337 patrol aircraft is used for offshore surveillance, when serviceable

PATROL FORCES

Notes: (1) One Rodman R 800 8.7 m patrol craft with a speed of 28 kt acquired in 1999.
 (2) One 15 m Peterson Mk 4 class, *Ilha de Caio*, is reported unserviceable.

2 ALFEITE TYPE (COASTAL PATROL CRAFT) (PC)

Name	No	Builders	Commissioned
CACINE	LF 01	Arsenal do Alfelte	9 Mar 1994
CACHEU	LF 02	Arsenal do Alfelte	9 Mar 1994

Displacement, tons: 55 full load
 Dimensions, feet (metres): 64.6 x 19 x 10.6 (19.7 x 5.8 x 3.2)
 Main machinery: 3 MTU 12V 183 TE92 diesels; 3,000 hp(m) (2.2 MW) maximum;
 3 Hamilton MH 521 water-jets
 Speed, knots: 28
 Complement: 9 (1 officer)
 Radars: Navigation: Furuno FR 2010; I-band.

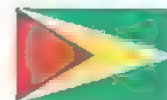
Comment: Ordered from Portugal in 1991. GRP hulls. Used for fishery protection patrols and customs duties. Operational status doubtful.



CACHEU

3/1994, Arsenal do Alfelte / 0064688

Guyana



Country Overview

Formerly known as British Guiana, the Cooperative Republic of Guyana became an independent state in 1966. With an area of 83,000 square miles it has borders to the east with Suriname, to the west with Venezuela and to the south with Brazil, its 270 n mile coastline is on the Atlantic Ocean. The capital, largest city and chief port is Georgetown. Territorial seas (12 n miles) and a fisheries zone (200 n miles) are

claimed. A 200 n mile Exclusive Economic Zone (EEZ) has also been claimed but the limits are not defined. Rebuilding of the Coast Guard started in 2001

Personnel

- (a) 2009: 180
(b) Voluntary service

Headquarters Appointments

Commanding Officer, Coast Guard
Commander John Flores

Bases

Georgetown (HQ), Banab (Corentyne), Morawhanna

PATROL FORCES

1 RIVER CLASS (COASTAL PATROL CRAFT) (PBO)

Name	No	Builders	Commissioned
ESSEQUIBO (ex-Orwell)	1026 (ex-M 2011)	Richards, Great Yarmouth	27 Nov 1985

Displacement, tons: 890 full load
Dimensions, feet (metres): 156 × 34.5 × 9.5 (47.6 × 10.5 × 2.9)
Main machinery: 2 Ruston 6 RKC diesels; 3,100 hp(m) (2.3 MW) sustained; 2 shafts
Speed, knots: 14. **Range, n miles:** 4,500 at 10 kt
Complement: 32 (4 officers)
Guns: 1—20 mm.
2 7.62 mm MGs
Radars: Surface search: 2 Racal Decca TM 1226C, I-band.

Comment: Ex-UK River class transferred on 22 June 2001 having previously been employed as patrol ship and then officers' training ship.



ESSEQUIBO

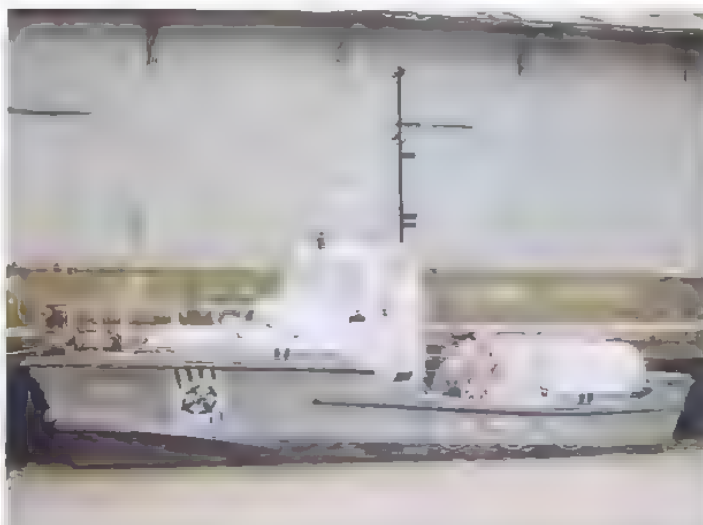
7/2001, Derek Fox / 0114272

4 TYPE 44 CLASS (WPB)

BARRACUDA	HYMARA	PIRAI	TIRAPUKA
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Displacement, tons: 18 full load
Dimensions, feet (metres): 44 × 12.8 × 3.6 (13.5 × 3.9 × 1.1)
Main machinery: 2 Detroit 6V-38 diesels, 185 hp (136 kW); 2 shafts
Speed, knots: 14
Range, n miles: 215 at 10 kt
Complement: 3

Comment: Acquired from the US and recommissioned on 9 August 2001.



TYPE 44 (Uruguay Colours)

5/2000, Hartmut Ehlers / 0105801

Honduras



FUERZA NAVAL REPUBLICA

Country Overview

The Republic of Honduras is one of the largest Central American republics. With an area of 43,433 square miles, it is situated between El Salvador and Guatemala to the west and Nicaragua to the south and east. It has a 350 n mile coastline with the Caribbean and a 93 n mile coastline with the Pacific Ocean. The capital and largest city is Tegucigalpa while the principal Caribbean ports are

La Ceiba and Puerto Cortés and Pacific port is Amapala. Territorial seas (12 nmiles) are claimed. A 200 n mile EEZ is claimed and has been partly defined by boundary agreements

Personnel

2009: 1,100 including 450 marines

Headquarters Appointments

Commanding Officer, General HQ:
Capitan de Navio Don Juan Pablo Rodriguez Rodriguez

Bases

Tegucigalpa (General HQ)
Puerto Cortés, Puerto Castilla (Atlantic HQ), Amapala (Pacific HQ), La Ceiba, Puerto Trujillo

PATROL FORCES

- Notes:** (1) In addition there may be three Piranha river craft still in limited service.
(2) Five 23 m catamarans reported to have been ordered in 2004
(3) Two 11 m personnel landing craft are used for anti-drug operations.
(4) Four interceptor craft, capable of 60 kt, were donated by the United States in 2007.

3 SWIFT 105 ft CLASS (FAST ATTACK CRAFT—GUN) (PB)

GUAYMURAS FNH 101	HONDURAS FNH 102	HIBUERAS FNH 103
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Displacement, tons: 111 full load
Dimensions, feet (metres): 105 × 23.6 × 7 (32 × 7.2 × 2.1)
Main machinery: 2 MTU 16V 538TB90 diesels; 6,000 hp(m) (4.4 MW) sustained; 2 shafts
Speed, knots: 30
Range, n miles: 1,200 at 18 kt
Complement: 17 (3 officers)
Guns: 6 Hispano-Suiza 20 mm (2 triple), 2—12.7 mm MGs.
Weapons control: Kollmorgen 350 optronic director.
Radars: Surface search, Furuno; I-band.

Comment: First delivered by Swiftships, Morgan City in April 1977 and last two in March 1980. Aluminium hulls. Armament changed 1996–98.



HONDURAS and HIBUERAS

12/2004, Julio Montes / 1129559

1 GUARDIAN CLASS (COASTAL PATROL CRAFT) (PB)

TEGUCIGALPA FNH 104 (ex-FNH 107)

Displacement, tons: 94 full load
 Dimensions, feet (metres): 106 x 20.6 x 7 (32.3 x 6.3 x 2.1)
 Main machinery: 3 Detroit 16V-92TA diesels; 2,070 hp (1.54 MW) sustained; 3 shafts
 Speed, knots: 30
 Range, n miles: 1,500 at 18 kt
 Complement: 17 (3 officers)
 Guns: 1 General Electric Sea Vulcan 20 mm Gatling, 3 Hispano Suiza 20 mm (1 triple), 2 12.7 mm MGs.
 Weapons control: Kollmorgen 350 optronic director.
 Radars: Surface search: Furuno, I-band

Comment: Delivered by Lantana Boatyard, Florida August 1986. Second of class, *Copan*, no longer in service. A third of the class, completed in May 1984, became the Jamaican *Paul Bogle*. Aluminium hulls. Operational status doubtful.



GUARDIAN CLASS

7/1986, *Giorgio Arra* / 0506000

6 SWIFT 65 ft CLASS (COASTAL PATROL CRAFT) (PB)

NACAOME (ex-*Aguan*, ex-*Greil*) FNH 651
 GOASCORAN (ex-*General JT Cabanas*) FNH 652
 PATUCA FNH 653

ULUA FNH 654
 CHOLUTECA FNH 655
 RIO COCO FNH 656

Displacement, tons: 33 full load
 Dimensions, feet (metres): 69.9 x 17.1 x 5.2 (21.3 x 5.2 x 1.6)
 Main machinery: 2 GM 12V-71TA diesels; 840 hp (627 kW) sustained; 2 shafts (FNH 651-2)
 2 MTU 8V 396 TB93 diesels; 2,180 hp(m) (1.6 MW) sustained, 2 shafts (FNH 653-5)
 Speed, knots: 26 (FNH 651-2); 36 (FNH 653-5)
 Range, n miles: 2,000 at 22 kt (FNH 651-2)
 Complement: 9 (2 officers)
 Guns: 2—12.7 mm MGs. 3—7.62 MGs
 Radars: Surface search: Racal Decca; I-band.

Comment: First pair built by Swiftships, Morgan City originally for Haiti. Contract cancelled and Honduras bought the two that had been completed in 1973-74. Delivered in 1977. Last four ordered in 1979 and delivered 1980



PATUCA

5/1983 / 0064890

1 SWIFT 85 ft CLASS (COASTAL PATROL CRAFT) (PB)

CHAMELECON (ex-*Rio Kurngwass*) FNH 8501

Displacement, tons: 60 full load
 Dimensions, feet (metres): 85 x 20 x 5 (25.9 x 6.1 x 1.8)
 Main machinery: 2 Detroit diesels; 2 shafts
 Speed, knots: 25
 Complement: 10 (2 officers)
 Radars: Surface search: Racal/Decca; I-band

Comment: Built by Swiftships, Morgan City in about 1967 for Nicaragua from where it was transferred in 1979.



CHAMELECON

2000, *Honduran Navy* / 0105611

5 OUTRAGE CLASS (RIVER PATROL CRAFT) (PBR)

Displacement, tons: 2.2 full load
 Dimensions, feet (metres): 24.9 x 7.9 x 1.3 (7.6 x 2.4 x 0.4)
 Main machinery: 2 Evinrude outboards, 300 hp (224 kW)
 Speed, knots: 30
 Range, n miles: 200 at 30 kt
 Complement: 4
 Guns: 1—12.7 mm MG. 2—7.62 mm MGs
 Radars: Navigation: Furuno 3600, I-band

Comment: Built by Boston Whaler in 1982. Seven deleted so far. Radar is sometimes embarked.



OUTRAGE

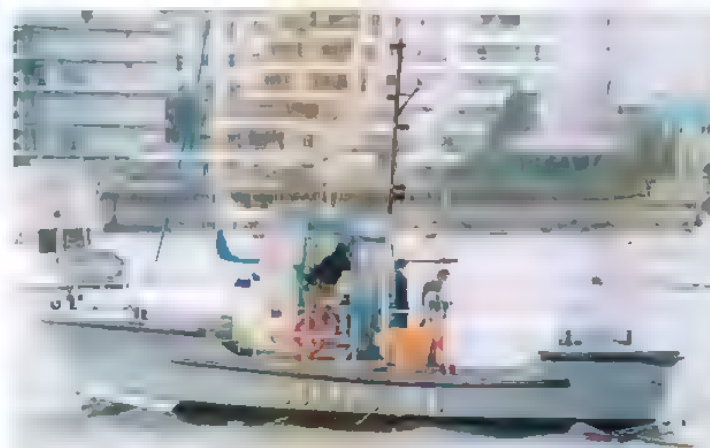
10/1987, *Julio Montes* / 0012461

4 TYPE 44 CLASS (WPB)

GUANAJA (ex-4434) UTILA (ex-44351)
 ROATAN (ex-44390) CAYO COCHINAS (ex-44365)

Displacement, tons: 18 full load
 Dimensions, feet (metres): 44 x 12.6 x 3.6 (13.5 x 3.9 x 1.1)
 Main machinery: 2 Detroit 6V-38 diesels; 185 hp (136 kW); 2 shafts
 Speed, knots: 14
 Range, n miles: 215 at 10 kt
 Complement: 3

Comment: Acquired from the US in December 2005



PREFECTURA 442 (Uruguay colours)

6/2005, *A E Galarza* / 1133602

15 RIVER CRAFT (PBR)

Comment: 4.6 m craft acquired from Taiwan in 1996. Nine based at Castilla, three at Cortes and three at Amapala. Single Mercury outboard engine. Carry a 7.62 mm MG. Three sunk in 1998.



PBR 10/1997, *R. Torrento* / 1017492

AUXILIARIES

Notes: In addition there are two ex-US LCM 8 (*Warunta* FNH 7401, *Tansin* FNH 7402) transferred in 1987. Both are used as transport vessels.



LCM 8

2000, *Honduran Navy* / 0105812

1 LANDING CRAFT (LCU)

PUNTA CAXINAS FNH 1491

Displacement, tons: 625 full load
Dimensions, feet (metres): 149 x 33 x 6.5 (46.4 x 10 x 2)
Main machinery: 3 Caterpillar 3412 diesels; 1,821 hp (1.4 MW) sustained, 3 shafts
Speed, knots: 14
Range, n miles: 3,500 at 12 kt
Complement: 18 (3 officers)
Cargo capacity: 100 tons equipment or 50,000 gallons diesel plus 4 standard containers
Radars: Navigation: Furuno 3600; I-band.

Comment: Ordered in 1986 from Lantana, Florida, and commissioned in May 1988.



PUNTA CAXINAS

12/2004, *Julio Montes* / 1179550

Hong Kong

POLICE MARINE REGION

**Country Overview**

Formerly a British colony, the Hong Kong Special Administrative Region of China reverted to Chinese sovereignty on 30 June 1997. While China has assumed responsibility for foreign affairs and defence, the territory is to maintain its own legal, social, and economic systems until at least 2047. Hong Kong comprises three main regions, Hong Kong Island (29 sq miles), Kowloon Peninsula and Stonecutters Island (6 sq miles) and the New Territories (380 sq miles). As with the remainder of China, territorial seas (12 n miles) are claimed. An EEZ (200 n mile) is also claimed but the limits have not been

defined by boundary agreements. The role of the Marine Police is to maintain the integrity of the sea boundary and territorial waters of Hong Kong, enforce the laws of Hong Kong in territorial waters, prevent illegal immigration by sea, SAR in territorial and adjacent waters, and casualty evacuation.

Headquarters Appointments

Regional Commander (Marine):
 Chang Mo See
Deputy Regional Commander (Marine):
 J A Cox

Organisation

Marine Police Regional HQ, Sai Wan Ho
 Bases at Ma Liu Shui, Tui Min Hoi, Tai Lam Chung, Aberdeen, Sai Wan Ho

Personnel

(a) 2009: 2,600
 (b) Voluntary service

POLICE**4 SURVEILLANCE BARGES (YAG)**

PB 1-4

Displacement, tons: 227
Dimensions, feet (metres): 98.4 x 42.6 x 2.6 (30.0 x 13 x 0.8)
Main machinery: 2 Cummins 75 MDG DB diesels
Complement: 10
Radars: Surface search: Decca; I-band.

Comment: Steel-hulled barges. PB 1-2 (built by Guangzhou Waterway Bureau Shipyards) delivered in June 2002 and PB 3-4 (built by Leung Wan Kee Shipyards) in October 2007. PB 1-2 are moored in Deep Bay, PB 3 in Rocky Harbour and PB 4 at Kat O (Crooked Island).



PB 1 6/2004, *Hong Kong Police* / 0588757

1 TRAINING VESSEL (WAX)

PL 3

Displacement, tons: 420 full load
Dimensions, feet (metres): 131.2 x 28.2 x 10.6 (40 x 8.6 x 3.2)
Main machinery: 2 Caterpillar 3512TA diesels; 2,350 hp (1.75 MW) sustained; 2 shafts
Speed, knots: 14. **Range, n miles:** 1,500 at 14 kt
Complement: 7
Radars: Surface search: 2 Racal Decca ARPA C342/8, I-band.

Comment: Built by Hong Kong SY in 27 July 1987 and commissioned 1 February 1988. Steel hull, Racal ARPA and GPS Electronic Chart system. 12.7 mm MGs removed in mid-1996. Can carry up to 30 armed police for short periods. Former command vessel converted to a training role.



PL 3 6/2004, *Hong Kong Police* / 0588753

320 Hong Kong/Police

6 KEKA CLASS (PATROL CRAFT) (WPB)

PL 60-65

Displacement, tons: 105
Dimensions, feet (metres): 98.4 × 20.7 × 7.2 (30.0 × 6.3 × 2.2)
Main machinery: 2 MTU 12V-396 TE 84 diesels
Speed, knots: 25. **Range, n miles:** 360 at 15 kt
Complement: 14
Radars: Surface search, Decca, I-band

Comment: Aluminium-hulled craft built by Cheoy Lee Shipyards Ltd to replace Damen Mk1 class patrol craft. Delivered in 2002, 2004 and 2005.



PL 64 12/2007, Chris Sattler / 1170158

10 DAMEN MK III CLASS (PATROL CRAFT) (WPB)

PL 70-73 PL 75 PL 77 PL 79-80 PL 82-83

Displacement, tons: 96 full load
Dimensions, feet (metres): 91.2 × 19.0 × 7.2 (27.8 × 5.8 × 2.2)
Main machinery: 2 MTU 12V 396 TB83 diesels, 2,965 hp(m) (2.2 MW) sustained; 2 shafts
1 Mercedes-Benz OM 424A 12V diesel; 465 hp(m) (347 kW) sustained; 1 Kamewa 45 water-jet
Speed, knots: 25 on 3 diesels; 8 on water-jet and cruising diesel
Range, n miles: 600 at 14 kt
Complement: 14
Radars: Surface search: Racal Decca, I-band

Comment: Steel-hulled craft constructed by Chung Wah SB & Eng Co Ltd, 1985-86. 12.7 mm MGs removed in mid-1996



PL 82 12/2007, Chris Sattler / 1170157

6 PROTECTOR (ASI 315) CLASS (COMMAND/PATROL CRAFT) (WPB)

PL 51-56

Displacement, tons: 150 full load
Dimensions, feet (metres): 107 × 26.9 × 8.2 (32.6 × 8.2 × 2.5)
Main machinery: 2 Caterpillar 3516TA diesels, 5,600 hp (4.17 MW) sustained; 2 shafts;
1 Caterpillar 3412TA; 764 hp (570 kW) sustained; Hamilton HM 521 waterjet (centreline)
Speed, knots: 30. **Range, n miles:** 600 at 18 kt
Complement: 19
Weapons control: GECV3901 optronic director.
Radars: Surface search: Racal Decca, I-band.

Comment: Built by Transfield Australian Shipbuilding Industries and completed in 1993. As well as patrol work, the craft provide command platforms for Divisional commanders. 12.7 mm guns removed in 1996 and the optronic director is used for surveillance only



PL 54 12/2007, Chris Sattler / 1170156

5 HARBOUR PATROL CRAFT (WPB)

PL 11-17

Displacement, tons: 35 full load
Dimensions, feet (metres): 52.5 × 15.1 × 4.9 (16 × 4.6 × 1.5)
Main machinery: 2 Cummins NTA-855-M diesels; 700 hp (522 kW) sustained, 2 shafts
Speed, knots: 12
Complement: 6
Radars: Surface search: Racal Decca, I-band

Comment: Built by Chung Wah SB & Eng Co Ltd in 1987-88.

Jane's Fighting Ships 2009-2010



PL 17 12/2007, Chris Sattler / 1335253

5 SEA STALKER 1500 CLASS (INTERCEPTOR CRAFT) (HSIC)

PL 85-89

Displacement, tons: 8.7 full load
Dimensions, feet (metres): 48.6 × 9.5 × 2.6 (14.8 × 2.7 × 1.2)
Main machinery: 3 Innovation Marine Sledge Hammers; 1,590 hp(m) (1.2 MW); 3 shafts
Speed, knots: 60, 45 in Sea State 3
Complement: 5
Radars: Surface search: Raytheon, I-band.

Comment: Built by Damen, Gorinchem in 1999. Used by the Small Boat Division.



PL 86 6/2004, Hong Kong Police / 0589746

4 SEASPRAY CLASS (LOGISTIC CRAFT) (YFB)

PL 46-49

Displacement, tons: 10.7 full load
Dimensions, feet (metres): 32.4 × 13.8 × 3.9 (11.4 × 4.2 × 1.2)
Main machinery: 2 Caterpillar 3208TA diesels; 700 hp (522 kW) sustained; 2 shafts
Speed, knots: 25
Complement: 4
Radars: Navigation: Koden; I-band.

Comment: Built by Seaspray Boats, Fremantle in 1992. Catamaran hulls capable of carrying 16 police officers.



PL 47 12/2007, Chris Sattler / 1170154

11 SEASPRAY CLASS (INSHORE PATROL CRAFT) (WPB)

PL 22-32

Displacement, tons: 8.7 full load
Dimensions, feet (metres): 32.5 × 13.8 × 3.9 (9.9 × 4.2 × 1.2)
Main machinery: 2 Caterpillar 3208TA diesels (Caterpillar C7 diesels PL 25 and 29); 700 hp (522 kW) (908 PL 25, 29) (522 kW) (677 PL 25, 29); 2 shafts
Speed, knots: 35
Complement: 4
Radars: Surface search: Koden, I-band.

Comment: Built by Seaspray Boats, Fremantle in 1992-93.



PL 28 12/2007, Chris Sattler / 1170152

9 INSHORE PATROL CRAFT (WPB)

PL 20-21 PL 90-96

Displacement, tons: 2.3
 Dimensions, feet (metres): 26.2 x 10.2 x 3.3 (8.1 x 3.1 x 1.0)
 Main machinery: 2 outboards; 540 hp (403 kW)
 Speed, knots: 42
 Complement: 3
 Radars: Surface search: Koden, I-band

Comment: Details given are for PL 20-21 which are Sharkcat class of catamaran construction, commissioned in October 1988. PL 90-92 are Boston Whaler Guardians with 2 Johnson 115 hp outboards, and PL 93-96 are Boston Whaler Vigilants with 2 Johnson 250 hp outboards. The Whalers were all delivered in 1997 and are capable of speeds in excess of 33 kt.



PL 93 12/2007, Chris Sattler / 1335252

6 CHEOY LEE CLASS (INSHORE PATROL CRAFT) (WPB)

PL 40-45

Displacement, tons: 19.4
 Dimensions, feet (metres): 42.9 x 13.2 x 2.6 (13.07 x 4.0 x 0.8)
 Main machinery: 2 MAN D2842LE403 diesels; 1,420 hp (1.06 MW) sustained; 2 Hamilton water-jets
 Speed, knots: 35
 Complement: 4
 Radars: Surface search: Bridgemaster E 180; I-band.

Comment: Based upon a design from Peterson Shipbuilders, these shallow draft vessels were constructed by Cheoy Lee Shipyards Ltd and delivered in 2000.



PL 42 12/2007, Chris Sattler / 1335251

8 HIGH SPEED INTERCEPTORS (HSIC)

PV 30-37

Displacement, tons: 2.7 full load
 Dimensions, feet (metres): 28.3 x 8.7 x 2.4 (8.5 x 2.6 x 0.7)
 Main machinery: 2 Mercury outboards; 500 hp (373 kW)
 Speed, knots: 51
 Complement: 3

Comment: Built by Queensland Ships in 1997. Used by the Small Boat Division.



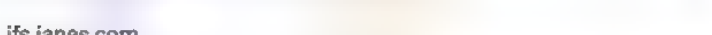
PV 35 12/2007, Chris Sattler / 1170151

6 + 11 LUNG-TEH CLASS (PATROL CRAFT) (PBF)

PL 5-10

Displacement, tons: 39
 Dimensions, feet (metres): 62.3 x 16.4 x 3.3 (19.0 x 5.0 x 1.0)
 Main machinery: 3 Caterpillar C32 diesels; 3,345 hp (2.5 MW); 3 Hamilton waterjets
 Speed, knots: 45
 Complement: 8

Comment: Contract for the construction of 17 patrol craft signed with Lung-Teh Shipyard, Taiwan on 19 September 2006. Aluminium construction. The first six entered service in November 2007 with the remainder to follow by 2009.



jfs.janes.com



PL 5 12/2007, Chris Sattler / 1170153

6 HIGH-SPEED INTERCEPTORS (PBF)

PV 5-10

Displacement, tons: To be announced
 Dimensions, feet (metres): 32.4 x 8.4 x 2.0 (9.88 x 2.55 x 0.6)
 Main machinery: 2 Mercury Verado outboards; 550 hp (410 kW)
 Speed, knots: 50
 Complement: 3

Comment: Constructed by Brisbane Ship Constructions Ltd in 2007.



PV 6 6/2007, Hong Kong Police / 1335750

3 FB 55SC CLASS (INSHORE PATROL CRAFT) (PBF)

Displacement, tons: 10.2
 Dimensions, feet (metres): 53.9 x 9.3 x 2.75 (16.43 x 2.85 x 0.84)
 Main machinery: 3 Seatek diesels; 2,250 hp (1.7 MW); surface piercing propeller
 Speed, knots: 65 approx
 Complement: 8

Comment: Designed by FB design of Italy. Delivered in 2003. Kevlar monohull fast inshore patrol craft for maritime law enforcement tasks. Eight seats in forward compartment.



FB 55SC 12/2007, Chris Sattler / 1170150

1 FB RIB 42SC CLASS (INSHORE PATROL CRAFT) (PB)

Displacement, tons: 6 approx
 Dimensions, feet (metres): 43.3 x 11.6 x 2.3 (13.2 x 3.55 x 0.7)
 Main machinery: 2 Caterpillar diesels; 1,400 hp (1.04 MW); surface piercing propeller
 Speed, knots: 63
 Complement: 3

Comment: Designed by FB design, Italy. Rigid inflatable Kevlar monohull for maritime law enforcement tasks. Delivered 2004.



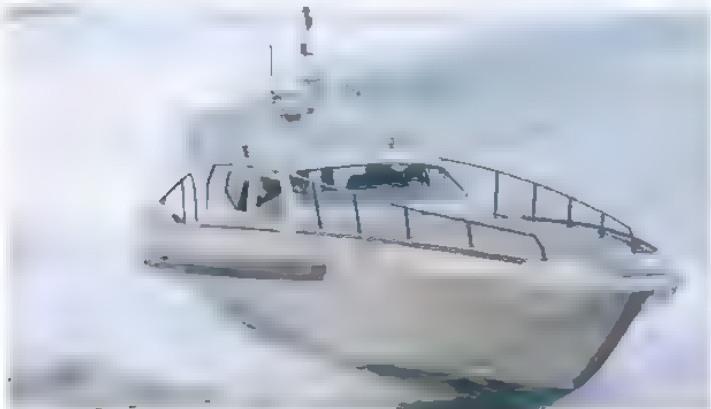
RIB 42SC 12/2007, Chris Sattler / 1170149

CUSTOMS

Headquarters Appointments

Senior Superintendent Ports and Marine Command:
Li Chun-fai

Notes: The Marine Enforcement Group is based at Stoncutters Island. There are five Sector Command launches of which there are Damen 26 m craft completed in 1986 by Chung Wah SB & Eng Co Ltd, Kowloon. In all essentials these craft are sisters of the 10 operated by the Hong Kong Police with the exception of the latter's slow speed waterjet. Names: *Sea Glory* (CE 6), *Sea Guardian* (CE 5), *Sea Leader* (CE 2). Two 32 m Challenger launches, *Sea Reliance* (CE 8) and *Sea Fidelity* (CE 9) were commissioned in October 2000. With a gross tonnage of 125 tonnes, the craft have a maximum speed of 28 kt. Equipped with a 'sea-rider' they are also fitted with night vision aids and narcotics and explosives scanning devices. There are also four 17 m FB design high-speed pursuit craft (CE 15-18), capable of 49 kt, and two Boston Whaler 10 m shallow-water launches (CE 12-13) capable of 39 kt.



CE 16 6/2007, Ports and Maritime Command / 1167810



CE 2 6/2007, Chris Sattler / 1335249



CE 13 6/2007, Ports and Maritime Command / 1167809

LAND-BASED MARITIME AIRCRAFT

Notes: All aircraft belong to the Government Flying Service based at Hong Kong International Airport.

Numbers/Type: 3 Eurocopter AS 332 L2 Super Puma.

Operational speed: 130 kt (240 km/h).

Service ceiling: 15,090 ft (4,600 m).

Range: 672 n miles (1,245 km).

Role/Weapon systems: SAR/coastal surveillance, Medevac and transport. Sensors: radar, Spectrolab searchlight. Weapons: Unarmed. Medical equipment and up to six stretchers. Ordered on 17 September 1999. The aircraft entered service in April 2002.



AS 332 6/2005, Government Flying Service / 1127927

Numbers/Type: 2 BAE Jetstream J 41.

Operational speed: 260 kt (482 km/h).

Service ceiling: 26,000 ft (7,925 m).

Range: 774 n miles (1,433 km).

Role/Weapon systems: SAR (command and control), airborne surveillance, survey and photography. Sensors: Radar, FLIR, survey camera, VHF/UHF/DF.



Jetstream 6/2005, Government Flying Service / 1127924

Numbers/Type: 4 Eurocopter EC 155B1

Operational speed: 140 kt (260 km/h).

Service ceiling: 16,760 ft (5,110 m).

Range: 432 n miles (800 km).

Role/Weapon systems: SAR, Medevac, VIP transport; enlarged variant of 'Dauphin'. Sensors: Radar, FLIR, searchlight, siren, loudspeaker. Weapons: Unarmed. Two stretchers. Ordered on 17 September 1999; aircraft delivered in late 2002.



EC 155 6/2005, Government Flying Service / 1127923



Hungary

Country Overview

A landlocked central European country, the Republic of Hungary has an area of 35,919 square miles and is bordered by Slovakia, Ukraine, Romania, Serbia, Croatia, Slovenia and Austria. Budapest

is the country's capital and largest city. The country is divided into two general regions by the principal river, the Danube, which flows for 145 miles north-south through the centre of the country and serves as a major artery of the transport system.

Diplomatic Representation

Defence Attaché in London:

Lieutenant Colonel Arpad Ibovics

Bases

Budapest

Personnel

(a) 2009 100

(b) National service replaced by a professional army on 3 November 2004

MINE WARFARE FORCES

3 NESTIN CLASS (RIVER MINESWEEPERS) (MSR)

ÓBUDA AM 22

DUNAÚJVÁROS AM 31

DUNAFOLDVÁR AM 32

Displacement, tons: 72.3 full load

Dimensions, feet (metres), 87.1 x 21.3 x 3.9 (26.5 x 6.5 x 1.2)

Main machinery: 2 Torpedo 12-cyl diesels, 520 hp(m) (382 kW); 2 shafts

Speed, knots, 15. **Range, n miles:** 810 at 11 kt

Complement: 17 (11 officers)

Guns: 6 Hispano 20 mm (1 quad M75 fwd, 2 single M70 aft)

Mines: 24 ground mines.

Radars: Navigation: Decca 101; I-band.

Comment: Built by Brodotehnika, Belgrade in 1980-82. Full magnetic/acoustic and wire sweeping capabilities. Kram minesweeping system employs a towed sweep at 200 m. The ships form the first 'Honved' Ordnance Disposal and Warship Regiment.



ÓBUDA 10/1998, Hungary Maritime Wing / 0064703

2 AN-2 CLASS (RIVER PATROL VESSELS) (PBR)

ERCSI 542-051 BAJA 542-054

Displacement, tons: 10.5 full load
 Dimensions, feet (metres): 44.0 x 12.5 x 1.97 (13.4 x 3.8 x 0.6)
 Main machinery: 2 Volvo Penta diesels; 380 hp(m) (283 kW) sustained; 2 shafts
 Speed, knots: 19
 Complement: 7 (1 officer)

Comment: Last survivors of an original 45 units built at Duna Shipyard in 1953. Refitted 2005. Employed on river patrol, diving support and disaster relief duties.



AN-2 CLASS

6/2007, Hungary Maritime Wing / 11/0159

Iceland



LANDHELGISGAESLAN

Country Overview

An island republic, the Republic of Iceland lies just south of the Arctic Circle in the North Atlantic Ocean about 162 n miles southeast of Greenland and 432 n miles northwest of Scotland. With an area of 39,769 square miles, the country has a 2,695 n mile coastline. Reykjavik is the capital, largest city and principal port. Territorial waters (12 n miles) are claimed. A 200 n mile Exclusive Economic Zone (EEZ) has also been claimed although the limits are not fully defined by boundary agreements. The Coast Guard Service deals with fishery protection, salvage, rescue, security, pollution control, hydrographic research, lighthouse duties and bomb disposal.

Headquarters Appointments

Director General of Coast Guard:
 Commodore Georg K Lörusson

Personnel

2009: 145 officers and men

Colours

Since 1990 vessels have been marked with red, white and blue diagonal stripes on the ships' side and the Coast Guard name (Landhelgisgaeslan).

Research Ships

Reykjavik
 A number of government Research Ships bearing RE pennant numbers operate off Iceland.

Maritime Patrol Aircraft

Maritime aircraft include a Fokker Friendship plus two AS 332 Super Puma and one SA 365 Dauphin. The Fokker Friendship is to be replaced in mid-2009 by a Bombardier Dash-8 maritime surveillance aircraft

COAST GUARD

2 AEGIR CLASS (PSOH)

Name	No	Builders	Commissioned
AEGIR	—	Aalborg Vaerft, Denmark	1968
TYR	—	Dannebrog Vaerft, Denmark	15 Mar 1975

Displacement, tons: 1,128 (1,214 Tyr) standard; 1,500 full load
 Dimensions, feet (metres): 229.1 (233.4 Tyr) x 32.8 x 15.1 (69.8 (71.1) x 10.0 x 4.6)
 Main machinery: 2 MAN/Burmeister & Wain 8L 40/54 diesels; 13,200 hp(m) (9.68 MW) sustained; 2 shafts; cp props
 Speed, knots: 19 (Aegir); 20 (Tyr). Range, n miles: 9,000 at 18 kt
 Complement: 19
 Guns: 1 Bofors 40 mm/60 Mk 3.
 Radars: Surface search/navigation: Sperry; E/F/I-band.

Comment: Similar ships but Tyr has a slightly improved design and Aegir has no sonar. The hangar is between the funnels. In 1994 a large crane was fitted on the starboard side at the forward end of the flight deck. In 1997 the helicopter deck was extended and a radome fitted on the top of the tower. Aegir refitted in Poland in 2005 and Tyr in 2006. Work included extension and modernisation of the bridge, upgrade of accommodation and the installation of helicopter-in-flight refuelling equipment.



TYR 9/2008, Adolfo Ortigueira Gil / 1335768

1 BALDUR CLASS (AGS/PB)

Name	No	Builders	Commissioned
BALDUR	—	Velsmidja Seydisfjardar	8 May 1991

Displacement, tons: 54 full load
 Dimensions, feet (metres): 67.9 x 17.1 x 5.6 (20.7 x 5.2 x 1.7)
 Main machinery: 2 Caterpillar 3406TA diesels; 640 hp (480 kW); 2 shafts
 Speed, knots: 12
 Complement: 5
 Radars: Navigation: Furuno, I-band.

Comment: Built in an Icelandic Shipyard. Used for survey work and patrol duties.



BALDUR 6/2005, Iceland Coast Guard / 1153888

1 ODINN CLASS (PSOH)

Name	No	Builders	Commissioned
ODINN	—	Aalborg Vaerft, Denmark	Jan 1960

Displacement, tons: 910 standard; 1,200 full load
 Dimensions, feet (metres): 209.0 x 33 x 13 (63.7 x 10 x 4)
 Main machinery: 2 MAN/Burmeister & Wain diesels; 5,700 hp(m) (4.19 MW); 2 shafts
 Speed, knots: 18. Range, n miles: 9,500 at 17 kt
 Complement: 19
 Guns: 1 Bofors 40 mm/60 Mk 3.
 Radars: Surface search/navigation: Sperry; E/F/I-band

Comment: Refitted in Denmark in late 1975 by Aarhus Flydedock AS with a hangar and helicopter deck which was later adapted in 1989 for the operation of RHIB inspection craft, a crane was fitted at the starboard forward end of the flight deck. The original 57 mm gun was replaced in 1990. To be replaced in 2009 by a new vessel Ulstein UT 512L under construction in Chile



ODINN 2/2002, L-G Nilsson / 0561507

0 + 1 ULSTEIN UT 512L (OFFSHORE PATROL SHIP) (PSO)

Name	No	Builders	Commissioned
—	—	ASMAR, Talcahuano	2009

Displacement, tons: 4,000 full load
 Dimensions, feet (metres): 302.1 x 50.8 x 16.1 (93.6 x 15.5 x 4.9)
 Main machinery: 2 Borgen B 32. 40L diesels; 10,730 hp (8 MW); 2 Kamewa Ulstein cp props, two bow thrusters; 1 Kamewa Ulstein 736 kW tunnel thruster; 1 Ulstein Aquamaster swing-up 883 kW azimuth thruster
 Speed, knots: 19.5
 Complement: 48

Comment: Contract awarded on 1 December 2006 for the construction of a replacement vessel for Odinn. The ship, designated UT 512L, is an enlarged design of the Norwegian Coast Guard ship Herstad. The Rolls Royce design is for a variety of coastguard and EEZ management roles including offshore standby and rescue, firefighting, salvage, pollution prevention, general law enforcement operations and fishery control. The ship is under construction at ASMAR shipyard in Chile. Further ships may be ordered to replace Iceland's ageing inventory of ships.



UT 512L (artist's impression) 6/2007, Iceland Coast Guard / 1305270

SUBMARINES

Notes: (1) The Advanced Technology Vessel (ATV) project was initiated in the 1980s. In addition to traditional SSN/SSGN functions, the boat is likely to have a strategic role and, to this end, may also be capable of deploying nuclear-tipped ballistic missiles in addition to torpedo-tube launched conventional anti-ship and land-attack missiles. The delayed Project K-15 Sagarika 750 km range ballistic missile is a possibility. A test-firing of the missile was made from a submerged pontoon on 26 February 2008. Currently led by Vice Admiral D S P Varma, the ATV project has facilities in Delhi, Hyderabad, Vishakapatnam (where the boat is reported to be under construction) and

Kalpakkam (where the PWR reactor reportedly became fully operational in 2006). Companies in support of the project are reported to be Larsen and Toubro at Hazira, Mazagon Dock Ltd and Bharat Electronics. It is believed that the submarine is a development of a Russian design, derived either from the Project 885 Severodvinsk class SSGN or more probably from the Victor/Akula class generation. The nuclear propulsion system is understood to be an Indo-Russian PWR although reports that it may be a Russian supplied VM-5 PWR have also circulated. It was announced in December 2007 that sea trials of the ATV are to begin in 2009.

(2) A request for proposals for a class of six submarines, to follow the Scorpene programme, is expected in 2009. Contenders include further Scorpene class, German Type 214 and Russian Amur 1650 class.
(3) India operates up to 11 Cosmos CE2F/FX100 swimmer delivery vehicles, delivered in 1991.
(4) Procurement of at least two Deep Sea Rescue Vehicles (DSRV) was reported to be in progress in 2005. The new DRSV would be operated from *Nireekshak* or a vessel of opportunity.

Attack Submarines

0 + 1 AKULA (SCHUKA-B) CLASS (PROJECT 971) (SSN)

Name	No	Builders	Laid down	Launched	Commissioned
CHAKRA (ex-Nerpa)	-	Komsomolsk Shipyard	1986	24 June 2006	2009
Displacement, tons: 7,500 surfaced; 9,100 dived		Radars: Surface search. Snoop Pair or Snoop Half with back to back aenals on ESM mast, I-band.			handed over in September 2009. The contract included a training package and three crews are reported to have been trained at Sosnovy Bor near St Petersburg. The weapons and sensors of the submarine in Indian service are speculative and have not been confirmed.
Dimensions, feet (metres): 360.1 oa; 337.9 wl × 45.9 × 34.1 (110; 103 × 14.0 × 10.4)		Sonars: Shark Gill (Skat MGK 503); hull-mounted; passive/active search and attack; low/medium frequency. Mouse Roar; hull-mounted; active attack; high frequency. Skat 3 towed array; passive; very low frequency			Structure: The very long fin is particularly notable. Diving depth 450 m approximately
Main machinery: Nuclear; 1 VM-5 PWR; 190 MW; 2 GT3A turbines; 47,600 hp(m) (35 MW); 2 emergency propulsion motors; 750 hp(m) (552 kW); 1 shaft, 2 spinners; 1,006 hp(m) (740 kW)		Programmes: The construction of <i>Nerpa</i> (K 152) began at Komsomolsk in 1986 but, following the collapse of the Soviet Union in 1991, work was suspended. Negotiations for the 10-year lease of the boat by the Indian Navy started in about 1996 and terms were subsequently agreed in September 2001 when construction, likely to have been at least partly financed by India, was restarted. The boat was subsequently launched in 2006 and, following sea trials and certification by the Russian Navy, is likely to be			Operational: <i>Chakra</i> bears the same name as the <i>Cherie</i> class SSN leased from the Soviet Union 1988-91. Initially, the principal role of the submarine is to be training of both sea-going and shore-based personnel in nuclear submarine operations and support. The boat is likely to carry a number of Russian crew which may place some restrictions on the boat's operational use. As experience is gained, the submarine is likely to be deployed on a broader range of SSN operations.
Speed, knots: 28 dived; 10 surfaced					
Complement: 62 (31 officers)					
Missiles: SLCM/SSM: Novator Alfa Klub SS-N-27 (3m-54E-1 anti-ship); active radar homing to 180 km (97.2 n miles) at 0.7 Mach (cruise) and 2.5 Mach (attack); warhead 450 kg.					
Torpedoes: 4-21 in (533 mm) and 4-25.6 in (650 mm) tubes.					
Countermeasures: ESM; Rim Hat; Intercept					



AKULA CLASS

6/2007, *Ships of the World* / 1305156

Patrol Submarines

2 FOXTROT (PROJECT 641) CLASS (SS)

Name	No	Builders	Commissioned
VELA	S 40	Sudomekh, Leningrad	Aug 1973
VAGLI	S 42	Sudomekh, Leningrad	Aug 1974
Displacement, tons: 1,952 surfaced; 2,475 dived		Range, n miles: 20,000 at 8 kt surfaced, 380 at 2 kt dived	
Dimensions, feet (metres): 299.5 × 24.6 × 19.7 (91.3 × 7.5 × 6)		Complement: 75 (8 officers)	
Main machinery: Diesel-electric; 3 Type 37-D diesels; 6,000 hp(m) (4.4 MW); 3 motors (1 × 2,700 and 2 × 1,350); 5,400 hp(m) (3.97 MW); 3 shafts, 1 auxiliary motor; 140 hp(m) (103 kW)		Torpedoes: 10 -21 in (533 mm) (6 fwd, 4 aft) tubes. 22 SET-65E/SAET-60, active/passive homing to 15 km (8.1 n miles) at 40 kt; warhead 205 kg	
Speed, knots: 16 surfaced, 15 dived		Mines: 44 in lieu of torpedoes.	
		Countermeasures: ESM Stop Light; radar warning.	
		Radars: Surface search: Snoop Tray; I-band.	
		Sonars: Harkules/Fenik; bow-mounted; passive search and attack; medium frequency.	
		Structure: Diving depth 250 m (820 ft), reducing with age.	
		Operational: Survivors of an original eight of the class. <i>Vagli</i> completed refit in 2004 and <i>Vela</i> was reportedly in refit in 2005. Both based at Vishakapatnam.	



FOXTROT

2/2001, *Guy Toremans* / 0105814

10 SINDHUGHOSH (KILO) (PROJECT 877EM/8773) CLASS (SSK)

Name	No	Builders	Commissioned
SINDHUGHOSH	S 55	Sudomekh, Leningrad	30 Apr 1986
SINDHUDHVAJ	S 56	Sudomekh, Leningrad	12 June 1987
SINDHURAJ	S 57	Sudomekh, Leningrad	20 Oct 1987
SINDHUVIR	S 58	Sudomekh, Leningrad	16 May 1988
SINDHURATNA	S 59	Sudomekh, Leningrad	19 Nov 1988
SINDHUKESARI	S 60	Sudomekh, Leningrad	19 Dec 1988
SINDHUKIRTI	S 61	Sudomekh, Leningrad	9 Dec 1990
SINDHUVIJAY	S 62	Sudomekh, Leningrad	17 Dec 1990
SINDHURAKSHAK	S 63	Sudomekh, St Petersburg	24 Dec 1997
SINDHUSHASTRA	S 66	Sudomekh, St Petersburg	19 July 2000

Displacement, tons: 2,325 surfaced; 3,076 dived

Dimensions, feet (metres), 238.2 x 32.5 x 21.7
(72.6 x 9.9 x 6.6)

Main machinery: Diesel-electric; 2 Model 4-2AA-42M diesels; 3,650 hp(m) (2.68 MW); 2 generators; 1 motor; 5,900 hp(m) (4.34 MW); 1 shaft; 2 MT-166 auxiliary motors; 204 hp(m) (150 kW); 1 economic speed motor; 130 hp(m) (95 kW)

Speed, knots: 10 surfaced; 17 dived; 9 snorting

Range, n miles: 6,000 at 7 kt snorting; 400 at 3 kt dived

Complement: 52 (13 officers)

Missiles: SLCM: Novator Alfa Klub SS-N-27 (3M-54 anti-ship missiles) (S 55, 57, 59, 60, 62 and 66), active radar homing to 180 km (97.2 n miles) at 0.7 Mach (cruise) and 2.5 Mach (attack); warhead 450 kg
Novator Klub SS-N-30 (3M 14) land-attack missiles (S 55, S 62); terrain following/SATNAV guidance to 300 km (162 n miles) at 0.7 Mach; warhead 450 kg

SAM: SA-N-8 portable launcher; IR homing to 3.2 n miles (6 km)

Torpedoes: 6—21 in (533 mm) tubes. Combination of Type 53-66; passive wake homing to 19 km (10.3 n miles) at 45 kt; warhead 305 kg and TEST 71/96; anti-submarine, active/passive homing to 15 km (8.1 n miles) at 40 kt or 20 km (10.8 n miles) at 25 kt; warhead 220 kg Total of 18 weapons. Wire-guided on 2 tubes.

Mines: 24 DM-1 in lieu of torpedoes.

Countermeasures: ESM Squid Head, radar warning

Weapons control: Uzel MVU-119EM TFCS

Radars: Navigation, SnoopTray; I-band

Sonars: Shark Teeth/Shark Fin; MGK-400; or Bel Ushus (S 55, 62), hull-mounted; active/passive search and attack, medium frequency
Mouse Roar; MG-519; hull-mounted; active search; high frequency

Programmes: The Kilo class was launched in the former Soviet Navy in 1979 and although India was the first country to acquire one they have since been transferred to Algeria, Poland, Romania, Iran and China. Because of the slowness of the S 209 programme, the original order in 1983 for six Kilo class expanded to 10 but was then cut back again to eight. Two further orders were confirmed in May 1997. S 63 was a spare Type 877 hull built for the Russian Navy, but never purchased. S 65 is a Type 8773 and was fitted for SLCM on build. She was launched on 14 October 1999.

Modernisation: *Sindhuvir* completed major refit at Severodvinsk from May 1997 to July 1999. *Sindhuraj* and *Sindhukesari* completed similar refits at Admiralty Yard, St Petersburg from May 1999 to November 2001. *Sindhuratna* completed a two-year refit at Severodvinsk in 2002. *Sindhughosh*, following refit work

at Vishakapatnam from 1999, started modernisation at Severodvinsk in September 2002 which completed on 22 April 2005. *Sindhuvijay* started a two-year refit at Severodvinsk in May 2005 which was completed on 8 May 2007 although acceptance of the boat was delayed until August 2008 due to reported defects in the missile system. She became the sixth boat to be fitted with SS-N-27. Both *Sindhughosh* and *Sindhuvijay* are equipped with the SS-N-30 (3M 14) land-attack missiles. *Sindhukirti* began refit at Hindustan Shipyards, Vishakapatnam, in January 2006 but may not rejoin the fleet until 2015

Structure: Diving depth, 300 m (985 ft). Reported that from *Sindhuvir* onwards these submarines have an SA-N-8 SAM capability. The launcher is shoulder held and stowed in the fin for use when the submarine is surfaced. Two torpedo tubes can fire wire-guided torpedoes and four tubes have automatic reloading. Anechoic tiles are fitted on casings and fins.

Operational: First four form the 11th Submarine Squadron Based at Vishakapatnam and the remainder of the 12th Squadron based at Mumbai. There are doubts about the operational status of *Sindhudhvaj* which has not been included in the refit cycle. She is reported to be at Vishakapatnam and, while she may be under repair, there has been speculation that she may be modified to fire Brahmos cruise missiles.



SINDHUVIJAY

9/2008, Diego Quevedo / 1353085



SINDHURAKSHAK

12/2007, Michael Nitz / 1353084

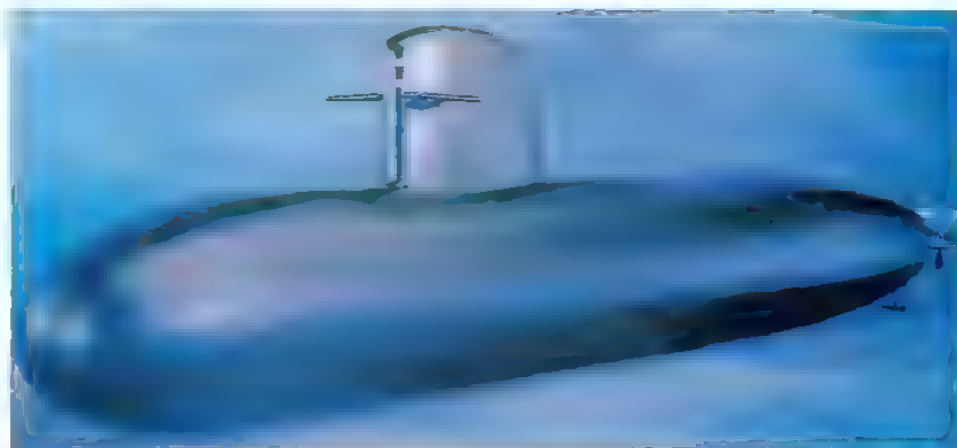
0 + 6 SCORPENE CLASS (SSK)

Name	No	Builders	Laid down	Launched	Commissioned
-	-	Mazagon Dock Ltd, Mumbai	2009	2012	2013

Displacement, tons: 1,705 dived
Dimensions, feet (metres): 217.8 x 20.3 x 19
 (664 x 6.2 x 5.8)
Main machinery: Diesel electric; 4 MTU 16V 396 SE84 diesels, 2,992 hp(m) (2.2 MW); 1 Jeumont Schneider motor; 3,808 hp(m) (2.8 MW); 1 shaft
Speed, knots: 20 dived; 11 surfaced
Range, n miles: 550 at 4 kt dived; 6,500 at 8 kt surfaced
Complement: 31 (6 officers)

Missiles: MBDA Exocet SM 39. Block 2 launched from 21 in (533 mm) tubes, inertial cruise, active terminal homing to 50 km (27 n miles) at 0.9 Mach; warhead 165 kg
Torpedoes: 6-21 in (533 mm) tubes.
Countermeasures: ESM
Weapons control: UDS International SUBTICS
Radars: Navigation: Sagem; I-band.
Sonars: Hull mounted; active/passive search and attack, medium frequency.

Programmes: Project 75. Following protracted negotiations which began in 2002, a contract for the licensed production of six submarines at Mazagon Dock Ltd, Mumbai, was signed on 6 October 2005. The agreement is reported to include an option for a further nine boats. DCNS is to supply technical advisers and provide prefabricated hull elements and the combat systems, including the command system, underwater sensors, optronics, and communications. MBDA is to supply Exocet SM39 missiles as part of the package



SCORPENE (computer graphic)

1998, DCN / 001/689

Details are based on the boats built for Chile. AIP is not to be installed in the first two boats but a reassessment for the remaining submarines will be made at a later date. Delivery of all six boats was to have begun in 2012 and to have been completed in about 2018 but this

programme is likely to have been delayed by at least a year
Structure: Diving depth more than 300 m (984 ft). AIP would require the addition of an 8 m 'plug' to incorporate the MESMA system.

4 SHISHUMAR (TYPE 209/1500) CLASS (SSK)

Name	No	Builders	Laid down	Launched	Commissioned
SHISHUMAR	S 44	Howaldtswerke, Kiel	1 May 1982	13 Dec 1984	22 Sep 1986
SHANKUSH	S 45	Howaldtswerke, Kiel	1 Sep 1982	11 May 1984	20 Nov 1986
SHALKI	S 46	Mazagon Dock Ltd, Mumbai	5 June 1984	30 Sep 1989	7 Feb 1992
SHANKUL	S 47	Mazagon Dock Ltd, Mumbai	3 Sep 1989	21 Mar 1992	28 May 1994

Displacement, tons: 1,450 standard; 1,660 surfaced; 1,850 dived
Dimensions, feet (metres): 211.2 x 21.3 x 19.7
 (644 x 6.5 x 6)
Main machinery: Diesel electric; 4 MTU 12V 493 AZ80 GA31L diesels; 2,400 hp(m) (1.76 MW) sustained, 4 Siemens alternators; 1.8 MW; 1 Siemens motor; 4,600 hp(m) (3.38 MW) sustained; 1 shaft
Speed, knots: 11 surfaced; 22 dived
Range, n miles: 8,000 snorkeling at 8 kt; 13,000 surfaced at 10 kt
Complement: 40 (8 officers)

Torpedoes: 8-21 in (533 mm) tubes. 14 AEG SUT Mod 1; wire-guided; active/passive homing to 28 km (15.3 n miles) at 23 kt; 12 km (6.6 n miles) at 35 kt; warhead 250 kg.
Mines: External 'strap-on' type for 24 mines.
Countermeasures: Decoys: C 303 acoustic decoys.
ESM: Argo Phoenix II AR 700 or Kullmorgen Sea Sentry; radar warning
Weapons control: Singer Librascope Mk 1.
Radars: Surface search: Thomson-CSF Calypso; I-band.
Sonars: Atlas Elektronik CSU 83, active/passive search and attack; medium frequency TSM 2272 to be fitted.
 Thomson Sintra DUUX-5; passive ranging and intercept

Programmes: Howaldtswerke concluded an agreement with the Indian Navy on 11 December 1981. This was in four basic parts: the building in West Germany of two Type 1500 submarines; the supply of 'packages' for the building of two more boats at Mazagon, Mumbai; training of various groups of specialists for the design and construction of the Mazagon pair; logistic services during the trials and early part of the commissions as well as consultation services in Mumbai. In 1984 it was announced that a further two submarines would be built at Mazagon for a total of six but this was overtaken by events in 1987-88 and the agreement with HDW terminated at four. This was reconsidered in 1992 and again in 1997. Government approval was given in mid-1999 for the construction of further submarines.



SHANKUL

2/2006, Ships of the World / 1164317

Modernisation: Thomson Sintra Eledone sonars may be fitted in due course. Trials for integration of indigenous Panchendriya ATAS developed by NPOL are in progress in Karanj
Structure: The Type 1500 has a central bulkhead and an IKL designed integrated escape sphere which can carry the full crew of up to 40 men, has an oxygen supply for 8 hours, and can withstand pressures at least as great as those that can be withstood by

the submarine's pressure hull. Diving depth 260 m (853 ft).
Operational: Form 10th Submarine Squadron based at Mumbai. *Shishumar* mid-life refit started in 1999 and had been completed by 2001. She undertook a further repair period in 2004 following a collision. *Shankul* underwent refit 2001-2005 and *Shankush* is reported to have started refit in 2001. *Shalki* started refit in early 2007.



SHISHUMAR

2/2001, Guy Toremans / 0105813

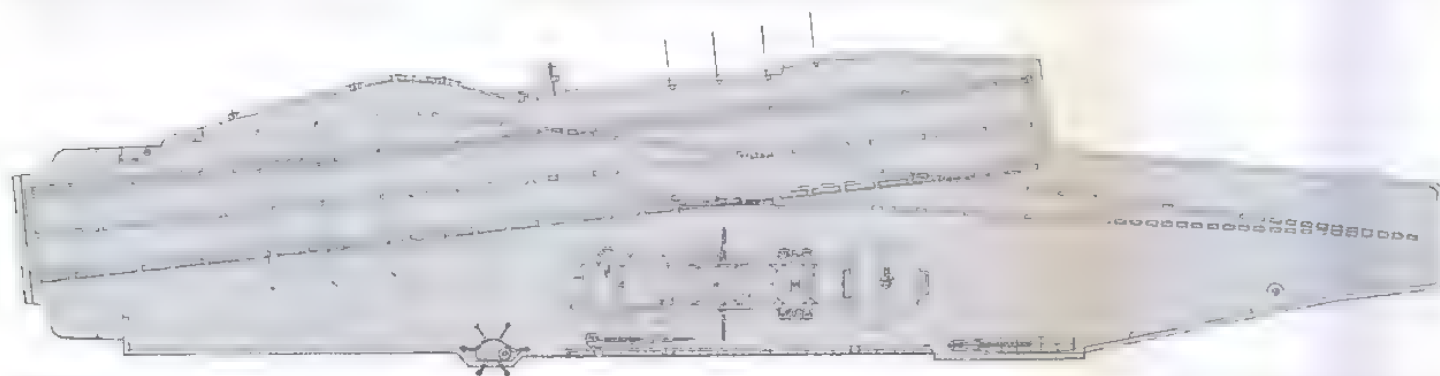
For details of the latest updates to *Jane's Fighting Ships* online and to discover the additional information available exclusively to online subscribers please visit jfs.janes.com

AIRCRAFT CARRIERS

Notes: The Maritime Capability Perspective Plan includes proposals to achieve a three-carrier force by 2022. Construction of a second indigenously built carrier is expected to start in about 2017.

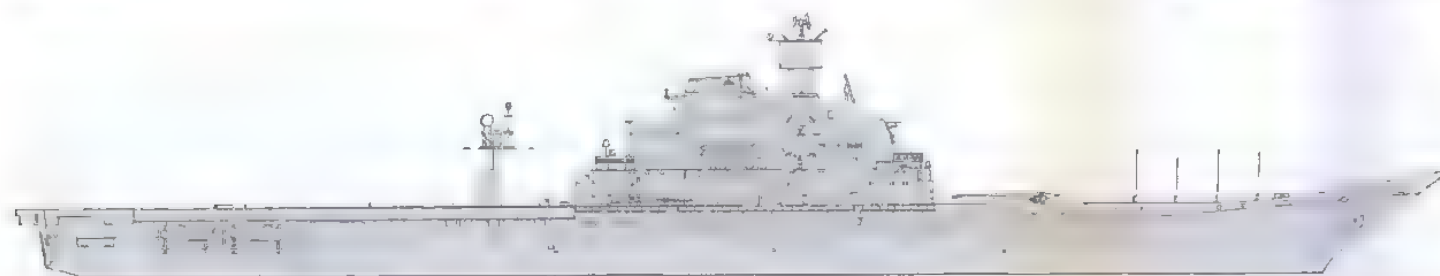
0 + 1 MODIFIED KIEV CLASS (PROJECT 1143.4) (CVGM)

Name	Builders	Laid down	Launched	Commissioned
VIKRAMADITYA (ex-Admiral Gorshkov, ex-Baku)	Nikolayev South	17 Feb 1978	1 Apr 1982	11 Jan 1987
Displacement, tons: 45,400 full load Dimensions, feet (metres): 928 5 oa, 818.6 wl x 167.3 oa, 107.3 wl x 32.8 (283; 249.5 x 51; 32.7 x 10) Main machinery: 8 KWG4 boilers; 4 GTZA 674 turbines; 200,000 hp(m) (147 MW); 4 shafts Speed, knots: 29 Range, n miles: 13,800 at 18 kt Complement: 1,200 plus aircrew	Navigation, Aircraft control Sonars: Horse Jaw (MG 355); hull-mounted; active search; medium frequency. Fixed-wing aircraft: 12 MiG 29K. Helicopters: 6 Helix 27/28/31.	years and that the ship would not enter service until 2012. This may still prove to be optimistic. Agreement to fund cost overruns was reached in December 2008. Modernisation: New propulsion, power and air conditioning systems removed and to be replaced by six Kashtan SAM/gun systems. The flight deck is to be converted to a STOBAR configuration with a 14.3° ski-jump. Structure: The ship has a 198 m angled deck with three arrestor wires. Flight deck lifts are 19.2 x 10.3 m and 18.5 x 4.7 m, and can lift 30 tons (aft) and 20 tons (midships) respectively. The hangar is 130 x 22.5 m. Operational: The ship was re-launched on 4 December 2008. Sea trials are expected to start in 2011. The ship is to be based at Karwar.		
Missiles, SAM/Guns: To be announced Countermeasures: Decoys: 2 PK2 chaff launchers; 2 towed torpedo decoys. ESM/ECM: Bharat intercept and jammers. Combat data systems: Lesorub E. Radars: Air search: Plate Steer Surface search, 2 Strut Pair	Programmes: Last of the four Project 1143.4 aircraft carriers built for the Soviet Navy. First offered for sale to India by Russia in 1994. By 1999 the proposal was to gift the ship as long as India pays for the refit. Following a Government to Government agreement on 4 October 2000 and protracted negotiations, contract signed on 20 January 2004 for a five-year refit at a cost estimated to be USD625 million. However, it was announced in August 2007 that the refit had been delayed by three			



VIKRAMADITYA

(Scale 1 : 1,500), Ian Sturton / 1170085



VIKRAMADITYA

(Scale 1 : 1,500), Ian Sturton / 1170085



VIKRAMADITYA (artist's impression)

10/2004, Nevskoye Design Bureau / 1042276

1 HERMES CLASS (CVM)

Name	No	Builders	Laid down	Launched	Commissioned
VIRAAAT (ex-Hermes)	R 22	Vickers Shipbuilding Ltd, Barrow-in-Furness	21 June 1944	16 Feb 1953	18 Nov 1959

Displacement, tons: 23,900 standard, 28,700 full load
Dimensions, feet (metres): 685 wl; 744.3 oa x 90; 160 oa x 28.5 (208.8; 226.9 x 27.4; 48.8 x 8.7)
Main machinery: 4 Admiralty boilers; 400 psi (28 kg/cm²); 700°F (370°C); 2 Parsons geared turbines; 76,000 hp (57 MW); 2 shafts
Speed, knots: 28
Complement: 1,350 (143 officers)

Missiles: SAM/Guns: 2 Octuple IAI/Rafael Barak 1 VLS ●, command line of sight radar or optical guidance to 10 km (5.5 n miles) at 2 Mach; warhead 22 kg
Guns: 4 – 30 mm/65 (2 twin) AK 230 ●; 500 rds/min to 5 km (2.7 n miles); weight of shell 0.54 kg
Countermeasures: Decoys: 2 Knebnorth Corvus chaff launchers ●
ESM: Bharat Ajanta; intercept ●
Combat data systems: CAAIS action data automation, SATCOM
Radars: Air search: Bharat RAWL-02 Mk 3 (LW08) ●, D-band.
 Air/surface search: Bharat RAWS (PFN 513) ●; E/F-band.
 Fire control: IAI/Elta EL/M-2221 ●; Ka-band.
 Navigation: 2 Bharat Rashmi ●; I-band.
 Tacan: FT 13-S/M
Sonars: Graseby Type 184M, hull-mounted; active search and attack; 6-9 kHz.

Fixed-wing aircraft: 12 Sea Harriers FRS Mk 51 ● (capacity for 30)

Helicopters: 7 Sea King Mk 42B/C ● ASW/ASV/Vertrep and Ka-27 Helix, Ka-31 Helix.

Programmes: Purchased in May 1986 from the UK, thence to an extensive refit in Devonport Dockyard. Commissioned in Indian Navy 20 May 1987.

Modernisation: UK refit included new fire-control equipment, navigation radars and deck landing aids. Boilers were converted to take distillate fuel and the ship was given improved NBC protection. New search radar in 1995. Further modernisation in 1999-2001 refit, improved indigenous RAWL 02 (Mk II) and Rashmi radars for CCA/navigation, EW equipment and new communications systems. A further refit, completed in December 2004, included installation of Barak CIWS. This has replaced the previously fitted 40 mm guns. A further refit, to extend ship-life to 2012, was completed in 2008.

Structure: Fitted with 12° ski jump. Reinforced flight deck (0.75 in); 1 to 2 in of armour over magazines and machinery spaces. Four LCVP on after davits. Magazine capacity includes 80 lightweight torpedoes. Barak launchers are recessed in the starboard side of the flight deck, aft of the island.

Operational: The Sea Harrier complement is likely to be of the order of six aircraft leaving room for a greater mix of Sea King and Helix helicopters. Based at Mumbai.

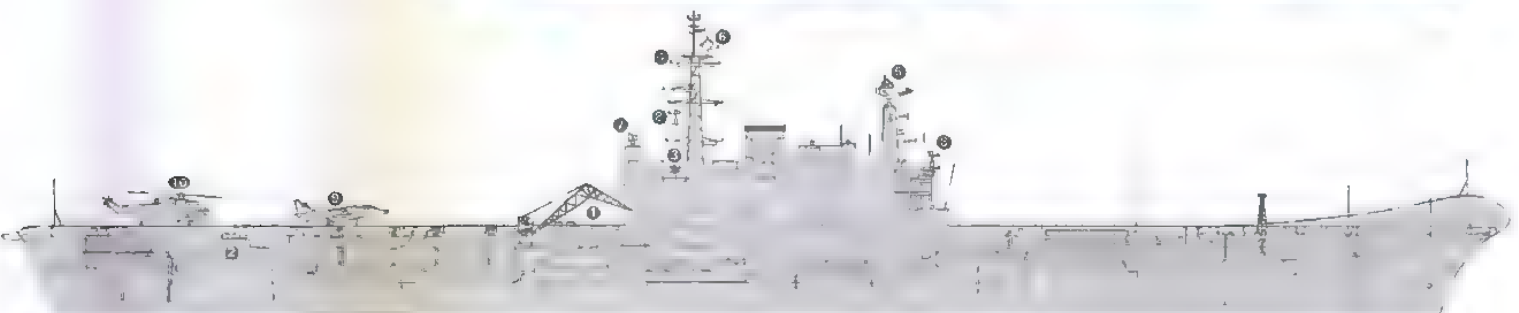


VIRAAAT

10/2005, Ships of the World / 1153836

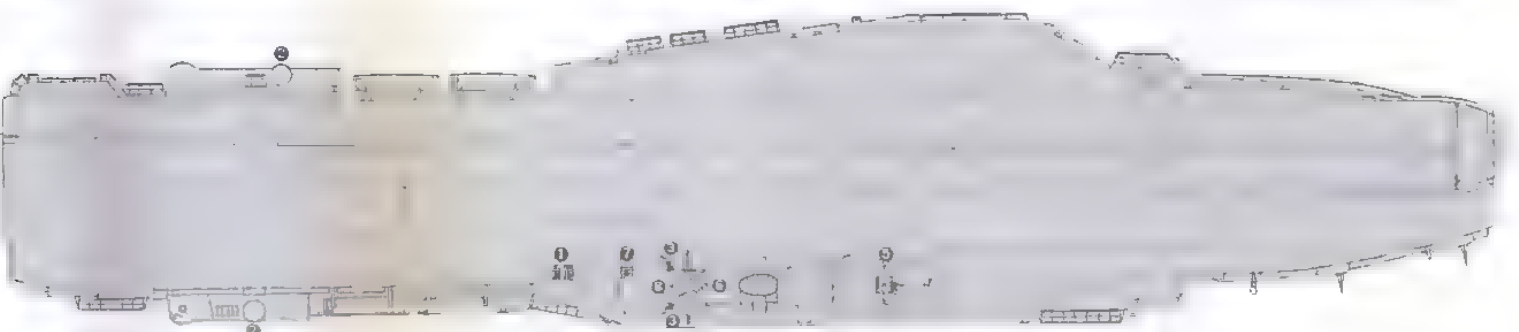


VIRAAAT
10/2007, Ships of the World
1170082



VIRAAAT

(Scale 1 : 1,200), Ian Sturton / 1303034



VIRAAAT

(Scale 1 : 1,200), Ian Sturton / 1166362

0 + 1 INDIGENOUS AIRCRAFT CARRIER CLASS (PROJECT 71) (CVM)

Name	No	Builders	Laid down	Launched	Commissioned
VIKRANT	—	Kochi Shipyard Ltd	28 Feb 2009	2013	2015

Displacement, tons: 37,500 standard
Dimensions, feet (metres): 826.8 × 190.3 × 27.5 (252.0 × 58.0 × 8.4)
Main machinery: COGAG: 4 General Electric LM 2500 gas turbines; 120,000 hp (89.5 MW); 2 shafts; cp props
Speed, knots: 28
Range, n miles: 7,500 at 18 kt
Complement: 1,400 (180 officers)

Helicopters: 10 Ka-31 and ALH
Programmes: The plan announced in 1989 was to build two new aircraft carriers. The Indigenous Aircraft Carrier (IAC), formerly the Air Defence Ship (ADS), is to replace the former *Vikrant* (and will probably receive the same name) while *Vikramaditya* (ex-Admiral Gorshkov) is to replace *Viraat* in 2012. A number of international companies including DCN, IZAR and Fincantieri are believed to have been involved in conceptual and design work of the ADS and it is understood that the shipbuilder, Cochin Shipyard Ltd (CSL), has sub-contracted specialist 'task forces' to collaborate in building the ship. Two contracts signed in mid-2004 with Fincantieri to finalise the ADS design and its ancillary propulsion systems and main power plants. Fincantieri is likely to provide further assistance during the vessel's construction, tests and sea trials. First steel cut on 11 April 2005 and construction of building blocks started thereafter. However the project has been afflicted by delays, including reported problems in acquiring sufficient high-quality steel.
Structure: All details are still speculative and the diagrams show an indicative design including a short take off (with 14° ski jump) and arrested recovery (STOVAR) system. The ADS is to have a similar propulsion system as the *Cavour* being built for the Italian Navy.
Operations: The ship is to be based on the east coast possibly at a new base.

Missiles: SAM: To be announced.
Guns: CIWS: To be announced
Radars: Air search; surface search, fire control.
Sonars: Hull mounted
Fixed-wing aircraft: 12 MiG-29K.



PROJECT 71

(Scale 1 : 1,500), Ian Sturton (via M Mazumdar) 0529540



PROJECT 71

(Scale 1 : 1,500), Ian Sturton / 1353093

DESTROYERS

0 + 3 (4) KOLKATA (PROJECT 15A) CLASS (DDGHM)

Name	No	Builders	Laid down	Launched	Commissioned
KOLKATA	—	Mazagon Dock Ltd, Mumbai	26 Sep 2003	30 Mar 2006	2011
—	—	Mazagon Dock Ltd, Mumbai	25 Oct 2005	2009	2012
—	—	Mazagon Dock Ltd, Mumbai	2006	2011	2013

Displacement, tons: 7,000 full load
Dimensions, feet (metres): 534.8 × 67.1 × 21.3 (163 × 17.4 × 6.5)
Main machinery: 4 Zorya/Mashproekt DT-59 gas turbines; 82,820 hp (61.7 MW); 2 shafts; cp props
Speed, knots: 32. **Range, n miles:** 4,500 at 18 kt
Complement: 360 (40 officers)

Missiles: SSM: 16 Brahmos PJ-10 (2 octuple VLS) ●; active/passive radar homing to 280 km (157 n miles) at 2.5 Mach; warhead 200 kg; sea skimmer in terminal phase.
 SAM: IAI/Rafael Barak 2/8 ●. 1 × 16 cell VLS launcher (forward), 1 × 32 cell VLS launcher (aft), total of 48 missiles
 4 octuple IAI/Rafael Barak 1 VLS, command line of sight or optical guidance to 10 km (5.5 n miles) at 2 Mach; warhead 22 kg.
SAM/Guns: 2 CADS-N-1 (Kashtan) (may replace AK 630); each has twin 30 mm Gatling combined with 8 SA-N-11 (Grison) and Hot Flash/Hot Spot radar/optronic director.

Laser beam guidance for missiles to 8 km (4.4 n miles); warhead 9 kg; 9,000 rds/min (combined) to 1.6 km for guns.

Guns: 1—3.9 in (100 mm) 59 A 190E ●; 60 rds/min to 21.5 km (11.6 n miles); weight of shell 16 kg
 2—30 mm AK 630 ●; 6 barrels per mounting, 3,000 rds/min combined to 2 km

Torpedoes: 5 PTA 21 in (533 mm) (quin) tubes ●
 Combination of SET 65E; anti-submarine, active/passive homing to 15 km (8.1 n miles) at 40 kt; warhead 205 kg and Type 53-65, passive wake homing to 19 km (10.3 n miles) at 45 kt; warhead 305 kg.

A/S mortars: 2 RBU 6000 ●; 12 tubed trainable; range 6,000 m; warhead 31 kg.
Countermeasures: Decoys: 2 PK2 chaff launchers ●. Towed torpedo decoy.

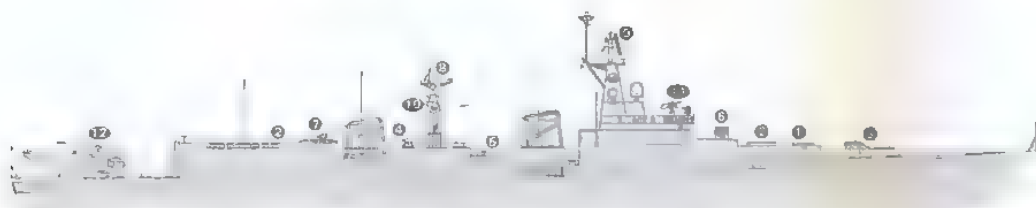
ESM: Bharat Ajanta Mk 2; intercept.
ECM: Electronics TQN-2, jammer.
Combat data systems: CAIO 15A.
Radars: Air search, Bharat RAWL-02 Mk 3 (LW08) ●; D-band

Air/surface search: EL/M-2238 STAR; 3D; E/F-band ●.
Fire control: ELTA EL-M 2221 STGR, I/J/K-band (for SAM) ●; Ratep 5P-10E Puma; I-band (for 100 mm); Plank Shave (Granit Garpun B) (for SSM) ●; I/J-band
Navigation: Kelvin Hughes Nucleus 6000; E/F-band.
Sonars: 2 Nyada MR-212/201; I-band
Sonars: Bharat HUMSA, hull-mounted; medium frequency. Towed array (to be confirmed).

Helicopters: 2 Westland Sea Kings Mk 42B ● or 2 Hindustan Aeronautics ALH

Programmes: The first of three modified Delhi class was laid down in 2003 but progress since her launch in 2006 has been very slow. Four further ships are to be ordered under Project 15B.

Structure: Designed by the Indian Naval Design Bureau, the design appears to be a development of the Delhi class incorporating some features of both the Talwar and Project 17 frigates.



PROJECT 15A

(Scale 1 : 1,200), Ian Sturton / 1042090

5 RAJPUT (KASHIN II) CLASS (PROJECT 61ME) (DDGHM)

Name	No	Builders	Laid down	Launched	Commissioned
RAJPUT (ex-Nadezhnyi)	D 51	Nikolayev North (61 Kommuna)	11 Sep 1976	17 Sep 1977	4 May 1980
RANA (ex-Gubatelyniyy)	D 52	Nikolayev North (61 Kommuna)	29 Nov 1976	27 Sep 1978	18 Feb 1982
RANJIT (ex-Lovkiyy)	D 53	Nikolayev North (61 Kommuna)	29 June 1977	16 June 1979	24 Nov 1983
RANVIR (ex-Tverdyi)	D 54	Nikolayev North (61 Kommuna)	24 Oct 1981	12 Mar 1983	21 Apr 1986
RANVIJAY (ex-Tolkoviyy)	D 55	Nikolayev North (61 Kommuna)	19 Mar 1982	1 Feb 1986	21 Dec 1987

Displacement, tons: 3,950 standard; 4,974 full load
Dimensions, feet (metres): 480.5 × 51.8 × 15.7
(146.5 × 15.8 × 4.8)

Main machinery: COGAG; 4 Ukraine gas turbines,
72,000 hp(m) (53 MW); 2 shafts
Speed, knots: 35
Range, n miles: 4,500 at 18 kt; 2,600 at 30 kt
Complement: 320 (35 officers)

Missiles: SSM: 2 (D 51) or 4 SS-N-2D Mod 2 Styx (D 52, 53) ●,
IR homing to 83 km (45 n miles) at 0.9 Mach; warhead
513 kg; sea-skimmer.

4 (D 51) or 8 (D 54, 55) Brahmos PJ-10, active/passive
radar terminal homing to 290 km (157 n miles) at 2.6
Mach, warhead 200 kg

SAM: 2 (D 51, 52, 53) or 1 (D 54, 55) SA-N-1 Goa twin
launchers ●, command guidance to 31.5 km (17 n miles)
at 2 Mach; height 91–22, 860 m (300–75,000 ft); warhead
60 kg, 44 missiles. Some SSM capability.
2 octuple IAI/Rafael Barak 1 VLS (D 54, D 55); command
line of sight radar or optical guidance to 10 km (5.5 n miles)
at 2 Mach; warhead 22 kg

Guns: 2–3 in (76 mm)/59 AK 726 (twin, fwd) ●, 90 rds/min
to 16 km (8.5 n miles); weight of shell 5.9 kg.
8–30 mm/65 (4 twin) AK 230 (D 51, 52, 53) ●, 500 rds/
min to 5 km (2.7 n miles); weight of shell 0.54 kg.
2–30 mm/65 AK 630 (6 barrels per mounting) (D 54, 55);
3,000 rds/min combined to 2 km.

Torpedoes: 5–21 in (533 mm) (quin) tubes ● Combination
of SET-65E, anti-submarine; active/passive homing to
15 km (8.1 n miles) at 40 kt, warhead 205 kg and Type
53-65; passive wake homing to 19 km (10.3 n miles) at
45 kt; warhead 305 kg.

A/S mortars: 2 RBU 6000 12-tubed trainable ●, range
6,000 m, warhead 31 kg

Countermeasures: 4 PK 16 chaff launchers for radar decoy
and distraction.

ESM: Bharat Ajanta Mk 2; intercept.

ECM: Elettronica TQN 2; jammer.

Radars: Air search: Big Net A (D 51, 54–55) ●, C-band; range
183 km (100 n miles) for 2 m² target.
Bharat/Signal RAWL-02 Mk 2 (LW04) (D 52, 53);
D band.

Air/surface search: Head Net C (D 51–54) ●, 3D, E-band.
EL/M-2238 STAR (D 54, 55), 3D, E/F-band.

Navigation: 2 Bharat Rashmi; I-band.

Fire control: 2 Peel Group ●, H/I-band; range 73 km (40 n
miles) for 2 m² target.

Owl Scream ●, G-band.

2 Drum Tilt ● or 2 Bass Tilt; H/I-band or 2 EL/M-2221
STGR, I/J/K-band.

IFF: 2 High Pole B

Sonars: Vycheda MG 311 (D 51, 52, 55); hull-mounted;
active search and attack; medium frequency.

Mare Tail VDS; active search; medium frequency.



RANA

(Scale 1 : 1,200), Ian Sturton / 0506295



RANJIT

10/2004, Toshiyuki Hants / 1042765

Bharat Humsa (D 53, 54), hull-mounted; medium
frequency.

Helicopters: 1 Ka-28 Helix ●.

Programmes: First batch of three ordered in the mid-1970s.

Ranvir was the first of the second batch ordered on
20 December 1982.

Modernisation: New EW equipment installed on all ships
refitted since 1993. It is possible that an Italian combat
data system compatible with Selenia IPN-10 has been
installed. D 51, 54 and 55 have undergone extensive
modernisation since 2003. This includes installation of
Brahmos SSM and Barak SAM. EL/M 2238 STAR search
radar has replaced Head Net C in D 55 and is likely to be
fitted to other ships. All ships are Inmarsat fitted.

Structure: Originally built to a modified Kashin-class
design, the ships are equipped with a helicopter hangar.

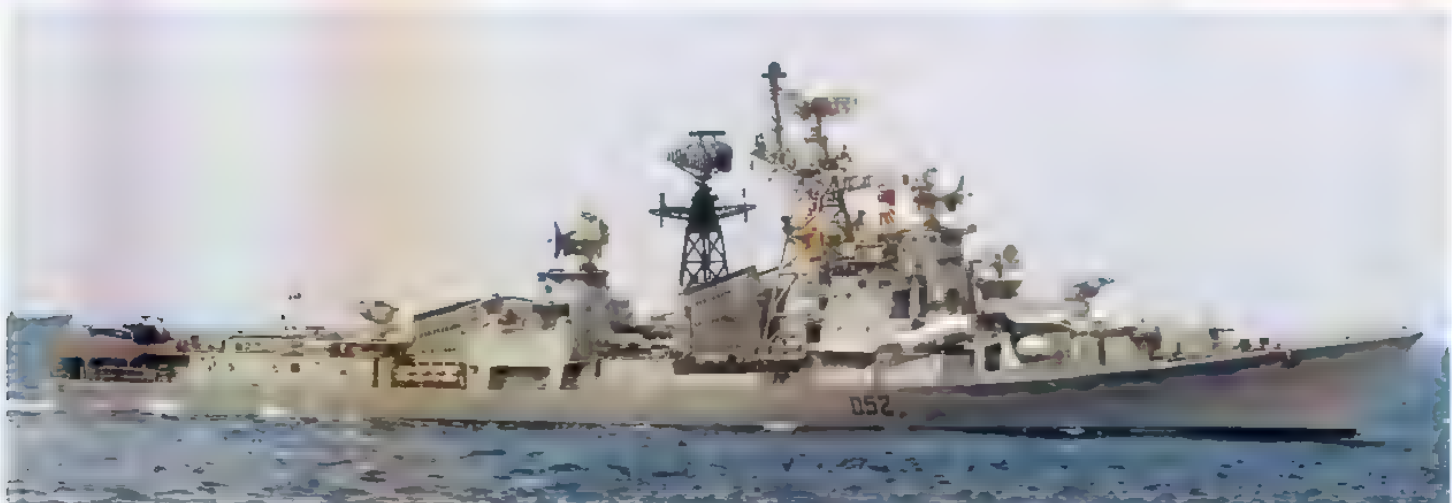
reached by a lift from the flight deck, to replace the
after 76 mm twin mount. Recent modifications have
led to some differences in structure. While D 52 and
D 53 remain unmodified, four Brahmos missile launchers
have replaced the forward SS-N-2D mountings in
D 51 while, in D 54 and D 55, an 8-cell Brahmos VLS
system has been installed in lieu of the aft SA-N 1
launcher. D 54 and D 55 have also been fitted (port
and starboard) with two octuple VLS silos for Barak
SAM and associated EL/M-2221 STGR fire-control
radars. These silos are in place of the forward AK-630
mountings. D 52 and D 53 may be similarly fitted in due
course.

Operational: All based at Vishakapatnam. Dhanush
(Prithvi) ballistic missile test launched from Rajput on
28 December 2005. Vertical launch of Brahmos was
conducted from Ranvir on 18 December 2008.



RANVIJAY

10/2004, Ships of the World / 1042765



RANA

10/2008, US Navy / 1357086

3 DELHI CLASS (PROJECT 15) (DDGHM)

Name	No	Builders	Laid down	Launched	Commissioned
DELHI	D 61	Mazagon Dock Ltd, Mumbai	14 Nov 1987	1 Feb 1991	15 Nov 1997
MYSORE	D 60	Mazagon Dock Ltd, Mumbai	2 Feb 1991	4 June 1993	2 June 1999
MUMBAI	D 62	Mazagon Dock Ltd, Mumbai	14 Dec 1992	20 Mar 1995	22 Jan 2001

Displacement, tons: 6,700 full load
 Dimensions, feet (metres): 534.8 x 57.1 x 21.3
 (163 x 174 x 6.5)

Main machinery: 4 Zorya/Mashprockt DT-59 gas turbines;
 82,820 hp(m) (61.7 MW); 2 shafts, cp props
 Speed, knots: 32
 Range, n miles: 4,500 at 18 kt
 Complement: 360 (40 officers)

Missiles: SSM: 16 Zvezda SS-N-25 (4 quad) (KH 36E Uran) ●
 active radar homing to 130 km (70.2 n miles) at 0.9 Mach,
 warhead 145 kg, sea skimmer.

SAM: 2 SA-N-7 Gadfly (Kashmir/Urgan) ● command,
 semi-active radar and IR homing to 25 km (13.5 n miles)
 at 3 Mach, warhead 70 kg. Total of 48 missiles.

4 Octuple IAI/Rafael Barak 1 VLS (D 60, D 61) ●; command
 line of sight radar or optical guidance to 10 km (5.5 n
 miles) at 2 Mach; warhead 22 kg.

Guns: 1 USSR 3.9 in (100 mm)/59 ●. AK 100; 60 rds/min to
 21.5 km (11.5 n miles); weight of shell 15.6 kg.
 4 (2 in D 61) USSR 30 mm/65 ● AK 630; 6 barrels per
 mounting; 3,000 rds/min combined to 2 km.

Torpedoes: 5 PTA 21 in (533 mm) (quin) tubes ●.
 Combination of SET 65E, anti-submarine; active/passive
 homing to 15 km (8.1 n miles) at 40 kt; warhead 205 kg
 and Type 53-65; passive wake homing to 19 km (10.3 n
 miles) at 45 kt; warhead 305 kg.

A/S mortars: 2 RBU 6000 ●; 12 tubed trainable; range
 6,000 m; warhead 31 kg.

Depth charges: 2 rails.

Countermeasures: Decoys: 2 PK2 chaff launchers ●. Towed
 torpedo decoy.

ESM: Bharat Ajanta Mk 2; intercept.

Combat data systems: Bharat IPN Shikari (IPN 10).

Radars: Air search: Bharat RAWL-02 Mk 3 (LW08) (D 60),
 Bharat RAWL-02 Mk 2 (LW04) (D 61, D 62) ●; D-band.

Air/surface search: Half Plate ●; E-band.

Fire control: 6 Front Dome ●; H/I-band (for SAM); Kite
 Screech ●; I/J-band (for 100 mm); 2 Bass Tilt (MR-123)
 (D 62); I/J-band (for AK 630), EL/M-2221 STGR (D 60, D 61) ●
 (for Barak); I/J/K-band; Plank Shave (Granit Garpun B) ●
 (for SSM); I/J-band.

Navigation: 3 Nyada MR-212/201; I-band.

Sonars: Bharat HUMVAD; hull-mounted; active search;
 medium frequency.

Bharat HUMSA; hull-mounted; medium frequency (D 62).

Indal/Gardner Reach Model 15-750 VDS

Thales ATAS; active towed array (D 62).

Helicopters: 2 Westland Sea Kings Mk 42B ● or 2 Hindustan
 Aeronautics ALH.



DELHI

(Scale 1 : 1,500), Ian Sturton / 05/7398



DELHI (before being fitted with Barak)

2/2001, Sattler/Steale / 0121369

Programmes: Built with Russian Severmoye Design Bureau
 assistance. Delhi ordered in March 1986. Programme was
 called Project 15. Much delay was caused by the breakdown
 in the central control of Russian export equipment.

Structure: The design is described as a 'stretched Rajput'
 with some Godavari features. A combination of Russian
 and Indian weapon systems fitted. Missile blast deflectors
 indicate an original intention to fit SS-N-22 Sunburn.

Samehe helo handling system. Forward funnel offset to
 port and after funnel to starboard.

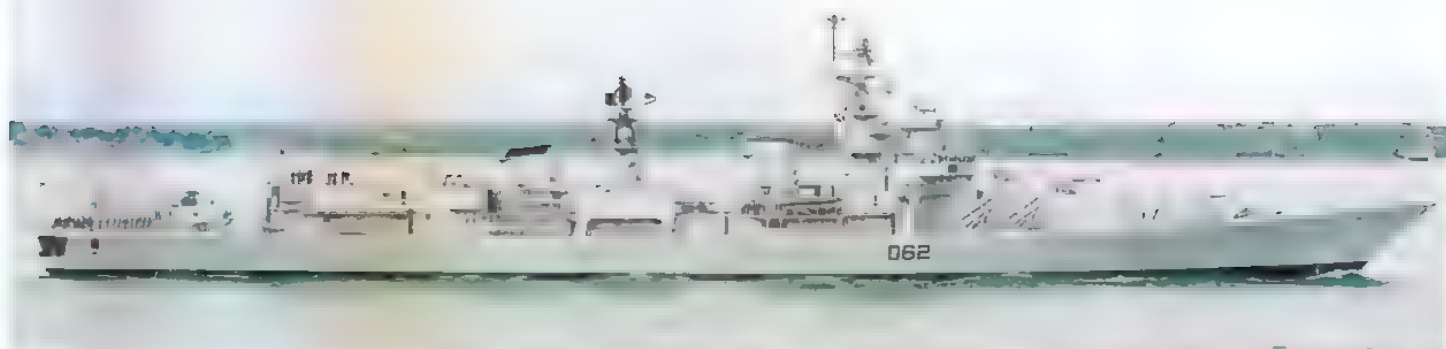
Modernisation: Barak has replaced the forward AK-630
 mountings in D 60 and D 61. The two Bass Tilt radars
 have also been replaced by EL/M-2221 STGR. D 62 is
 to be similarly refitted. SS-N-25 may be replaced by
 Brahmos.

Operational: Based at Mumbai. Have Flag facilities.



MYSORE

4/2007, Hachiro Nakai / 1166537



MUMBAI

6/2005, Maritime Photographic / 1151257



MUMBAI

7/2005, A A de Kruif / 1151118



MYSORE

4/2007, Mitsuhiro Kadota / 1166561

FRIGATES

Notes: Project 17A is for a new class of warships to complement or succeed the Project 17 Shivalik class. A Request for Information (RFI) was issued to European and Russian shipyards in December 2006 for the procurement of seven frigates, one or more of which might be built in a foreign shipyard and remaining ships in India. The initiative is reported to have been prompted by concerns about the ability of Indian shipyards to meet projected force levels.

3 + 3 (3) TALWAR (PROJECT 1135.6) CLASS (FFGHM)

Name	No	Builders	Laid down	Launched	Commissioned
TALWAR	F 40	Baltic Shipyard, St Petersburg	10 Mar 1999	12 May 2000	18 June 2003
TRISHUL	F 43	Baltic Shipyard, St Petersburg	24 Sep 1999	24 Nov 2000	25 June 2003
TABAR	F 44	Baltic Shipyard, St Petersburg	26 May 2000	25 May 2001	19 Apr 2004
-	-	Yantar Shipyard, Kaliningrad	27 July 2007	2009	2011
-	-	Yantar Shipyard, Kaliningrad	28 Nov 2007	2010	2012
-	-	Yantar Shipyard, Kaliningrad	11 June 2008	2010	2012

Displacement, tons: 3,820 standard, 4,035 full load
Dimensions, feet (metres): 409.6 x 49.9 x 15.1
(124.8 x 15.2 x 4.6)

Main machinery: COGAG, 2 Zorya DN-59 gas turbines, 43,448 hp/m (34.2 MW); 2 Zorya UGT 6000 gas turbines; 16,628 hp/m (12.4 MW); 2 shafts; fixed propellers

Speed, knots: 32

Range, n miles: 4,850 at 14 kt; 1,600 at 30 kt

Complement: 180 (18 officers)

Missiles: SSM 8 SS-N-27 Novator Alfa Klub-N (Batch 1) (3K-54-TE) active radar homing to 180 km (97.2 n miles) at 0.7 Mach (cruise) and 2.5 Mach (attack); warhead 450 kg. 8 Brahmos PJ-10 (Batch 2); active/passive radar terminal homing to 290 km (157 n miles) at 0.9 Mach, warhead 513 kg. VLS silo.

SAM: SA-N-7 Gadfly (Kashmir/Uragan) single launcher command, semi-active radar and IR homing to 25 km (13.5 n miles) at 3 Mach; warhead 70 kg. 24 9M 317 missiles.

SAM/Guns: 2 CADS-N-1 (Kashtan) each has twin 30 mm Gatling combined with 8 SA-N-11 (Grison) and Hot Flash/Hot Spot radar/optronic director. Laser beam guidance for missiles to 8 km (4.4 n miles) warhead 9 kg; 9,000 rds/min (combined) to 1.5 km for guns.

Guns: 1-3.9 in (100 mm) 70 A 190E, 80 rds/min to 21.5 km (11.6 n miles); weight of shell 15.6 kg.

Torpedoes: 4 DTA-53 21 in (533 mm) (2 twin) fixed launchers.

A/S mortars: 1 RBU 6000 12-barrelled launcher range 6 km; warhead 31 kg.

Countermeasures: Decoys: 2 PK 2 chaff launchers (to be fitted).

ESM ASOR (TK 25E 5), jammer.

Combat data systems: Trebovaniye-M.

Radars: Air search: Top Plate (Fregat-M2EM) 3D; E/F-band. Air/surface search: Cross Dome (Positiv-E) E; E/F-band.



TALWAR I

(Scale 1 : 1,200, Ian Sturton / 1186841)



TALWAR II

(Scale 1 : 1,200, Ian Sturton / 1186840)

Fire control: 4 Front Dome (MR-90) H/I-band (for SA-N-7). Plank Shave (Garpun-B) I/J-band (for SSM). Ratep 5P-10E Puma I-band (for 100 mm gun).

Navigation: Kelvin Hughes Nucleus 6000 E/F-band. 2 Nyada MR 212/201 (Palm Frond) I-band.

Sonars: HUMSA; hull mounted, active/passive medium frequency.

VDS (may be fitted in future).

Helicopters: 1 Ka-28/Ka-31 Helix or ALH.

Programmes: Contract placed in 1997 and confirmed 21 July 1998 for the first batch of three modified Krivak IIIs.

Mutual interference difficulties reportedly delayed entry into service of first of class by one year. An option for a second batch of three ships was exercised on 14 July 2006. Construction at Yantar Shipyard, Kaliningrad, started in July 2007. The first ship is to be delivered after five years and the other two ships at six-month intervals thereafter. Negotiations for the procurement of three Batch 3 ships began in early 2009.

Structure: Batch 1 are the first surface units to be fitted with the SS-N-27 missile. This may be replaced by the Brahmos missile in Batch 2.



TABAR

6/2006, Chris Sattler / 1164473



TABAR

5/2004, Harald Carstens / 1042274

0 + 3 SHIVALIK (PROJECT 17) CLASS (FFGHM)

Name	No	Builders	Laid down	Launched	Commissioned
SHIVALIK	-	Mazagon Dock Ltd, Mumbai	11 July 2001	18 Apr 2003	2009
SATPURA	-	Mazagon Dock Ltd, Mumbai	Oct 2002	4 June 2004	2009
SAHYADRI	-	Mazagon Dock Ltd, Mumbai	17 Mar 2003	27 May 2005	2010

Displacement, tons: 4,600 standard; 5,300 full load

Dimensions, feet (metres): 469.3 x 55.5 x 17.4
(144.0 x 16.9 x 5.3)

Main machinery: CODOG; 2 GE LM 2,500 gas turbines; 44,000 hp (32.8 MW); 2 SEMT-Pielstick PA6 STC diesels, 15,200 hp (11.3 MW); 2 cp propellers.

Speed, knots: 30

Range, n miles: 4,500 at 18 kt; 1,600 at 30 kt

Complement: 257 (35 officers)

Missiles: SSM: 8 SS-N-27 Novator Alfa Klub-N (3K-54-TE) ●; active radar homing to 180 km (97.2 n miles) at 0.7 Mach (cruise) and 2.5 Mach (attack); warhead 450 kg; VLS silo SAM: SA-N-7 Gadfly (Kashmir/Urgan) single launcher 6 ● command, semi-active radar and IR homing to 25 km (13.5 n miles) at 3 Mach; warhead 70 kg. 24 9M38M1 missiles.

SAM/Guns: 1 octuple Barak VLS ●; command line-of-sight radar or optical guidance to 10 km (5.5 n miles) at 2 Mach, warhead 22 kg.

Guns: 1 OTO Melara 3 in (76 mm)/62 Super Rapid ●, 120 rds/min to 16 km (8.7 n miles); weight of shell 6 kg.

Torpedoes: 6—324 mm ILAS 3 (2 triple) ●

A/S mortars: 2 RBU 6000 12-barrelled launcher ● range 6 km; warhead 31 kg.

Countermeasures: Decoys: 2 PK 2 chaff launchers.

ESM: Bharat Ajanta; intercept.

SHIVALIK

ECM ASOR (TK 25E-5); jammer.

Combat data systems: BEL EMCCA.

Radars: Air search: Bharat RAWL-02 Mk 3 (LW08) ●.

E/F-band.

Air/surface search: Top Plate (Fregat-M2EM) ● 3D; D/E-band.

Fire control: 2 BEL Shukri (based on Contraves Seaguard) ● (for 76 mm); I/K-bands.

1 Bharat Aparna (modified Plank Shave/Garpun B) ● (for SSMs); I/J-bands.

4 Front Dome (MR 90) ● (for SA-N-7); H/I-band.

Navigation: 1 BEL Rashmi; I-band.

Sonars: Bharat HUMSA; hull-mounted; active search and attack, medium frequency.

VDS; active search; medium frequency.

(Scale 1 : 1,200), Ian Sturton / 056924/

Helicopters: 1 Sea King Mk 42B ●.

Programmes: Three Project 17 ships approved in June 1999 and construction of the first of class began in 2001. Initially, building was rapid but the production process has taken much longer than first estimates. While Project 17A for seven follow-on ships has been initiated, these may be to a different design.

Structure: An enlarged and modified version of the Talwar class, the aft section resembles the Delhi class. Signature reduction (IR and RCS) features are believed to be incorporated. Details are speculative.

Operational: Sea trials of *Shivalik* are planned to have started by mid-2009.

3 GODAVARI CLASS (PROJECT 16) (FFGHM)

Name	No	Builders	Laid down	Launched	Commissioned
GODAVARI	F 20	Mazagon Dock Ltd, Mumbai	2 June 1978	15 May 1980	10 Dec 1983
GOMATI	F 21	Mazagon Dock Ltd, Mumbai	1981	19 Mar 1984	15 Apr 1988
GANGA	F 22	Mazagon Dock Ltd, Mumbai	1980	21 Oct 1981	30 Dec 1985

Displacement, tons: 4,209 full load

Dimensions, feet (metres): 414.9 x 47.6 x 14.8 (29.5 sonar)
(126.5 x 14.5 x 4.5; 9)

Main machinery: 2 Babcock & Wilcox boilers; 550 psi (38.7 kg/cm²); 850°F (450°C); 2 turbines; 30,000 hp (22.4 MW); 2 shafts

Speed, knots: 28

Range, n miles: 4,500 at 12 kt

Complement: 313 (40 officers including 13 aircrew)

Missiles: SSM: 4 SS-N-2D Styx ●; active radar (Mod 1) or IR (Mod 2) homing to 83 km (45 n miles) at 0.9 Mach; warhead 513 kg, sea-skimmer at end of run. Indian designation.

SAM: 1 Octuple IAI/Rafael Barak VLS ●; command line of sight radar or optical guidance to 10 km (5.5 n miles) at 2 Mach; warhead 22 kg.

Guns: 1 OTO Melara 76 mm/62 Super Rapid ●; 120 rds/min to 16 km (8.7 n miles); weight of shell 6 kg.

8—30 mm/65 (4 twin) AK 230 ●, 500 rds/min to 5 km (2.7 n miles); weight of shell 0.54 kg.

2—7.63 mm MGs.

Torpedoes: 6—324 mm ILAS 3 (2 triple) tubes ●. Whitehead A244S, anti-submarine; active/passive homing to 7 km (3.8 n miles) at 33 kt; warhead 34 kg (shaped charge).

Godavari has tube modifications for the Indian NST 58 version of A244S.

Countermeasures: Decoys: 2 chaff launchers (Super Barricade). Graseby G738 towed torpedo decoy.

ESM/ECM: Selenia INS-3 (Bharat Ajanta and Elettronica TQN-2); intercept and jammer.

Combat data systems: Selenia IPN-10 action data automation. Inmarsat communications (JRC) ●.

Weapons control: MR 301 MFCS. MR 103 GFCS.

Radars: Air search: Bharat RAWL-02 Mk 3 (LW08) ●; D-band.

Air/surface search: EL/M-2238 STAR ●, 3D; E/F-band.

Navigation/helo control: 2 Signal ZW06 ●; or Don Kay, I-band.

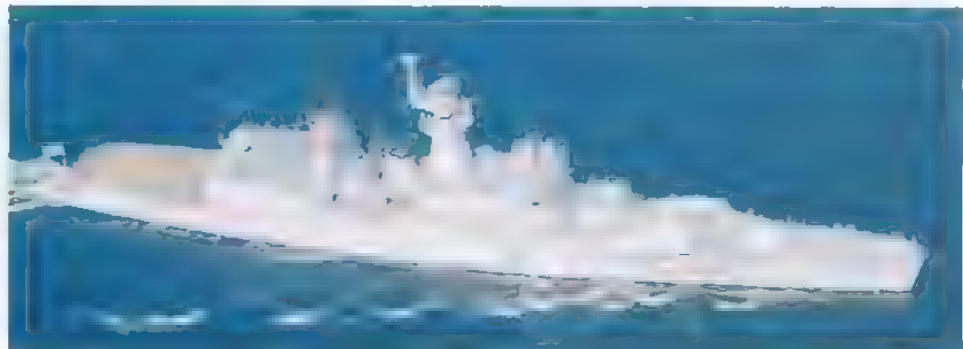
Fire control: 2 Drum Tilt ●; H/I-band (for 30 mm).

EL/M-2221 STGR ●, I/J/K-band.

Bel Lynx ●, I band (for 76 mm).

Sonars: Bharat APSOH; hull-mounted; active panoramic search and attack; medium frequency.

GANGA



(Scale 1 : 1,200), Ian Sturton / 1166539

GANGA

Fathoms Oceanic VDS. Thomson Sintra DSBV 62 (in *Ganga*); passive towed array; very low frequency. Type 162M; bottom classification; high frequency.

Helicopters: 2 Sea King or 1 Sea King and 1 Chetak ●.

Modernisation: Barak launchers have replaced SA-N-4 in all three ships. 57 mm gun has been replaced by OTO Melara 76 mm.

Structure: A further modification of the original Leander design with an indigenous content of 72 per cent and a larger hull. Poor welding is noticeable in *Godavari*. *Gomati* is the first Indian ship to have digital electronics in her combat data system.

Operational: French Samahé helicopter handling equipment is fitted. Usually only one helo is carried with more than one crew. These ships have a unique mixture of Russian, Western and Indian weapon systems which has inevitably led to some equipment compatibility problems.

2/2006, M Mazumdar / 1164474



GODAVARI

10/2008, US Navy / 1350197

3 BRAHMAPUTRA CLASS (PROJECT 16A) (FFGHM)

Name	No	Builders	Laid down	Launched	Commissioned
BRAHMAPUTRA	F 31	Garden Reach SY, Kolkata	1989	29 Jan 1994	14 Apr 2000
BETWA	F 39	Garden Reach SY, Kolkata	22 Aug 1994	26 Feb 1998	7 July 2004
BEAS	F 37	Garden Reach SY, Kolkata	26 Feb 1998	2002	11 July 2005

Displacement, tons: 4,450 full load

Dimensions, feet (metres): 414.9 x 47.6 x 14.8 (29.5 sonar)
(126.5 x 14.5 x 4.5, 9)

Main machinery: 2 boilers; 550 psi (38.7 kg/cm²); 850°F (450°C); 2 Bhopal turbines; 30,000 hp (22.4 MW); 2 shafts

Speed, knots: 27. Range, n miles: 4,500 at 12 kt

Complement: 351 (31 officers and 13 aircrew)

Missiles: SSM: 16 SS-N-25 (4 quad) (KH-35E Uran) ●; active radar homing to 130 km (70.2 n miles) at 0.9 Mach; warhead 145 kg; sea skimmer.

SAM: 1 Octuple IAI/Rafael Barak VLS ●; command line of sight radar or optical guidance to 10 km (5.5 n miles) at 2 Mach; warhead 22 kg.

Guns: OTO Melara 76 mm/62 ●; 85 rds/min to 16 km (8.6 n miles) weight of shell 6 kg
4–30 mm/65 AK 630 ●; 6 barrels per mounting; 3,000 rds/min combined to 2 km.

Torpedoes: 6–324 mm ILAS 3 (2 triple) tubes ●. Whitehead A244S, anti-submarine; active/passive homing to 7 km (3.8 n miles); at 33 kt; warhead 34 kg (shaped charge).

Countermeasures: Decoys: 2 chaff launchers (Super Barricade in due course). Graseby G738 towed torpedo decoy.

ESM: Selenia (NS-3 (Bharat Ajanta) ●; intercept

Combat data systems: BEL EMCCA. Inmarsat communications (JRC)



BRAHMAPUTRA

(Scale 1 : 1,200), Ian Sturton / 0121334

Weapons control: MR 103 GFCS

Radars: Air search: Bharat RAWL-02 Mk 3 (LW08) ●; D-band.

Air/surface search: Bharat RAWL-03 (using DA 08 antenna) (PFN 513) ●; E/F-band.

Navigation/helo control: Decca Bridgemaster; I-band. BEL Rashmi (PIN 524) (using ZW 06 antenna); I-band.

Fire control: 2 BEL Shikari (based on Contraves Seaguard) ● (for 76 mm and Ak 630), I/K bands

EL/M-2221 STGR (for Barak); I/J/K-bands

Bharat Aparna (modified Plank Sheva/Garpun B) ● (for SSM); I/J-band.

Selenia RAN (for SAM); I-band.

Sonars: Bharat HUMSA (APSOH); hull-mounted; active panoramic search and attack, medium frequency. Theles towed array.

Helicopters: 2 Sea King or 1 Sea King and 1 Chetak ●.

Programmes: Project 16A. Progress has been very slow. Structure: The main difference is the replacement of the Godavari SS-N-2 by SS-N-25. Following the cancellation of the Trishul SAM programme, Barak has been fitted in its place. Gun armament has also improved.



BETWA

3/2006 / 116472



BEAS

3/2006*, Michael Nitz / 1305306

3 NILGIRI (LEANDER) CLASS (FFH)

Name	No	Builders	Laid down	Launched	Commissioned
DUNAGIRI	F 36	Mazagon Dock Ltd, Mumbai	25 Jan 1973	9 Mar 1974	5 May 1977
TARAGIRI	F 41	Mazagon Dock Ltd, Mumbai	15 Oct 1976	25 Oct 1976	16 May 1980
VINDHYAGIRI	F 42	Mazagon Dock Ltd, Mumbai	6 Nov 1976	12 Nov 1977	8 July 1981

Displacement, tons: 2,962 full load (F 35-F 36), 3,039 full load (F 41-F 42)

Dimensions, feet (metres): 372 x 38.1 (F 35-F 36); 44.3 (F 41 and F 42) x 18 (113.5 x 11; 13.5 x 5.5)

Main machinery: 2 Babcock & Wilcox boilers; 550 psi (38.7 kg/cm²); 850°F (450°C); 2 turbines; 30,000 hp (22.4 MW); 2 shafts

Speed, knots: 27, 28 (F 41 and F 42)

Range, n miles: 4,500 at 12 kt

Complement: 267 (17 officers), 300 (20 officers) (F 41 and F 42)

Guns: 2 Vickers 4.5 in (114 mm)/45 (twin) Mk 8 ●; 20 rds/min to 19 km (10.4 n miles) anti-surface; 6 km (3.3 n miles) anti-aircraft, weight of shell 25 kg (4–30 mm/65 (2 twin) AK 230 ●; 500 rds/min to 5 km (2.7 n miles); weight of shell 0.54 kg
2 Oerlikon 20 mm/70 ●; 800 rds/min to 2 km.

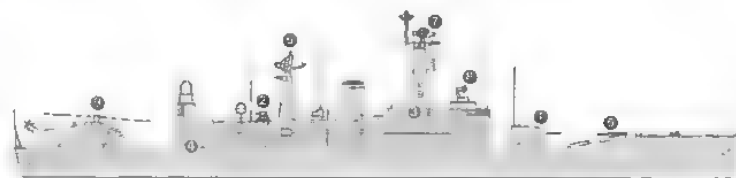
Torpedoes: 6–324 mm ILAS 3 (2 triple) tubes (F 41 and F 42) ●. Whitehead A244S or Indian NST 58 version; anti-submarine, active/passive homing to 7 km (3.8 n miles) at 33 kt, warhead 34 kg (shaped charge)

A/S mortars: 1 Bofors 375 mm twin-tubed launcher (F 41 and F 42) ●; range 1,800 m.
1 Limbo Mk 10 triple-tubed launcher (remainder); range 1,000 m; warhead 92 kg.

Countermeasures: Decoys: Graseby 738; towed torpedo decoy.

ESM: Bharat Ajanta; intercept, FH5 Telegon D/F.
ECM: Racal Cutlass; jammer.

Combat data systems: Signaal DS-22.



VINDHYAGIRI

(Scale 1 : 1,200), Ian Sturton / 1042089

Radars: Air search: Bharat RAWL-02 Mk 2 (LW04) ●; D-band. Air/surface search. Signaal DA 05 ●; E/F-band.
Navigation: Signaal ZW 06, I-band.
Fire control: Signaal M 45 ●; I/J-band.
IFF Type 944; 954M.

Sonars: Westinghouse SQS-505; hull-mounted; active search and attack; medium frequency. Type 170; active attack; high frequency.
Westinghouse VDS (F 36 only), active; medium frequency. Thomson Diodon VDS in F 41 and F 42.

Helicopters: 1 Chetak or 1 Sea King Mk 42 (in *Taragiri* and *Vindhya giri*) ●.

Programmes: The first major warships built in Indian yards to a UK design with a 60 per cent indigenous component. An ex-UK Leander class was acquired in 1995 and is listed under Training Ships.

Modernisation: The VDS arrays are installed inside towed bodies built by Fathom Oceanology Ltd of Canada. The transducer elements in both cases are identical. AK 230 guns have replaced the obsolete Seacat. *Vindhya giri* modified with UAV control stations above the hangar in order to operate Heron II UAVs.

Structure: In the first two the hangar was provided with telescopic extension to take the Alouette III helicopter while in the last pair, a much-changed design, the Mk 10 Mortar has been removed as well as VDS and the aircraft space increased to make way for a Sea King helicopter with a telescopic hangar and Canadian Beartrap haul-down gear. In these two an open deck has been left below the flight deck for handling mooring gear and there is a cut-down to the stern.

Operational: *Himgiri* was decommissioned on 6 May 2005 and *Udaygiri* in 2007.



VINDHYAGIRI

11/2003 / 1042277



DUNAGIRI

2/2001, Michael Nitz / 0634080

CORVETTES

4 KORA CLASS (PROJECT 25A) (FSGHM)

Name	No	Builders	Laid down	Launched	Commissioned
KORA	P 61	Garden Reach SY, Kolkata	10 Jan 1990	23 Sep 1992	10 Aug 1998
KIRCH	P 62	Garden Reach SY, Kolkata/Mazagon Dock	31 Jan 1990	28 Sep 1995	22 Jan 2001
KULISH	P 63	Garden Reach SY, Kolkata	4 Oct 1995	18 Aug 1997	20 Aug 2001
KARMAK	P 64	Garden Reach SY, Kolkata/Mazagon Dock	27 Aug 1997	6 Apr 2000	4 Feb 2004

Displacement, tons: 1,480 full load
Dimensions, feet (metres): 298.9 x 34.4 x 14.8 (91.7 x 10.5 x 4.5)
Main machinery: 2 SEMT-Pielstick/Kirloskar 18 PA6 V 280 diesels; 14,400 hp(m) (10.58 MW) sustained; 2 shafts; 1 PS cp props
Speed, knots: 25
Range, n miles: 4,000 at 16 kt
Complement: 134 (14 officers)



(Scale 1 : 900), Ian Sturton / 0064715

Missiles: SSM. 8 Zvezda SS-N-25 (2 quad) (Kh 35E Uran) ●; active radar homing to 130 km (70.2 n miles) at 0.9 Mach; warhead 145 kg, sea skimmer.
SAM: 2 SA-N-5 Grail ●; manual aiming; IR homing to 6 km (3.2 n miles) at 1.5 Mach; altitude to 2,500 m (8,000 ft); warhead 1.5 kg.
Guns: 1 USSR 3 in (76 mm)/59 AK 176 (P 61) ●, 120 rds/min to 15 km (8.0 n miles); weight of shell 5.9 kg 1 Otobreda 76 mm/62 (P 62, P 63 and P 64).
 2-30 mm/65 AK 630 ●; 6 barrels per mounting; 3,000 rds/min to 2 km
Countermeasures: Decoys: 2 PK 10 chaff launchers ● 2 BEL TOTED; towed torpedo decoys.
ESM: Bharat Ajanta P Mk II intercept ●

KORA
Combat data systems: Bharat Vympal IPN-10.
Radars: Air search: Cross Dome ●; E/F-band; range 130 km (70 n miles).
Air/surface search: Plank Shave (Granit Harpun B) ●; I/J-band.
Fire control: Bass Tilt (P 61) ●; H/I-band; BEL Lynx (P62-64); band
Navigation: Bharat 1245; I-band.
IFF: Square Head.
Helicopters: Platform only ● for Chetak (to be replaced by Hindustan Aeronautics ALH in due course)

Programmes: First pair ordered in April 1980 and second pair in October 1994. Programme slowed by delays in provision of Russian equipment and it is not clear whether further vessels are to be built.
Structure: Very similar to the original Khukri class except that SS-N-25 has replaced SS-N-2. Stabilisers fitted
Operational: Sea trials for Kirch and Kulish probably took place in 2000. All 16 SS-N-25 can be fired in one salvo.



KIRCH

3/2004, Bob Fildes / 1047713



KULISH

10/2008, Michael Nitz / 1353088

4 KHUKRI CLASS (PROJECT 25) (FSGHM)

Name	No	Builders	Laid down	Launched	Commissioned
KHUKRI	P 49	Mazagon Dock Ltd, Mumbai	27 Sep 1985	3 Dec 1986	23 Aug 1989
KUTHAR	P 46	Mazagon Dock Ltd, Mumbai	13 Sep 1986	15 Apr 1989	7 June 1990
KIRPAN	P 44	Garden Reach SY, Kolkata	16 Nov 1985	16 Aug 1988	12 Jan 1991
KHANJAR	P 47	Garden Reach SY, Kolkata	15 Nov 1985	16 Aug 1988	22 Oct 1991

Displacement, tons: 1,423 full load
 Dimensions, feet (metres): 298.9 x 34.4 x 13.1
 (91.1 x 10.5 x 4)

Main machinery: 2 SEMT-Pielstick/Kirloskar 18 PA6 V 280 diesels; 14,400 hp(m) (10.58 MW) sustained; 2 shafts, LIPS cp props

Speed, knots: 24

Range, n miles: 4,000 at 16 kt

Complement: 112 (12 officers)

Missiles: SSM: 4 SS-N-2D Mod 1 Styx (2 twin) launchers ●; IR homing to 83 km (45 n miles) at 0.9 Mach; warhead 513 kg

SAM: SA-N-5 Grail ●; manual aiming; IR homing to 6 km (3.2 n miles) at 1.5 Mach; altitude to 2,500 m (8,000 ft); warhead 1.5 kg.

Guns: 1 USSR 3 in (76 mm)/59 AK 176 ●; 120 rds/min to 15 km (8.0 n miles); weight of shell 5.9 kg. 2 - 30 mm/65 AK 630 ●; 6 barrels per mounting; 3,000 rds/min to 2 km

Countermeasures: Decoys: 2 PK 18 chaff launchers ●.

ESM: Bharat Ajanta P; intercept.

Combat data systems: Seenia IPN-10 (Khukri); Bharat Vympal IPN-10 (remainder).

KHUKRI

Radars: Air search: Cross Dome ●; E/F-band; range 130 km (70 n miles).

Air/surface search: Plank Shave ●; I-band.

Fire control: BassTilt ●; H/I-band.

Navigation: Bharat 1245; I-band.

Helicopters: Platform only ● for Chetak (to be replaced by HAL Dhruv in due course).

Programmes: First two ordered December 1983, two in 1985. The diesels were assembled in India under licence

by Kirloskar. Indigenous content of the whole ship is about 65 per cent.

Structure: The reported plan was to make the first four ASW ships, and the remainder anti-aircraft or general purpose. However *Khukri* has neither torpedo tubes nor a sonar (apart from an Atlas Elektronik echo-sounder), so if the plan is correct these ships will rely on an ALH helicopter which has dunking sonar and ASW torpedoes and depth charges. All have fin stabilisers and full air conditioning.

Operational: All based at Vishakhapatnam



(Scale 1 : 900), Ian Sturton / 0064713



KUTHAR

2/2006, M Mazumdar / 11644/1



KIRPAN

2/2001, Michael Nitz / 0534081



KUTHAR

4/2007, Mitsuhiro Kadota / 1166560

0 + 4 (8) PROJECT 28 (CORVETTES) (FFG)

Name	No	Builders	Laid down	Launched	Commissioned
-	-	Garden Reach Shipbuilding & Engineering, Kolkata	18 Nov 2006	2009	2010
-	-	Garden Reach Shipbuilding & Engineering, Kolkata	27 Sep 2007	2010	2011

Displacement, tons: 2,500 full load
Dimensions, feet (metres): 358.3 × 48.5 × 7.0
(109.2 × 14.17 × 3.72)

Main machinery: CODAD: 4 Pielstick 12PA 6 STC diesels;
22,030 hp (16.2 MW); 2 shafts; cp props
Speed, knots: 25
Range, n miles: 4,000 at 12 kt
Complement: 123

Missiles: SSM: SS-N-27 Novator Alfa Klub-N (3K-54-TE),
active radar homing to 220 km (119 n miles) at
0.7 Mach (cruise) and 2.5 Mach (dive); warhead 450 kg;
VLS s/w.

SAM: 1-16 cell IAI/Rafael Barak VLS; command line of
sight radar or optical guidance to 10 km (5.5 n miles) at
2.0 Mach; warhead 22 kg.

Guns: 1 Otobreda 3 in (76 mm)/62 Super Rapid; 120 rds/
min to 16 km (8.7 n miles); weight of shell 6 kg
2—30 mm/65 AK 630; 6 barrels per mounting; 3,000 rds/
min combined to 2 km.

Torpedoes: 6—324 or 533 mm ILAS (2 triple); Eurotorp
MU-90.

A/S mortars: 2 RBU 6000 12-barrelled launchers; range
6 km; warhead 31 kg.

Countermeasures: Decoys: 4 Kavach chaff/flare decoy
launchers. Towed torpedo decoy.

ESM: To be announced.

ECM: To be announced.

Combat data systems: BEL CMS-28. Datalinks: Satcom.



PROJECT 28

(Scale 1 : 900), Ian Sturton / 1353097

Weapons control: EO director.

Radars: Surveillance: Bharat Revathi, 3D; E/F-band.

Fire control: Plank Shave (Garpun B); I-band (for SSM)

Bel Lynx (for 76 mm); I-band.

2 Elta EL/M-2221 STGR; I/J/K-band (for Barak)

Navigation: Decca Bridgmaster; I-band.

Sonars: Hull-mounted sonar. Active/passive towed array.

Helicopters: 1 Ka-28PL or HAL Dhruv.

Programmes: Multipurpose corvette designed to operate in
Indian offshore waters. First four units ordered in 2003

and first steel cut for first of class on 12 August 2005.
The first of class was reportedly laid-down in 2006 and
further ships are likely to follow at 18-month intervals.
A class of 12 is planned.

Structure: The design is understood to be the result of a
joint venture by the Indian Navy's DGND SSG (Directorate
General Naval Design Surface Ship Group) and Garden
Reach Shipbuilder's in-house design team. Details have
not been formally released and are speculative. Measures
to reduce acoustic, magnetic, IR and radar cross-section
signatures are reported to have been incorporated. The
hull may use amagnetic steel.

12 VEER (TARANTUL I) CLASS (PROJECT 1241RE) (FSGM)

Name	No	Builders	Laid down	Launched	Commissioned
VEER	K 40	Volodarski, Rybinsk	1984	Oct 1986	26 Mar 1987
NIRBHAK	K 41	Volodarski, Rybinsk	1985	Oct 1987	21 Dec 1987
NIPAT	K 42	Volodarski, Rybinsk	1986	Nov 1988	5 Dec 1988
NISHANK	K 43	Volodarski, Rybinsk	1987	June 1989	2 Sep 1989
NIRGHAT	K 44	Volodarski, Rybinsk	1988	Mar 1990	4 June 1990
VIBHUTI	K 45	Mazagon Dock, Mumbai	28 Sep 1987	26 Apr 1990	3 June 1991
VIPUL	K 46	Mazagon Dock, Mumbai	29 Feb 1988	3 Jan 1991	16 Mar 1992
VINASH	K 47	Goa Shipyard	30 Jan 1989	24 Jan 1992	20 Nov 1993
VIDYUT	K 48	Goa Shipyard	27 May 1990	12 Dec 1992	16 Jan 1995
NASHAK	K 83	Mazagon Dock, Mumbai	21 Jan 1991	12 Nov 1993	29 Dec 1994
PRABAL	K 92	Mazagon Dock, Mumbai	31 Aug 1998	28 Sep 2000	11 Apr 2002
PRALAYA	K 91	Goa Shipyard	14 Nov 1998	14 Dec 2000	18 Dec 2002

Displacement, tons: 455 full load, 477 full load (K 92 and K 91)
Dimensions, feet (metres): 184.1 × 37.7 × 8.2
(56.1 × 11.5 × 2.5)

Main machinery: COGAG (M15E); 2 Nikolayev Type DR 77
(DS 71 in K 92) gas turbines; 16,016 hp(m) (11.77 MW)
sustained; 2 Nikolayev Type DR 76 gas turbines with
reversible gearboxes; 4,993 hp(m) (3.67 MW) sustained;
2 shafts
Speed, knots: 35. Range, n miles: 2,000 at 20 kt; 400 at 36 kt
Complement: 41 (5 officers)

Missiles: SSM: 4 SS-N-2D Mod 1 Styx; IR homing to 83 km
(45 n miles) at 0.9 Mach; warhead 513 kg; sea-skimmer
at end of run. 16 (4 quad) SS-N-25 (Kh 35 Uran) in K 91
and K 92; active radar homing to 130 km (70.2 n miles) at
0.9 Mach; warhead 145 kg; sea skimmer.

SAM: SA-N-5 Grail quad launcher; manual aiming; IR
homing to 6 km (3.2 n miles) at 1.5 Mach; warhead 1.5 kg.

Guns: 1 USSR 3 in (76 mm)/59 AK 176; 120 rds/min to 15 km
(8 n miles); weight of shell 5.9 kg

1 OTO Melara 3 in (76 mm)/62 Super Rapid (K 91 and K 92);
120 rds/min to 16 km (8.7 n miles); weight of shell 6 kg

2—30 mm/65 AK 630; 6 barrels per mounting; 3,000 rds/
min combined to 2 km. 2—7.62 mm MGs.

Countermeasures: Decoys: PK 16 chaff launcher.

ESM: Bharat Ajanta P Mk II; Intercept.

Weapons control: Hood Wink optronic director.

Radars: Air/surface search. Plank Shave; E-band.

Cross Dome (K 91 and K 92); E/F-band.



PRALAYA

3/2008*, Guy Toremans / 1305305

Navigation: Mius; I-band

Fire control: Bass tilt; H/I-band.

BEL Lynx (K 91 and K 92) (for guns); I-band; Bharat Aparna
(modified Plank Shave/Harpun B) (for SSM); I/J-band.

IFF: Salt Pot, Square Head A.

Programmes: First five are USSR Tarantul I class built for
export. Six further of the same type built in India. Two
further craft, armed with the SS-N-25 missile were

delivered in 2002. It is not clear whether there are to be
further vessels.

Structure: K 92 and K 91 are to a modified design to
accommodate the SS-N-25 missile. Principal differences
are the bridge and mast configurations.

Operational: All form the 22nd Missile Vessel Squadron at
Mumbai although K 41, 43 and 47 are reported to have
moved to Vishakapatnam. Pralaya sunk after a collision
on 21 April 2006.



PRABAL

3/2007, Marco Ghiglino / 1166559

4 ABHAY (PROJECT 1241 PE) (PAUK II) CLASS (FSM)

Name	No	Builders	Commissioned
ABHAY	P 33	Volodarski	10 Mar 1989
AJAY	P 34	Volodarski	24 Jan 1990
AKSHAY	P 35	Volodarski	10 Dec 1990
AGRAY	P 36	Volodarski	30 Jan 1991

Displacement, tons: 485 full load
Dimensions, feet (metres): 191.9 x 33.5 x 11.2 (58.5 x 10.2 x 3.4)
Main machinery: 2 Type M 521 diesels, 16,184 hp(m) (11.9 MW) sustained; 2 shafts
Speed, knots: 28
Range, n miles: 2,400 at 14 kt
Complement: 32 (6 officers)

Missiles: SAM: SA-N-5/8 Grail quad launcher; manual aiming, IR homing to 6 km (3.2 n miles) at 1.5 Mach; warhead 1.5 kg.
Guns: 1 USSR 3 in (76 mm)/69 AK 176; 120 rds/min to 15 km (8 n miles); weight of shell 5.9 kg
 1—30 mm/66 AK 630, 6 barrels, 3,000 rds/min combined to 2 km.
Torpedoes: 4—21 in (533 mm) (2 twin) tubes. SET-65E, active/passive homing to 15 km (8.1 n miles) at 40 kt; warhead 205 kg.
A/S mortars: 2 RBU 1200 5-tubed fixed; range 1,200 m; warhead 34 kg
Countermeasures: 2 PK 16 chaff launchers.
Radars: Air/surface search. Cross Dome; E/F-band. Navigation Pechora; I-band
Fire control: Bass Tilt; H/I-band.
Sonars: Rat Tail VDS (on transom); attack; high frequency.



AJAY

3/2007, Marco Ghigino / 116655R

Programmes: Modified Pauk II class built in the USSR at Volodarski, Rybinsk for export. Original order in late 1983 but completion of the first delayed by lack of funds and the order for the others was not reinstated until 1987. Names associated with former coastal patrol craft.
Modernisation: There are plans to re-engine all four ships.

Structure: Has a longer superstructure than the Pauk I, larger torpedo tubes and improved electronics.
Operational: Classified as ASW ships. Comprise 23rd Patrol Boat Squadron based at Mumbai. Agray was damaged by an onboard explosion on 6 February 2004 but is reportedly under repair at Mumbai

SHIPBORNE AIRCRAFT

Notes: (1) Plans to procure up to eight second-hand Sea Harriers from the UK were abandoned in late 2006
 (2) Replacement of the Sea King fleet was initiated in January 2006 when Requests for Proposals were issued to eight overseas suppliers. Following evaluation, a contract is expected in 2009. In the meantime six UH-3H Sea Kings are reported to have been acquired for operation from Jelashwa following transfer in 2007. The aircraft are to be used for commando assault, vertrep and general patrol duties
 (3) The maiden flight of the naval version of the HAL Tejas light combat aircraft is expected in 2009. While the Indian Navy has expressed interest, there is no commitment to procure the aircraft.

Numbers/Type: 12/4 MIG 29K Fulcrum/29 KUB
Operational speed: 750 kt (1,400 km/h)
Service ceiling: 57,000 ft (17,400 m).
Range: 1,400 n miles (2,600 km).
Role/Weapon systems: All-weather single-seat fighter with attack capability, optimised for ski-jump take off, is to be main weapon of Admiral Gorshkov aircraft carrier. Initial order for 12 aircraft and four trainers to be delivered from 2009 following the maiden flight of a twin-seat MIG 29KUB on 20 January 2007. Agreement in principle to acquire a further 29 aircraft was reached in September 2008. Sensors: Phazotron-NIIR Zhuk-ME radar; Elta EL/M-8222 jammer; OLS IR search and track. Weapons: AAM; RVV-AE and R-73. ASM: Kh-35 (possibly Club). Conventional bombs: KAB-500 Kr. 30 mm cannon.



MiG 29KUB 1/2007, Piotr Butowski / 118493R

Numbers/Type: 14/2 British Aerospace Sea Harrier FRS. Mk 51/Mk 60
Operational speed: 640 kt (1,186 km/h).
Service ceiling: 51,200 ft (15,600 m).
Range: 800 n miles (1,480 km).
Role/Weapon systems: Fleet air defence, strike and reconnaissance STOVL fighter Three more acquired from UK in 1999 to make good losses. Of total numbers, only about one third are operational. Sensors: Ferranti Blue Fox air interception radar, limited ECM/RWR (Elta 8420 in due course). Weapons: Air defence; two Magic AAMs (possibly ASRAAM in due course), two 30 mm Aden cannon. Plans for a mid-life upgrade have been abandoned. Avionics are to be improved to extend life of aircraft to 2020



SEA HARRIER 1994, Indian Navy / 001297O

Numbers/Type: 2/15/5 Westland Sea King Mk 42A/Mk 42B/Mk 42C
Operational speed: 112 kt (208 km/h)
Service ceiling: 11,500 ft (3,500 m).
Range: 664 n miles (1,230 km).
Role/Weapon systems: Mk 42A has primary ASW and 42B primary ASV capability; Mk 42C for commando assault/vertrep. Not all aircraft are operational. Sensors: MEL Super Searcher radar, Thomson Sintra H/S-12 dipping sonar (Mk 42A and B), AQS 902B acoustic processor (Mk 42B); Marconi Hermes ESM (Mk 42B); Bendix weather radar (Mk 42C). Weapons: ASW; 2 Whitehead A244S or USSR APR-2 torpedoes; Mk 11 depth bombs, mines (Mk 42B only). ASV; two Sea Eagle (Mk 42B only). Unarmed (Mk 42C)



SEA KING 42B 8/2002, Arjun Sarup / 056179A

Numbers/Type: 12 Kamov Ka-28 Helix A.
Operational speed: 110 kt (204 km/h).
Service ceiling: 12,000 ft (3,660 m).
Range: 270 n miles (500 km).
Role/Weapon systems: ASW helicopter embarked in large escorts. Has replaced Ka-25. Sensors: Splash Drop search radar; VGS-3 dipping sonar, sonobuoys. Weapons: ASW; two Whitehead A244S or USSR APR-2 torpedoes or four depth bombs.



Ka-28 6/2006, Chris Sattler / 118447O

For details of the latest updates to *Jane's Fighting Ships* online and to discover the additional information available exclusively to online subscribers please visit jfs.janes.com

Numbers/Type: 9 Kamov Ka-31 Helix B.
Operational speed: 119 kt (220 km/h)
Service ceiling: 11,480 ft (3,500 m).
Range: 325 n miles (600 km)
Role/Weapon systems: AEW helicopter. First two delivered late 2002 with remainder in 2003. Radar antenna folds beneath fuselage. Sensors: OKO E-80/M radar



Ka-31 6/2005, Patrick Allen/Jane's / 1136991

Numbers/Type: 23 Aerospatiale (HAL) SA 319B Chetak (Alouette III).
Operational speed: 113 kt (210 km/h).
Service ceiling: 10,500 ft (3,200 m).
Range: 290 n miles (540 km).
Role/Weapon systems: Several helicopter roles performed including embarked ASW and carrier-based SAR, utility and support to commando forces. 15 aircraft are operated by Coast Guard. Weapons: ASW; two Whitehead A244S torpedoes.



CHETAK 4/2007 / 1305304

Numbers/Type: 20 HAL Dhruv.
Operational speed: 156 kt (290 km/h).
Service ceiling: 9,850 ft (3,000 m).
Range: 216 n miles (400 km).
Role/Weapon systems: Formerly known as Advanced Light Helicopter (ALH), full production was delayed by thrust and vibration problems which have now been overcome. The naval variant started trials in March 1995 and the first two were delivered in 2003. Sensors: Dipping sonar, ECM. Weapons: ASW; torpedoes, depth charges. ASW; Sea Eagle ASM



Dhruv 2/2001, HAL / 0121338

LAND-BASED MARITIME AIRCRAFT (FRONT LINE)

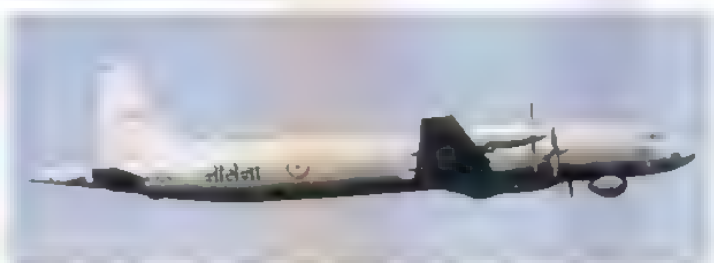
Numbers/Type: 2 Fokker F27 Friendship
Operational speed: 250 kt (463 km/h)
Service ceiling: 29,500 ft (8,990 m)
Range: 2,700 n miles (5,000 km).
Role/Weapon systems: Operated by coast guard for long-range patrol. Search radar only. Unarmed.

Numbers/Type: 14 Dornier 228.
Operational speed: 200 kt (370 km/h).
Service ceiling: 28,000 ft (8,535 m).
Range: 940 n miles (1,740 km).
Role/Weapon systems: Coastal surveillance and EEZ protection duties for Navy and Coast Guard. Sensors: MEL Marec or THORN EMI Super Marec search radar with FLIR, cameras and searchlight. Weapons: Unarmed, but may carry anti-ship missiles in due course



DORNIER 228 12/2000 / 0121347

Numbers/Type: 5 Ilyushin Il-38 (May).
Operational speed: 347 kt (645 km/h).
Service ceiling: 32,800 ft (10,000 m).
Range: 3,887 n miles (7,200 km).
Role/Weapon systems: Shore-based long-range ASW reconnaissance into Indian Ocean. Following the loss of two aircraft in a mid-air collision in 2002, two replacement aircraft were donated by Russia. All five aircraft upgraded to Il-38SD standard with improved avionics, radar, ASM (probably Brahmos) and ASW capabilities. The first three aircraft had been delivered by 2008. Delivery of the final two is expected by 2010. Sensors: Lenmet Sea Dragon/Novella radar, MAD, sonobuoys, ESM. Weapons: ASW; various torpedoes, mines and depth bombs.



MAY 2/2001, Wingman Aviation / 0121338

Numbers/Type: 6 Pilatus Britten-Norman Maritime Defender
Operational speed: 150 kt (280 km/h).
Service ceiling: 18,900 ft (5,760 m).
Range: 1,500 n miles (2,775 km).
Role/Weapon systems: Coastal and short-range reconnaissance tasks undertaken in support of Navy (6) and Coast Guard. Six upgraded with turboprop engines 1996-97. Sensors: Search radar, camera. Weapons: Unarmed



DEFENDER 2/2001, Wingman Aviation / 0121338

Numbers/Type: 4 Tupolev Tu 142M (Bear F).
Operational speed: 500 kt (925 km/h).
Service ceiling: 45,000 ft (13,720 m).
Range: 6,775 n miles (12,550 km).
Role/Weapon systems: First entered service in April 1988 for long-range surface surveillance and ASW. Air Force manned. Sensors: Wet Eye search and attack radars, MAD, cameras, 75 active and passive sonobuoys. Weapons: ASW; 12 torpedoes, depth bombs. ASW; two 23 mm cannon. Avionics, ASM (possibly SS-N-25) and ASW package upgraded in mid-life update from 2001.



BEAR F 2/2001 / 0121345

Numbers/Type: 8 SEPECAT/HAL Jaguar International.
Operational speed: 917 kt (1,699 km/h) (max).
Service ceiling: 36,000 ft (11,000 m).
Range: 760 n miles (1,408 km)

Role/Weapon systems: A maritime strike squadron. Air Force operated. Sensors: Thomson-CSF Agave radar. Weapons: ASV; 2 BAe Sea Eagle, 2 DEFA 30 mm cannon or up to 8-1,000 lb bombs. Can carry 2 Magic AAM overwing.



JAGUAR 2/2001, *Wingman Aviation* / 0171340

Numbers/Type: 8 Boeing P-8I Poseidon
Operational speed: 490 kt (907 km/h).
Service ceiling: 41,000 ft (12,500 m).
Range: 1,380 n miles (2,555 km).

Role/Weapon systems: Contract for eight aircraft signed on 31 December 2008. Deliveries to begin in 2013 and to be completed by 2016. To replace Tu-142 (Bear F). Design based on Boeing 737-800ERX. Crew of nine. Sensors: To be equipped with modern ASW, ASUW and intelligence, surveillance and reconnaissance (ISR) sensors. Weapons: To be announced.



BOEING P-8A Poseidon demonstrator 6/2004, *US Navy* / 1043653

UNMANNED AIR VEHICLES

Numbers/Type: 4 Israel Aircraft Industries Heron.
Operational speed: 125 kt (231 km/h).
Service ceiling: 26,500 ft (8,075 m).
Range: 108 n miles (200 km).

Role/Weapon systems: Capable of performing a variety of missions but primarily a real-time system for intelligence collection, surveillance, target acquisition/tracking, and communications/data relay. Several payloads can be carried simultaneously including real-time TV/FLIR, synthetic aperture radar or camera. Can be controlled from ground station via direct LOS data/command link. Part of JAV squadron commissioned on 6 January 2006. Based at Kochi but operated from other bases. Has conducted sea trials with INS *Vindhyagiri*. Endurance 50 hours.



HERON UAV 12/2005, *IAI* / 1116200

Numbers/Type: 8 Israel Aircraft Industries Searcher II.
Operational speed: 105 kt (194 km/h).
Service ceiling: 20,000 ft (6,100 m).
Range: 92 n miles (170 km).

Role/Weapon systems: Can be configured for tactical surveillance or as communications relay aircraft. Several payloads can be carried simultaneously including real-time TV/FLIR, synthetic aperture radar or camera. Can be controlled from ground station via direct LOS data/command link. Part of UAV squadron commissioned on 6 January 2006. Based at Kochi but operated from other bases. Endurance 18 hours.



Searcher II 6/2003, *C Hoyle/Jane's* / 0531011

PATROL FORCES

0 + 4 OFFSHORE PATROL VESSEL (PSOH)

Name	No	Builders	Laid down	Launched	Commissioned
-	-	Goa Shipyard	2008	2009	Mar 2010
-	-	Goa Shipyard	25 Sep 2007	2008	Sep 2010
-	-	Goa Shipyard	7 May 2008	2010	Dec 2010
-	-	Goa Shipyard	2008	2011	June 2011

Displacement, tons: 2,215 full load
Dimensions, feet (metres): 344.5 x 42.3 x 11.8 (105.0 x 12.9 x 3.6)
Main machinery: 2 Pielstick PA 6B STC diesels; 20,900 hp(m) (15.58 MW); 2 shafts, cp props
Speed, knots: 25
Range, n miles: 6,000 at 16 kt
Complement: 118 (16 officers)
Guns: 1 OTO Melara 3 in (76 mm)/82 Super Rapid, 120 rds/min to 18 km (8.7 n miles); weight of shell 6 kg. 2 -30 mm/65 AK 630 (6 barrels per mounting); 3,000 rds/min combined to 2 km.
Radars: Surface search: To be announced.
Navigation: To be announced.
Helicopters: 1 HAL Dhruv



OPV (Scale 1 : 900), *Ian Sturton* / 1164335

Comment: The order for three offshore patrol vessels was announced in 2006 and the order for a fourth was confirmed on 20 April 2007. The ships are to be naval variants of the Coast Guard's Sankalp class under construction at Goa Shipyard

7 SUPER DVORA MK II CLASS (PBF)

No	Builders	Commissioned
T 80	IAI, Ramta	14 May 1998
T 81	Goa Shipyard Ltd	29 May 1999
T 82	IAI, Ramta	9 Oct 2003
T 83	Goa Shipyard Ltd	22 Mar 2004
T 84	Goa Shipyard Ltd	19 Apr 2004
T 85	Goa Shipyard Ltd	16 Feb 2005
T 86	Goa Shipyard Ltd	16 Feb 2005

Displacement, tons: 60 full load
Dimensions, feet (metres): 83.3 x 18.4 x 4.9 (25.4 x 5.6 x 1.5)
Main machinery: 2 MTU 12V 396 TE94 diesels, 4,570 hp(m) (3.36 MW); 2 Arneson ASD 16 surface drives
Speed, knots: 50
Range, n miles: 700 at 42 kt
Complement: 10 (1 officer)
Guns: 2 - 20 mm.
Weapons control: Elop MSIS optronic director.
Radars: Surface search: Koden; 1 band

Comment: Collaborative programme involving IAI, Ramta, Israel and Goa Shipyard Ltd. T 80 was built at Ramta and T 82 was procured by the Indian Navy from Israel. The other five were assembled at Goa



SUPER DVORA 2/2001 / 0176189

6 SUKANYA CLASS (PSOH)

Name	No	Builders	Launched	Commissioned
SUKANYA	P 50	Korea Tacoma, Masan	1989	31 Aug 1989
SUBHADRA	P 51	Korea Tacoma, Masan	1989	25 Jan 1990
SUVARNA	P 52	Korea Tacoma, Masan	22 Aug 1990	4 Apr 1991
SAVITRI	P 53	Hindustan SY, Vishakapatnam	23 May 1989	27 Nov 1990
SHARADA	P 55	Hindustan SY, Vishakapatnam	22 Aug 1990	27 Oct 1991
SUJATA	P 56	Hindustan SY, Vishakapatnam	25 Oct 1991	3 Nov 1993

Displacement, tons: 1,890 full load
Dimensions, feet (metres): 331.7 oa; 315 wl × 37.7 × 14.4 (101.1; 96 × 11.5 × 4.4)
Main machinery: 2 SEMT-Pielstick 16 PA6 V 280 diesels; 12,800 hp(m) (9.41 MW) sustained; 2 shafts
Speed, knots: 21
Range, n miles: 5,800 at 15 kt
Complement: 140 (15 officers)

Guns: 3 Bofors 40 mm/60. 4—12.7 mm MGs.
A/S mortars: 4 RBU 2500 16-tubed trainable launchers; range 2,500 m; warhead 21 kg. Two launchers fitted in forward section.
Radars: Surface search: Racal Decca 2459; I-band
Navigation: Bharat 1245; I-band.

Helicopters: 1 Chetak

Programmes: First three ordered in March 1987 from Korea Tacoma to an Ulsan class design. Second four ordered in August 1987. The Korean-built ships commissioned at Masan and then sailed for India where the armament was fitted. Three others of a modified design have been built for the Coast Guard. P 54 transferred to Sri Lanka December 2000.

Structure: Lightly armed and able to 'stage' helicopters, they are fitted out for offshore patrol work only but have the capacity to be much more heavily armed. Fin stabilisers fitted. Firefighting pump on hangar roof aft.



SHARADA (1166553)

3/2007 / 1166553

Operational. These ships are used for harbour defence, protection of offshore installations and patrol of the EEZ. Potential for role change is considerable. *Subhadra* modified in early 2000 to test fire Dhanush (naval version of Prithvi) SRBM from her flight deck. Dhanush was first successfully fired on 20 September 2001.

On 7 November 2004, a 350 km range Prithvi 3 solid propellant missile was reportedly fired in the Bay of Bengal. P 50 and P 51 based at Karwar, P 52 at Mumbai, P 53 at Vishakapatnam and the other two at Kochi

Sales: *Saryu* transferred to Sri Lanka in 2000.

5 SDB MK 3 CLASS (LARGE PATROL CRAFT) (PB)

T 55-59

Displacement, tons: 210 full load
Dimensions, feet (metres): 124 × 24.6 × 6.2 (37.8 × 7.5 × 1.9)
Main machinery: 2 MTU 16V 538 TB92 diesels; 6,820 hp(m) (5 MW) sustained; 2 shafts
Speed, knots: 30
Complement: 32
Guns: 2 Bofors 40 mm/60; 120 rds/min to 10 km (5.5 n miles); weight of shell 0.89 kg.
Radars: Surface search: Bharat 1245; I-band.

Comment: Built at Garden Reach and Goa and completed 1984-86. Employed as seaward defence forces.

T 56
 6/2004, Indian Navy
 1042279



6 SDB MK 5 (BANGARAM) CLASS (LARGE PATROL CRAFT) (PBO)

Name	No	Launched	Commissioned
TRINKAT	T 61	28 Sep 2000	24 Aug 2001
TARASA	T 63	2000	24 Aug 2001
BANGARAM	T 65	11 Dec 2004	10 Feb 2006
BITRA	T 66	14 Dec 2004	28 Mar 2006
BATTI MALV	T 67	28 June 2005	31 July 2006
BARATANG	T 68	6 Aug 2005	12 Sep 2006

Displacement, tons: 260 full load
Dimensions, feet (metres): 151.0 × 24.6 × 8.2 (46.0 × 7.5 × 2.5)
Main machinery: 2 MTU 16V 538 TB92 diesels; 6,820 hp(m) (5 MW) sustained; 2 shafts
Speed, knots: 30
Range, n miles: 2,000 at 12 kt
Complement: 34 (4 officers)
Guns: 1 Medak 30 mm 2A42. 2—7.62 mm MGs.
Radars: Surface search: Bharat 1245; I-band.

Comment: T 61 and T 63 are the two survivors of four commissioned between September 2000 and March 2002. T 62 transferred to the Maldives in 2006 and T 64 to the Seychelles in June 2005. Four (T 65-68) of a modified design have since entered service.



TARASA

3/2007 / 1166555



BANGARAM

3/2007 / 1166554

2 + 5 (3) CAR NICOBAR CLASS (PBO)

Name	No	Builders	Launched	Commissioned
CAR NICOBAR	T 69	Garden Reach Shipyard, Kolkata	23 Nov 2007	16 Feb 2009
CHETLAT	T 70	Garden Reach Shipyard, Kolkata	27 Nov 2007	16 Feb 2009
CINQUE	T 71	Garden Reach Shipyard, Kolkata	16 July 2008	Dec 2009
CHERIYAM	T 72	Garden Reach Shipyard, Kolkata	16 July 2008	Dec 2009
-	-	Rajabagan Shipyard, Kolkata	2010	2011
-	-	Rajabagan Shipyard, Kolkata	2010	2011
-	-	Rajabagan Shipyard, Kolkata	2010	2011

Displacement, tons: 260 full load
 Dimensions, feet (metres): 180.4 × 24.6 × 8.5
 (48.9 × 7.5 × 2.6)
 Main machinery: 3 MTU 16V 4000 M90 diesels; 11,238 hp(m)
 (8.16 MW) sustained, 3 Kamewa 71SII waterjets
 Speed, knots: 35
 Range, n miles: 2,000 at 13 kt

Complement: 35
 Guns: 1 – 30 mm. 2 – 12.7 mm MGs.
 Radars: Surface search; To be announced.

Comment: The design is an improved version of the Bangaram class and other patrol craft built by Garden Reach and may also have drawn on the waterjet

propelled Sarojini Naidu class built by Goa Shipyard for the coast guard. Steel hull and aluminium superstructure. The first four ships are under construction at GRSE and three further craft were laid down at Rajabagan Shipyard on 29 July 2008. A class of 10 ships is expected.

AMPHIBIOUS FORCES

Notes: There are plans to acquire further amphibious ships capable of transporting troops and helicopters and of operating in littoral waters. Talks were reported to have taken place with ST Marine Singapore during 2008.

4 + 1 MAGAR CLASS (LSTH)

Name	No	Builders	Launched	Commissioned
MAGAR	L 20	Garden Reach	7 Nov 1984	15 July 1987
GHARIAL	L 23	Hindustan/Garden Reach	1 Apr 1991	14 Feb 1997
SHARDUL	L 16	Hindustan/Garden Reach	3 Apr 2004	4 Jan 2007
KESARI	L 15	Garden Reach Shipyard	8 June 2005	5 Apr 2008
AIRAVAT	-	Garden Reach Shipyard	27 Mar 2006	2009

Displacement, tons: 5,655 full load
 Dimensions, feet (metres): 409.4 oa, 393.7 wl × 57.4 × 13.1 (124.8; 120 × 17.5 × 4)
 Main machinery: 2 SEMT-Pielstick 12 PA6 V280 diesels; 8,560 hp(m) (6.29 MW) sustained;
 2 shafts
 Speed, knots: 15
 Range, n miles: 3,000 at 14 kt
 Complement: 136 (16 officers)
 Military lift: 15 tanks plus 8 APC plus 500 troops
 Guns: 4 Bofors 40 mm/60. 2 – 122 mm multibarrel rocket launchers at the bow
 Countermessures: ESM. Bharat Ajanta; intercept.
 Radars: Navigation: Bharat; I-band.
 Helicopters: 1 Sea King 42C; platform for 2.

Comment: Based on the *Sir Lancelot* design *Magar* was built entirely at Garden Reach *Gharial* ordered in 1985. Built at Hindustan Shipyard but fitted out at Garden Reach. Internal design differs from *Magar*. Carries four LCVPs on davits. Bowdoor. Can beach on gradients 1 in 40 or more. *Magar* refitted in 1995. Both based at Vishakapatnam. *Shardul* and subsequent ships include major design changes. *Magar* and *Gharial* are based at Vishakapatnam and *Shardul* at Karwar.



GHARIAL 10/2008, Michael Nitz / 1353089



MAGAR 3/2006, M Mazumdar / 1166551

5 POLNOCHNY C (PROJECT 773 I) AND D CLASS (PROJECT 773 IM) (LSM/LSMH)

SHARABH L 17 CHEETAH L 18 MAHISH L 19 GULDAR L 21 KUMBHIR L 22

Displacement, tons: 1,150 (C class); 1,190 (D class) full load
 Dimensions, feet (metres): 266.7; 275.3 (D class) × 31.8 × 7.9 (81.3; 83.9 × 9.7 × 2.4)
 Main machinery: 2 Kolomna Type 40-D diesels; 4,400 hp(m) (3.2 MW) sustained; 2 shafts
 Speed, knots: 16
 Range, n miles: 3,000 at 12 kt
 Complement: 60 (6 officers)
 Military lift: 160 troops; 5 MBT or 5 APC or 5 AA guns or 8 trucks
 Guns: 4 – 30 mm (2 twin) Ak 230. 2 – 140 mm 18-tubed rocket launchers.
 Radars: Navigation: Don 2 or Krivach (SRN 745); I-band
 Fire control: Drum Tilt; H/I-band (in D class).
 Helicopters: Platform only (in D class).

Comment: A original class of eight built in two batches by Naval Shipyard, Gdynia. The first four (L 14-17) were commissioned in 1975-76. Of these L 14, L 15 and L 16 have been decommissioned. The second batch of four (L 18-22) were commissioned in 1985-88 and are to a modified design with a flight deck forward of the bridge. All are being restricted operationally through lack of spares, but all are seaworthy. Drum Tilt radar removed from some ships. Four Polnochny Ds (L 18-22) form 5th landing Ship Squadron based at Port Blair.



CHEETAH 3/2007 / 1166548

8 MK 2/3 LANDING CRAFT (LSM)

L 32-39

Displacement, tons: 500 full load
 Dimensions, feet (metres): 188.6 oa; 174.5 pp × 26.9 × 5.2 (57.5; 53.2 × 8.2 × 1.6)
 Main machinery: 3 Kirloskar-MAN V8V 17.5/22 AMAL diesels; 1,686 hp(m) (1.24 MW);
 3 shafts
 Speed, knots: 11
 Range, n miles: 1,000 at 8 kt
 Complement: 167
 Military lift: 250 tons; 2 PT 76 or 2 APC. 120 troops
 Guns: 2 Bofors 40 mm/60 (aft).
 Mines: Can be embarked.
 Radars: Navigation: Decca 1229; I-band

Comment: L 32-35 are Mk 2 craft built 1980-83. L 36-39 are Mk 3 craft built 1986-87. All built by Goa Shipyard. L 36-39 have a considerably modified superstructure and a higher bulwark on the cargo deck. L 32-35 commissioned 1980-83 and L 36-39 1986-87.



L 36 2/1998, 92 Wing RAAF / 0064719



L 32 3/2007 / 1166547

1 + (1) AUSTIN CLASS (AMPHIBIOUS TRANSPORT DOCK) (LPD)

Name	No	Builders	Laid down	Launched	Commissioned
JALASHWA	L 41	Lockheed SB & Construction Co	8 Aug 1966	3 Aug 1968	6 Mar 1971
(ex-Trenton)	(ex-LPD 14)				

Displacement, tons: 9,130 light, 16,500–17,244 full load
Dimensions, feet (metres): 570 × 100 (84 hull) × 23 (173.8 × 30.5, 25.6 × 7)
Main machinery: 2 Foster-Wheeler boilers; 800 psi (42.3 kg/cm²); 870°F (467°C); 2 De Laval turbines, 24,000 hp (18 MW); 2 shafts
Speed, knots: 21
Range, n miles: 7,700 at 20 kt
Complement: 328 (27 officers)
Military fit: 930 troops; 9 LCM 6s or 4 LCM 8s or 2 LCAC or 20 LVTs, 4 LCPL/LCVP

Guns: 2 General Electric/General Dynamics 20 mm/76 6-barrelled Vulcan Phalanx Mk 15; 3,000 rds/min (4,500 in Block 1) combined to 1.5 km, 2–25 mm Mk 38, 8–12.7 mm MGS
Countermeasures: Decoys: 4 Lorel Hycor SRBOC 6-barrelled Mk 36, IR flares and chaff to 4 km (2.2 n miles)
ESM: SLQ 32(V)1; intercept.
Combat data systems: SATCOM, WSC-3 (UHF), WSC-5 (SHF).
Radars: Air search: Lockheed SPS-40E, 8-band.
Surface search: Norden SPS-67; G band.
Navigation: Raytheon SPS-73(V)12; I-band.
Tacan: URN 25.
IFF: Mk XII UPX-36.

Helicopters: Up to 6 Sea King UH-3H can be carried. Hangar for only 1 light.

Programmes: Ex-LPD 14 authorised in the US Navy's FY65 new construction programme. Transferred as a 'hot transfer' on 17 January 2007 and formally recommissioned on 22 June 2007. The transfer of a second ship (ex-Nashville) is no longer considered likely.
Structure: One small telescopic hangar. Flight deck is 168 ft (51.2 m) in length. Well-deck 394 × 50 ft (120.1 × 15.2 m).
Operational: Likely to be based at Vishakapatnam.



JALASHWA

9/2007, Indian Navy / 1166556

MINE WARFARE FORCES

Notes: Procurement of up to eight minehunters has been approved. It is anticipated that the ships will be to a foreign design and of GRP construction. Building is expected to take place at Goa Shipyards. The ships are likely to be equipped with a minehunting sonar and with a remote-control mine-disposal system. Following requests for proposals, shortlisted companies are reported to include Intermarine, Sarzana, and Karlskronavarvet. A decision is expected in 2009.

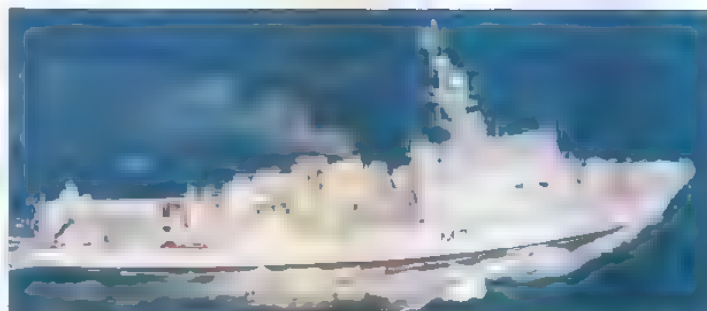
10 PONDICHERRY (NATYA I) CLASS (PROJECT 266M) (MINESWEEPERS—OCEAN) (MSO)

Name	No	Builders	Commissioned
BEDI	M 63	Isora, Leningrad	27 Apr 1979
BHAVNAGAR	M 64	Isora, Leningrad	27 Apr 1979
ALLEPPEY	M 65	Isora, Leningrad	10 June 1980
RATNAGIRI	M 66	Isora, Leningrad	10 June 1980
KARWAR	M 67	Isora, Leningrad	14 July 1986
CANNANORE	M 68	Isora, Leningrad	17 Dec 1987
CUDDALORE	M 69	Isora, Leningrad	29 Oct 1987
KAKINADA	M 70	Isora, Leningrad	23 Dec 1988
KOZHICODE	M 71	Isora, Leningrad	19 Dec 1988
KONKAN	M 72	Isora, Leningrad	8 Oct 1988

Displacement, tons: 804 full load
Dimensions, feet (metres): 200 1 × 33.5 × 10.8 (61 × 10.2 × 3.3)
Main machinery: 2 Type 504 diesels; 5,000 hp(m) (3.67 MW) sustained, 2 shafts, cp props
Speed, knots: 16
Range, n miles: 3,000 at 12 kt
Complement: 82 (10 officers)

Guns: 4–30 mm/65 (2 twin); 500 rds/min to 5 km (2.7 n miles); weight of shell 0.54 kg, 4–25 mm/70 (2 twin); 270 rds/min to 3 km (1.6 n miles)
A/S mortars: 2 RBL 1200 5-tubed fixed; range 1,200 m; warhead 34 kg
Mines: Can carry 10.
Countermeasures: MCM: 1 GKT-2 contact sweep; 1 AF-2 acoustic sweep; 1 TEM-3 magnetic sweep.
Radars: Navigation: Don 2; I-band
Fire control: Drum Tilt; H/I-band
IFF: 2 Square Head: High Pole B
Sonars: MG 69/79, hull-mounted; active mine detection; high frequency

Programmes: Built for export. Last six were delivered out of pennant number order.
Structure: Steel hulls but do not have stern ramp as in Russian class.
Operational: Some are fitted with two quad SA-N-5 systems. One serves as an AGI Divided between 19th MCM Squadron based at Mumbai and 21st MCM Squadron based at Vishakapatnam



KOZHICODE

2/2006, M Mazumdar / 1164669

SURVEY AND RESEARCH SHIPS

Notes: The National Institute of Oceanography operates several research and survey ships including *Sagar Kanya*, *RV Gaveshini* and *Sagar Shukti*. *Sagar Nidhi*, a 104 m ship built by Fincenteri, Muggiano, entered service in March 2008.

8 SANDHAYAK CLASS (SURVEY SHIPS) (AGSH)

Name	No	Builders	Launched	Commissioned
SANDHAYAK	J 18	Garden Reach, Calcutta	6 Apr 1977	1 Mar 1981
NIRDESHAK	J 19	Garden Reach, Calcutta	16 Nov 1978	4 Oct 1982
NIRUPAK	J 14	Garden Reach, Calcutta	10 July 1981	14 Aug 1985
INVESTIGATOR	J 15	Garden Reach, Calcutta	8 Aug 1987	11 Jan 1990
JAMUNA	J 16	Garden Reach, Calcutta	4 Sep 1989	31 Aug 1991
SUTLEJ	J 17	Garden Reach, Calcutta	1 Dec 1991	19 Feb 1993
DARSHAK	J 21	Goa Shipyard	3 Mar 1999	28 Apr 2001
SARVEKSHAK	J 22	Goa Shipyard	24 Nov 1999	14 Jan 2002

Displacement, tons: 1,929 full load
Dimensions, feet (metres): 288 × 42 × 11.1 (87.8 × 12.8 × 3.4)
Main machinery: 2 GRSE/MAN 66V 30/45 ATL diesels; 7,720 hp(m) (5.67 MW) sustained; 2 shafts, active rudders
Speed, knots: 16 **Range, n miles:** 6,000 at 14 kt, 14,000 at 10 kt
Complement: 178 (18 officers) plus 30 scientists
Guns: 1 or 2 Bofors 40 mm/60
Countermeasures: ESM: Telegon IV HF D/F
Radars: Navigation: Recal Decca 1629; I-band.
Helicopters: 1 Chetak

Comment: Telescopic hangar. Fitted with three echo-sounders, side scan sonar, extensively equipped laboratories, and carries four GRP survey launches on davits amidships. An active rudder with a DC motor gives speeds of up to 5 kt. First three based at Vishakapatnam and have been used as troop transports. *Investigator* is at Mumbai and *Jamuna* and *Sutlej* at Kochi. The last pair were laid down in May and August 1995 and have a secondary role as casualty holding ships.



INVESTIGATOR

3/2007, Marco Ghiglini / 1168546

1 SAGARDHWANI CLASS

Name	No	Builders	Commissioned
SAGARDHWANI	A 74	Garden Reach, Calcutta	30 July 1994

Displacement, tons: 2,050 full load
Dimensions, feet (metres): 279.2 × 42 × 12.1 (85.1 × 12.8 × 3.7)
Main machinery: 2 GRSE/MAN 66V 30/45 ATL diesels; 7,720 hp(m) (5.67 MW) sustained, 2 shafts, 2 auxiliary thrusters
Speed, knots: 16 **Range, n miles:** 6,000 at 16 kt
Complement: 80 (10 officers) plus 16 scientists
Radars: Navigation: Recal Decca 1629; I-band.
Helicopters: Platform for Alouette III.

Comment: Marine Acoustic Research Ship (MARS) launched in May 1991. The hull and main machinery are very similar to the Sandhayak class survey ships, but there are marked superstructure differences with the bridge positioned amidships and a helicopter platform forward. Aft there are two large cranes and a gantry for deploying and recovering research equipment. The vessel is designed to carry out acoustic and geological research and special attention has been paid to noise reduction. The ship is painted white except for the lift equipment and two boats which are orange. Employed in advanced torpedo trials and missile range support. Based at Kochi.



SAGARDHWANI

2/2001, Michael Nitz / 0534054

1 MAKAR CLASS (SURVEY SHIP) (AGS)

MEEN J 33

Displacement, tons: 210 full load
 Dimensions, feet (metres): 123 x 24.6 x 8.2 (37.5 x 7.5 x 1.9)
 Main machinery: 2 diesels; 1,124 hp(m) (826 kW); 2 shafts
 Speed, knots: 12
 Range, n miles: 1,500 at 12 kt
 Complement: 36 (4 officers)
 Guns: 1 Bofors 40 mm/60
 Radars: Navigation: Decca 1629; I band

Comment: Built by Goa Shipyard and delivered on 23 June 1984. Similar hull to deleted SDB Mk 2 class but with much smaller engines. Employed as seaward defence craft.



MEEN 4/1992, 0064773

0 + 6 SURVEY SHIPS (AGS)

Displacement, tons: 260 full load
 Dimensions, feet (metres): 163.4 x 52.0 x 7.2 (49.8 x 15.85 x 2.2)
 Main machinery: 2 (outer) Cummins KTA38 M2 diesels; 2,700 hp (2 MW); 2 (inner) Cummins QSK19M; 1,520 hp (1.1 MW); 2 shafts; cp props
 Speed, knots: 18
 Range, n miles: 3,000 at 13 kt
 Complement: 57 (10 officers)
 Guns: 1—30 mm, 2—12.7 mm MGs
 Radars: Surface search: To be announced.

Comment: Contract for six vessels signed with Alcock Ashdown (Gujarat) Ltd in December 2006 for construction of six survey vessels. Designed by Australian Company Sea Transport, the catamaran hulls are of steel construction with an aluminium superstructure. Delivery of the first vessel is expected in 2009 with further deliveries at six-month intervals. The survey equipment suite includes two Hugin 1000 AUV, the HiPAP subsea positioning equipment, multibeam echosounders and underwater cameras from Kongsberg. There are also two 6.5 m RIB and a 4 wheel-drive vehicle.

TRAINING SHIPS

1 TIR CLASS (TRAINING SHIP) (AXH)

Name	No	Builders	Launched	Commissioned
TIR	A 86	Mazagon Dock Ltd, Bombay	15 Apr 1983	21 Feb 1986

Displacement, tons: 3,200 full load
 Dimensions, feet (metres): 347.4 x 43.3 x 15.7 (105.9 x 13.2 x 4.8)
 Main machinery: 2 Crossley-Pielstick 8 PC2V Mk 2 diesels; 7,072 hp(m) (5.2 MW) sustained; 2 shafts
 Speed, knots: 18. Range, n miles: 6,000 at 12 kt
 Complement: 239 (35 officers) plus 120 cadets
 Guns: 2 Bofors 40 mm/60 (twin) with launchers for illuminants. 4 saluting guns.
 Countermeasures: ESM Telegon IV D/F
 Radars: Navigation: Bharat/Decca 1245, I-band
 Helicopters: Platform for Alouette III

Comment: Second of class reported ordered May 1986 but was cancelled as an economy measure. Built to commercial standards, Decca collision avoidance plot and SATNAV. Can carry up to 120 cadets and 20 instructors. Based at Kochi.



TIR 2/2001, Michael Nitz / 0534059

1 LEANDER (BATCH 3A) CLASS (AXH)

Name	No	Builders	Commissioned
KRISHNA (ex-Andromeda)	F 46 (ex-F 57)	Portsmouth Dockyard	2 Dec 1968

Displacement, tons: 2,960 full load
 Dimensions, feet (metres): 372 x 43 x 18 (screws) (113.4 x 13.1 x 5.5)
 Main machinery: 2 Babcock & Wilcox boilers; 550 psi (38.7 kg/cm²); 850 F (454°C); 2 White/English Electric turbines; 30,000 hp (22.4 MW); 2 shafts
 Speed, knots: 28. Range, n miles: 4,000 at 15 kt
 Complement: 260 (19 officers)
 Guns: 2 Bofors 40 mm/60, 2 Oerlikon 20 mm.
 Radars: Air/surface search, Marconi Type 968; D/E-band.
 Navigation: Kelvin Hughes Type 1006; I-band.
 Helicopters: 1 Chetak.

Comment: Laid down 25 May 1966 and launched 24 May 1967. Acquired from the UK in April 1995 having paid off in June 1993 to a state of extended readiness. Refitted by DML, Devonport, before recommissioning 22 August 1995. The original 114 mm gun turret, SeaCat SAM and ASW Limbo mortar were removed in 1979-80 when Exocet SSM, Seawolf SAM, STWS torpedo tubes and facilities for a Lynx helicopter were fitted. Acquired for training purposes to supplement the Tir. Armament has been reduced to the minimum required for the training role, and now includes 40 mm guns on either side, aft of the funnel. Based at Kochi.



KRISHNA 8/1995, H M Steele / 0064724

2 SAIL TRAINING SHIPS (AXS)

VARUNA TARANGINI A 75

Displacement, tons: 420 full load
 Dimensions, feet (metres): 177.2 x 27.9 x 13.1 (54 x 8.5 x 4)
 Main machinery: 2 diesels, 640 hp(m) (470 kW); 2 shafts; LIPS props
 Speed, knots: 10 (diesels)
 Complement: 15 (6 officers) plus 45 cadets

Comment: Varuna completed in April 1981 by Alcock-Ashdown, Bhavnagar. Can carry 26 cadets. Details given are for Tarangini which is based on a Lord Nelson design by Colin Mudie of Lymington and has been built by Goa Shipyard. Launched on 23 December 1995, and completed in December 1997. Three masted barque, square rigged on forward and main mast and 'fore and aft' rigged on mizzen mast. Varuna based at Mumbai and Tarangini at Kochi.



TARANGINI 8/2005, Guy Toremans / 1151260

AUXILIARIES

Notes: (1) There is also a small hospital ship Lakshadweep of 865 tons and a crew of 35 including 16 medics.
 (2) Ambika is a 1,000 ton oiler commissioned in 1995. Built by Hindustan Shipyard, it is based at Vishakhapatnam.
 (3) There are two auxiliary cargo ships Chowra and Akabar.

1 JYOTI CLASS (REPLENISHMENT TANKER) (AORH)

Name	No	Builders	Launched	Commissioned
JYOTI	A 58	Admiralty Yard, St Petersburg	8 Dec 1995	20 July 1996

Displacement, tons: 35,900 full load
 Dimensions, feet (metres): 587.3 x 72.2 x 26.2 (179 x 22 x 8)
 Main machinery: 1 Burmeister & Wain diesel; 10,948 hp(m) (8.05 MW); 1 shaft
 Speed, knots: 15
 Range, n miles: 12,000 at 15 kt
 Complement: 92 (16 officers)
 Cargo capacity: 25,040 tons diesel
 Radars: Navigation: I-band.
 Helicopters: Platform for 1 medium.

Comment: This was the third of a class of merchant tankers, modified for naval use for the Indian Navy and acquired in 1995. The ship was laid down in September 1993. Based at Mumbai where she arrived in November 1996. There are two replenishment positions on each side and stern refuelling is an option. Similar ship sold to China and two others are in commercial service.



JYOTI 4/2007, Mitsuhiro Kadota / 1166545

1 ADITYA CLASS (REPLENISHMENT AND REPAIR SHIP) (AORH/AS)

Name	No	Builders	Launched	Commissioned
ADITYA (ex-Rajaba Gan Patan)	A 59	Garden Reach, Calcutta	15 Nov 1993	3 Apr 2000

Displacement, tons: 24,600 full load
Measurement, tons: 17,000 dwt
Dimensions, feet (metres): 564.3 x 75.5 x 29.9 (172 x 23 x 9.1)
Main machinery: 2 MAN/Burmeister & Wain 16V 40/45 diesels; 23,936 hp(m) (17.59 MW) sustained; 1 shaft
Speed, knots: 20
Range, n miles: 10,000 at 16 kt
Complement: 156 (16 officers) + 6 aircrew
Cargo capacity: 14,200 m³ diesel and avcat; 2,250 m³ water; 2,170 m³ ammunition and stores.
Guns: 3 Bofors 40 mm/60.
Helicopters: 1 Chetak.

Comment: Ordered in July 1987 to a Bremer-Vulcan design. Lengthened version of Deepak class but with a multipurpose workshop. Four RAS stations alongside. Fully air conditioned. Building progress was very slow and sea trials were curtailed by propulsion problems during 1999. Ship has the capability to carry a Sea King 428 or KA 28 helicopter. First ship to be based at Karwar with effect from 15 December 2005.



ADITYA 2/2001, Guy Toremans / 0121357

1 DIVING SUPPORT SHIP (ASR)

Name	No	Builders	Commissioned
NIREEKSHAK	A 15	Mazagon Dock Ltd, Bombay	8 June 1989

Displacement, tons: 2,160 full load
Dimensions, feet (metres): 231.3 x 57.4 x 16.4 (70.5 x 125 x 5)
Main machinery: 2 Bergen KRM-8 diesels; 4,410 hp(m) (3.24 MW) sustained; 2 shafts, cp props; 2 bow thrusters; 2 stern thrusters; 990 hp(m) (727 kW)
Speed, knots: 12
Complement: 63 (15 officers)

Comment: Laid down in August 1982 and launched January 1984. Acquired on lease with an option for purchase which was taken up in March 1995, and the ship was commissioned on 15 September 1995. The vessel was built for offshore support operations but has been modified for naval requirements. Two DSRV, capable of taking 12 men to 300 m, are carried together with two six-man recompression chambers and one three-man bell. Kongsberg ADP-503 Mk II. Dynamic positioning system. The ship is used for submarine SAR. Based at Mumbai.



NIREEKSHAK 2/2006, M Mazumdar / 1363090

6 SUPPORT TANKERS (AOTL)

POSHAK PURAN PUSHPA PRADHAYAK PURAK PALAN

Comment: First two built at Mazagon Dock Ltd, Bombay. *Poshak* completed April 1982, and *Puran* in November 1988. *Pushpa* (capacity 650 tons) built at Goa Shipyard and completed in 1990. *Pradhayak*, *Purak* and *Palan* built at Rajabagan Shipyard, Bombay, the first two in 1977 and *Palan* in May 1986. Cargo capacities vary. Civilian manned.



PURAN 3/2007, Marco Ghigino / 1168544

3 NICOBAR CLASS (TRANSPORT SHIPS) (APH)

Name	No	Builders	Launched
NICOBAR	-	Szczecin Shipyard, Poland	12 Apr 1990
ANDAMANS (ex-Nancowry)	-	Szczecin Shipyard, Poland	5 Oct 1990
SWARAJ DEEP	-	Vishakhapatnam	1997

Displacement, tons: 19,000 full load
Measurement, tons: 14,176 grt
Dimensions, feet (metres): 515.1 x 68.9 x 22 (157 x 21 x 6.7)
Main machinery: 2 Ceg'elski-Burmeister am Wain 6L35MC diesels; 72,000 hp (5.3 MW); 2 shafts, bow thruster
Speed, knots: 16
Complement: 160
Cargo capacity: 1,200 troops
Helicopters: Platform for 1 medium.

Comment: The first two ships designed and built in Poland. *NicoBar* delivered to the Shipping Corporation of India (which operated the ship for the Andaman and Nicobar Islands Administration) on 5 June 1991 and subsequently acquired for use by the Indian Navy in April 1998. *Andamans* delivered to the Shipping Corporation of India on 31 March 1992 and acquired for use by the Indian Navy in April 2000. The ships are used to trans-ship stores and personnel to the Andaman and Nicobar Islands. They have large davits capable of operating LCVPs. *Swaraj Deep* is of a similar design.



NICOBAR 4/2007 / 1305803

0 + 1 (1) REPLENISHMENT TANKER (AORH)

Name	No	Builders	Laid down	Launched	Commissioned
-	-	Fincantieri	2008	2010	2010

Displacement, tons: 27,500 full load
Dimensions, feet (metres): 574.1 x 82.0 x 29.8 (175.0 x 25.0 x 9.1)
Main machinery: 2 diesels; 26,800 hp (20 MW); 1 shaft; cp prop
Speed, knots: 20
Range, n miles: 10,000 at 16 kt
Complement: accommodation for 248
Cargo capacity: Liquids: 12,000 tons of fuel, 2,300 tons of AVCAT, 2,000 tons of fresh water, and 1,000 tons of lub oil. Dry cargo: 200 tons ammunition, 150 tons provisions, 20 tons stores, 6-8 containers on the deck

Guns: To be announced.
Countermeasures: To be announced
Radars, Surface search: To be announced.
Navigation: To be announced.
Helicopters: 1 Sea King

Programmes: Fincantieri selected in late 2007 for the construction of a new fleet tanker. A contract was expected by the end of the year. The aft part is to be built at Riva Trigoso while the forward part is to be built at Palermo. There is an option for a second unit.
Structure: The design has a RINA classification and satisfies MARPOL and IMO requirements. It incorporates one elevator while internal passageways allow for the passage of fork-lift vehicles. The ship is to be equipped with two beam RAS stations on each side (all capable of transferring fuel, two for transferring 3 ton loads and two for 250 kg loads) and two stern refuelling stations.



AOR (artist's impression) 11/2007, Fincantieri / 1166542

2 WATER CARRIERS (AWT)

AMBUDA COCHIN

Comment: First laid down Rajabagan Shipyard 18 January 1977. Second built at Mazagon Dock Ltd, Bombay. Civilian manned.



AMBUDA 4/1992 / 0064729

1 TORPEDO RECOVERY VESSEL (YPT)

A 72

Displacement, tons: 110 full load
Dimensions, feet (metres): 93.5 × 20 × 4.6 (28.5 × 6.1 × 1.4)
Main machinery: 2 Kirloskar V12 diesels; 720 hp(m) (529 kW); 2 shafts
Speed, knots: 11
Complement: 13

Comment: Completed in 1981 at Goa Shipyard. Based at Vishakapatnam.



A 72

2/1989, G Jacobs / 0508006

3 DIVING TENDERS (YDT)

Displacement, tons: 36 full load
Dimensions, feet (metres): 48.9 × 14.4 × 3.9 (14.9 × 4.4 × 1.2)
Main machinery: 2 diesels; 130 hp(m) (96 kW); 2 shafts
Speed, knots: 12

Comment: Built at Cleback Yard. First completed 1979; second and third in 1984.



YDT

9/1986 0012531

TUGS**1 TUG (OCEAN) (ATA/ATR)**

MATANGA A 53

Displacement, tons: 1,170
Dimensions, feet (metres): 228.5 × 40.4 × 13.6 (69.64 × 12.3 × 4.1)
Main machinery: 2 GRSE/MAN G7V diesels; 3,920 hp(m) (2.88 MW); 2 shafts
Speed, knots: 15
Range, n miles: 4,000 at 15 kt
Complement: 78 (8 officers)
Guns: 1 Bofors 40 mm/60.
Radars: Navigation; I-band.

Comment: Built by Garden Reach SY. *Matanga* launched 29 October 1977. Bollard pull of 40 tons and capable of towing a 20,000 ton ship at 8 kt. Carries a divers' decompression chamber and other salvage equipment.



MATANGA

2/2001, Michael Nitz / 0143309

14 HARBOUR TUGS (YTM/YTL)

SHAMBU SINGH
 BC DUTT
 BALSHIL
 TARAFDAAR
 RAJAJI

MADAN SINGH
 BALRAM
 ANAND
 BAJARANG
 GAJ A 51

BHIM
 AJRAL
 BAHADUR
 NAKUL

Measurement, tons: 216 grt
Dimensions, feet (metres): 86.1 × 27.9 × 8.5 (29.3 × 8.5 × 2.6)
Main machinery: 2 SEMT-Pielstick 8 PA4 V 200 diesels; 3,200 hp(m) (2.35 MW); 2 shafts
Speed, knots: 11
Complement: 12

Comment: First three built by Mazagon Dock Ltd, Bombay in 1973-74. Five more delivered in 1988-89, and four more in 1991 from Mazagon Dock Ltd, Goa. *Gaj* is a 25 ton bollard pull tug built by Hindustan Shipyard and commissioned on 10 October 2002. Details given are for *Balram* and *Bajrang*; *Rajaji* is of comparable size built in 1982, *Bhim*, *Balshil* and *Ajral* were built by Tebma Shipyard, Chennai, the others are of varying types.



NAKUL

4/2007 / 1353091

COAST GUARD**Senior Appointments**

Director General:
 Vice Admiral Anil Chopra, AVSM
Deputy Director General:
 Inspector General Achutan Rajsekhar, PTM, TM

Personnel

2009: 6,868 (773 officers)

General

The Coast Guard was constituted as an independent armed force on 19 August 1978. It functions under the Ministry of Defence.

Responsibilities include:

1. Ensuring the safety and protection of artificial islands, offshore terminals, installations and other structures and devices in the Maritime Zones
2. Measures for the safety of life and property at sea and collection of scientific data as may be prescribed
3. Measures to preserve and protect the marine environment and control marine pollution.
4. Assisting the Customs and other authorities in anti-smuggling operations.
5. Enforcing the provisions of enactments in force in the Maritime Zones
6. Protection of fishermen and assistance to them at sea while in distress

Bases

CG HQ: Delhi
 West Region HQ: Mumbai
 District 1 HQ: Porbander
 District 2 HQ: Mumbai
 District 3 HQ: New Mangalore
 District 4 HQ: Kochi
 District 11 HQ: Goa
 Coast Guard stations: Jakhau, Vadinar, Okha, Bopypore, Kavaratti, Vizhinjam
 East Region HQ: Chennai
 District 5 HQ: Chennai

District 6 HQ: Vishakapatnam
 District 7 HQ: Paradip
 District 8 HQ: Haldia
 Coast Guard stations: Tuticorin, Mandapam, Puducherry, Kakinada
 Andaman and Nicobar Region HQ: Port Blair
 District 9 HQ: Digupur
 District 10 HQ: Campbell Bay

Aviation

Air Squadrons at Daman CGAS 750 (11 Dorniers 228), Kochi CGAS 747 (2 Dornier); Chennai CGAS 744 (7 Dorniers 228); Kolkata CGAS 700 (2 Dornier 228); Port Blair CGAS 745 (2 Dornier 228); Daman CGAS 841 (4 Chetaks); Mumbai CGAS 842 (3 Chetaks); Goa CGAS 800 (4 Chetaks); Chennai CGAS 848 (3 Chetaks); Vishakapatnam Vajra Flight (Chetaks); Kochi Veera Flight (Chetaks); Port Blair Varad Flight (Chetaks); Porbander Chetak and Dornier Flights; CGEFU Goa (3 ALH).

PATROL FORCES

2 SANKALP CLASS (OFFSHORE PATROL VESSELS) (WPSOH)

Name	No	Builders	Laid down	Launched	Commissioned
SANKALP	46	Goa Shipyard	17 July 2004	28 Apr 2006	20 May 2008
SAMRAT	47	Goa Shipyard	May 2006	2 July 2007	22 Jan 2009

Displacement, tons: 2,230 full load
 Dimensions, feet (metres): 344.5 x 42.3 x 11.8 (105.0 x 12.9 x 3.6)
 Main machinery: 2 SEMT-Pielstick 20 PA6B stc diesels; 20,900 hp(m) (15.58 MW); 2 shafts, cp props
 Speed, knots: 24
 Range, n miles: 6,500 at 12 kt
 Complement: 106 (12 officers)
 Guns: 2 CRN 91—30 mm.
 Radars: Surface search: To be announced.
 Navigation: To be announced
 Helicopters: 1 HAL Dhruv.

Comment: Designed and built under ABS and IRS classification by Goa Shipyard for patrol and SAR operations, pollution response and firefighting. Three naval variants of the class are also being built.



SANKALP 5/2008*, Goa Shipyard / 1335382

0 + 3 SAMUDRA (UT 517) CLASS (POLLUTION CONTROL VESSELS) (WPSOH)

Name	No	Builders	Laid down	Launched	Commissioned
SAMUDRA PRAHARI	—	ABG Shipyard, Surat	2004	20 Mar 2007	2009
SAMUDRA PAHARENDAR	—	ABG Shipyard, Surat	2005	2008	2009
SAMUDRA PAVAK	—	ABG Shipyard, Surat	2006	2009	2010

Displacement, tons: 3,300 full load
 Dimensions, feet (metres): 308.4 x 50.9 x 14.8 (94.0 x 15.5 x 4.5)
 Main machinery: 2 Bergen B32 diesels; 8,050 hp (6.0 MW); 2 shafts; cp props. 1 Ulstein Aquamaster bow thruster; 1,185 hp (883 kW)
 Speed, knots: 20
 Range, n miles: 6,000 at 14 kt
 Complement: 85 (10 officers)
 Guns: 1—30 mm.
 Radars: Navigation: To be announced.
 Helicopters: Platform for 1 medium.

Comment: Rolls-Royce UT 517 design selected on 25 October 2004 for three environmental protection ships. The ships are to feature a range of Rolls-Royce propulsion, steering and motion control equipment and are similar to those selected for use by the French Navy and Norwegian Coast Guard. The ships are to be capable of deploying a boom system to contain oil spillages while additional tasks are to include surveillance and law enforcement, anti-smuggling and fishery protection, search and rescue, collecting data, and assistance with salvage and fire fighting.



SAMUDRA (UT 517) CLASS (artist's impression) 10/2004, Rolls-Royce / 1042264

0 + 2 (3) COASTAL PATROL VESSELS (PBO)

Name	No	Builders	Laid down	Launched	Commissioned
—	—	Hindustan Shipyard, Vishakapatnam	26 June 2007	2009	2010
—	—	Hindustan Shipyard, Vishakapatnam	26 June 2007	2009	2010

Displacement, tons: 275 full load
 Dimensions, feet (metres): 167.7 x 27.2 x 6.9 (51.1 x 8.3 x 2.1)
 Main machinery: 3 MTU-F 16V4000 M90 diesels, total of 10,942 hp(m) (8.2 MW) sustained, 3 Kamewa 71SII waterjets
 Speed, knots: 34
 Range, n miles: 1,500 at 14 kt
 Complement: 35
 Guns: 1—30 mm. 2—12.7 mm MGs
 Radars: Surface search: To be announced.

Comment: The first two of a class of five offshore patrol vessels was laid down in 2007. The vessels are to be modified versions of the Sarojini Naidu class, built at Goa Shipyard, and details are based on these vessels. A fast construction timetable has been set.

4 SAMAR CLASS (OFFSHORE PATROL VESSELS) (WPSOH)

Name	No	Builders	Laid down	Launched	Commissioned
SAMAR	42	Goa Shipyard	1990	26 Aug 1992	14 Feb 1996
SANGRAM	43	Goa Shipyard	1992	18 Mar 1995	29 Mar 1997
SARANG	44	Goa Shipyard	1993	8 Mar 1997	21 June 1999
SAGAR	45	Goa Shipyard	1999	14 Dec 2001	3 Nov 2003

Displacement, tons: 2,005 full load
 Dimensions, feet (metres): 334.6 oa; 315 wl x 37.7 x 11.5 (102; 96 x 11.5 x 3.5)
 Main machinery: 2 SEMT-Pielstick 16 PA6V 280 diesels; 12,800 hp(m) (9.41 MW) sustained; 2 shafts, LIPS cp props
 Speed, knots: 22 Range, n miles: 7,000 at 15 kt
 Complement: 124 (12 officers)
 Guns: 1 OTO Melara 3 in (76 mm)/62 Super Rapid; 120 rds/min to 16 km (8.7 n miles); weight of shell 6 kg.
 2—12.7 mm MGs
 Weapons control: BEL/Radamec optromic 2400 director
 Radars: Surface search: Decca 2459, F1-band.
 Navigation: BEL 1245; I-band.

Helicopters: 1 Chetak

Comment: First three ordered in April 1991. Fourth of class ordered 1999. Similar to the Navy's Sukanya class but more heavily armed and carrying a helicopter capable of transporting a Marine contingent. Telescopic hanger.



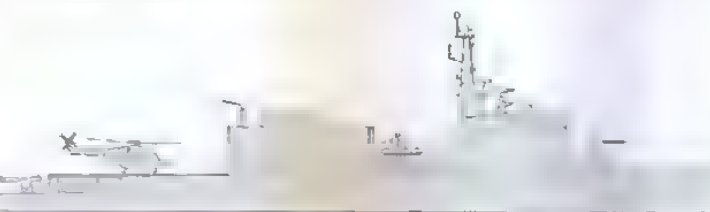
SAGAR 5/2007, Hachiro Nakai / 1166538

0 + 3 OFFSHORE PATROL VESSELS (WPSOH)

Name	No	Builders	Laid down	Launched	Commissioned
VISHWAST	30	Goa Shipyard	18 Nov 2006	4 July 2008	2009
—	—	Goa Shipyard	2007	2009	2010
—	—	Goa Shipyard	2007	2009	2011

Displacement, tons: 1,840 full load
 Dimensions, feet (metres): 307.4 x 40.0 x 11.8 (93.7 x 12.2 x 3.6)
 Main machinery: 2 MTU diesels; 24,150 hp(m) (18.0 MW); 2 shafts; cp props
 Speed, knots: 26. Range, n miles: 4,500 at 16 kt
 Complement: 118 (16 officers)
 Guns: 1 CRN 91—30 mm.
 Radars: Surface search: To be announced.
 Navigation: To be announced.
 Helicopters: 1 HAL Dhruv

Comment: Three 90 m offshore patrol craft ordered in 2006. The building programme has not been confirmed.



90 m OPV (Scale 1 : 800), Ian Sturton / 1164336

8 VIKRAM CLASS (OFFSHORE PATROL VESSELS) (WPSOH)

Name	No	Builders	Launched	Commissioned
VIKRAM	33	Mazagon Dock, Mumbai	26 Sep 1981	19 Dec 1983
VIJAYA	34	Mazagon Dock, Mumbai	6 June 1982	12 Apr 1985
VEERA	35	Mazagon Dock, Mumbai	30 June 1984	3 May 1986
VARUNA	36	Mazagon Dock, Mumbai	28 Jan 1986	27 Feb 1988
VAJRA	37	Mazagon Dock, Mumbai	3 Jan 1987	22 Dec 1988
VIVEK	38	Mazagon Dock, Mumbai	5 Nov 1987	19 Aug 1989
VIGRAHA	39	Mazagon Dock, Mumbai	27 Sep 1988	12 Apr 1990
VARAD	40	Goa Shipyard	3 Sep 1989	19 July 1990

Displacement, tons: 1,224 full load
 Dimensions, feet (metres): 243.1 x 37.4 x 10.5 (74.1 x 11.4 x 3.2)
 Main machinery: 2 SEMT-Pielstick 16 PA6V 280 diesels; 12,800 hp(m) (9.41 MW) sustained, 2 shafts; cp props
 Speed, knots: 22. Range, n miles: 4,250 at 12 kt
 Complement: 96 (11 officers)
 Guns: 1—30 mm.
 Weapons control: Lynx optical sights.
 Radars: Navigation: 2 Decca 1226; I-band
 Helicopters: 1 HAL (Aerospatiale) Chetak

Comment: Owes something to a NEVESBU (Netherlands) design, being a stretched version of its 750 ton offshore patrol vessels. Ordered in 1979. Fin stabilisers. Diving equipment. 4.5 ton deck crane. External firefighting pumps. Has one GRP boat and two inflatable craft. This class is considered too small for its required task and hence the need for the larger Samar class. *Veraha* was donated to the Sri Lankan Navy on 25 February 2007.



VIJAYA 2/2001, Guy Toremans / 0171354

8 PRIYADARSHINI CLASS (COASTAL PATROL CRAFT) (WPBO)

Name	No	Builders	Commissioned
PRIYADARSHINI	221	Garden Reach, Calcutta	25 May 1992
RAZIA SULTANA	222	Goa Shipyard	18 Nov 1992
ANNIE BESANT	223	Goa Shipyard	7 Dec 1992
KAMLA DEVI	224	Goa Shipyard	20 May 1992
AMRIT KAUR	225	Goa Shipyard	20 Mar 1993
KANAK LATA SAURA	226	Garden Reach, Calcutta	27 Mar 1997
BHIKAJI CAMA	227	Garden Reach, Calcutta	24 Sep 1997
SUCHETA KRIPALANI	228	Garden Reach, Calcutta	16 Mar 1998

Displacement, tons: 306 full load
 Dimensions, feet (metres): 150.9 x 24.6 x 6.2 (46.0 x 7.5 x 1.9)
 Main machinery: 2 MTU 12V 538 diesels; 4,025 hp(m) (2.96 MW) sustained; 2 shafts
 Speed, knots: 23. Range, n miles: 2,400 at 12 kt
 Complement: 34 (7 officers)
 Guns: 1—30 mm.
 2—762 mm MGs
 Radars: Racal Decca 1226 or BEL 1245/6X (221-225); I-band.

Comment: A development of the Tara Bai class. *Razia Sultana* (222), previously thought to have been lost at sea, remains in commission.



KAMLA DEVI 3/2004, Bob Fildes / 1042270

6 TARA BAI CLASS (COASTAL PATROL CRAFT) (WPBO)

Name	No	Builders	Commissioned
TARA BAI	71	Singapore SBEC	26 June 1987
AHALYA BAI	72	Singapore SBEC	9 Sep 1987
LAKSHMI BAI	73	Garden Reach, Calcutta	20 Mar 1989
AKKA DEVI	74	Garden Reach, Calcutta	9 Aug 1989
NAIKI DEVI	75	Garden Reach, Calcutta	19 Mar 1990
GANGA DEVI	76	Garden Reach, Calcutta	19 Nov 1990

Displacement, tons: 195 full load
 Dimensions, feet (metres): 147.3 x 23.0 x 8.5 (44.9 x 7.0 x 2.6)
 Main machinery: 2 MTU 12V 538 diesels; 4,025 hp(m) (2.96 MW) sustained; 2 shafts
 Speed, knots: 26. Range, n miles: 2,400 at 12 kt
 Complement: 34 (7 officers)
 Guns: 1 Bofors 40 mm/60
 2—76 mm MGs
 Radars: Surface search: Racal Decca 1226 or BEL 1245/6X (221-225); I-band.

Comment: Two ordered in June 1986 with license to build further four in India. These were laid down in 1987.



AKKA DEVI 6/2000, Indian Navy / 1047263

7 SAROJINI NAIDU CLASS (WPBO)

Name	No	Builders	Commissioned
SAROJINI NAIDU	229	Goa Shipyard	11 Nov 2002
DURGABAI DESHMUKH	230	Goa Shipyard	30 Apr 2003
KASTURBA GANDHI	231	Goa Shipyard	28 Oct 2005
ARUNA ASAF ALI	232	Goa Shipyard	28 Jan 2006
SUBHADRA KUMARI CHAUHAN	233	Goa Shipyard	28 Apr 2006
MEERA BEHAN	234	Goa Shipyard	25 July 2006
SAVITRI BAI PHULE	235	Goa Shipyard	28 Oct 2006

Displacement, tons: 260 full load
 Dimensions, feet (metres): 157.8 x 24.6 x 6.6 (48.1 x 7.5 x 2)
 Main machinery: 3 MTU-F 16V4000 M90 diesels; total of 10,942 hp(m) (8.2 MW) sustained;
 3 Kamewa 71SII waterjets
 Speed, knots: 35
 Complement: 35
 Guns: 1—30 mm
 2—12.7 mm MGs
 Radars: Surface search: to be announced

Comment: A new class of patrol ship designed and developed by Goa Shipyard. Following the initial delivery of two vessels, an order for a further five was made in 2004. These have all been commissioned.



SAROJINI NAIDU 11/2002, Indian Coast Guard / 0530081

7 JIJA BAI MOD 1 CLASS (TYPE 956) (COASTAL PATROL CRAFT) (WPBO)

Name	No	Builders	Commissioned
JIJA BAI	64	Sumidagawa, Tokyo	22 Feb 1984
CHAND BIBI	65	Sumidagawa, Tokyo	22 Feb 1984
KITTUR CHENNAMMA	66	Sumidagawa, Tokyo	21 Oct 1983
RANI JINDAN	67	Sumidagawa, Tokyo	21 Oct 1983
HABBAH KHATUN	68	Garden Reach, Calcutta	27 Apr 1985
RAMADEVI	69	Garden Reach, Calcutta	3 Aug 1985
AVVAIYYAR	70	Garden Reach, Calcutta	19 Oct 1985

Displacement, tons: 181 full load
 Dimensions, feet (metres): 144.3 x 24.3 x 7.5 (44 x 7.4 x 2.3)
 Main machinery: 2 MTU 12V 538 TB82 diesels; 4,025 hp(m) (2.96 MW) sustained; 2 shafts
 Speed, knots: 26. Range, n miles: 2,375 at 14 kt
 Complement: 34 (7 officers)
 Guns: 1 Bofors 40 mm/60. 2—762 mm MGs
 Radars: Surface search: Racal Decca 1226; I-band.

Comment: All were ordered in 1981 and are similar to those in service with the Philippines Coast Guard.



RANI JINDAN 6/1996, Indian Coast Guard / 0064732

2 SDB MK 2 RAJ CLASS (COASTAL PATROL CRAFT) (WPB)

Name	No	Builders	Commissioned
RAJKIRAN	59	Garden Reach, Calcutta	28 Mar 1984
RAJKAMAL	61	Garden Reach, Calcutta	19 Sep 1986

Displacement, tons: 203 full load
 Dimensions, feet (metres): 123 x 24.6 x 5.9 (37.5 x 7.5 x 1.8)
 Main machinery: 2 MTU 12V 538 diesels; 4,025 hp(m) (2.96 MW) sustained; 2 shafts
 Speed, knots: 29. Range, n miles: 1,400 at 14 kt
 Complement: 28 (4 officers)
 Guns: 1 Bofors 40/60 mm.
 Radars: Surface search: Racal Decca; I-band.

Comment: Earlier vessels of this class belonged to the Navy but have been scrapped.



RAJKAMAL 6/2000, Indian Coast Guard / 0104591

1 SWALLOW 65 CLASS (WPB)

C 63
 Displacement, tons: 32 full load
 Dimensions, feet (metres): 65.6 x 15.4 x 5 (20 x 4.7 x 1.5)
 Main machinery: 2 Detroit 12V-71TA diesels; 840 hp (627 kW) sustained; 2 shafts
 Speed, knots: 20. Range, n miles: 400 at 20 kt
 Complement: 9 (1 officer)
 Guns: 1—762 mm MG
 Radars: Navigation: I-band.

Comment: Built by Swallow Craft Co, Pusan, South Korea in early 1980s. Last remaining craft in service.



C 63 1982, Swallow Craft / 0017534

8 INSHORE PATROL CRAFT (WPBF)

C 109-116
 Displacement, tons: 5.5 full load
 Dimensions, feet (metres): 31.2 x 10.7 x 2.5 (9.5 x 3.3 x 0.75)
 Main machinery: 2 outboard motors; diesels; 500 hp (370 kW)
 Speed, knots: 35. Range, n miles: 75 at 25 kt
 Complement: 2
 Guns: 1—762 mm MG

Comment: Built by Bristol Boats Ltd, Kochi. The first craft became operational on 1 December 2004.

PENNANT LIST—continued

623	Badik	824	Tedung Selar	509	Teluk Ratai	591	Surabaya	721	Pulau Roto
624	Keris	825	Boiga	510	Teluk Saleh	971	Tanjung Kamban	722	Pulau Raas
651	Sings	826	Kelabang	511	Teluk Bone	972	Dr Soeharso	723	Pulau Romang
653	Ajak	827	Krait	512	Teluk Semangka	973	Tanjung Nusanive	724	Pulau Rimau
801	Pandrong	828	Kala Hitam	513	Teluk Penyui	974	Tanjung Fataga	726	Pulau Rusa
802	Sura	829	Tarihu	514	Teluk Mandar	981	Karang Pilang	727	Pulau Rangsang
803	Todak	847	Sibarau	515	Teluk Sampit	982	Karang Tekok	729	Pulau Rempang
804	Hiu	848	Sillman	516	Teluk Banten	983	Karang Benteng		
805	Layang	857	Sigalu	517	Teluk Ende	984	Karang Galang		
806	Lemadang	858	Silea	531	Teluk Gilimanuk	985	Karang Unarang		
807	Boa	859	Siribus	532	Teluk Celukan				
808	Welang	862	Siada		Sawang				
809	Suluh Pari	863	Sikuda	533	Teluk Condrawasih				
810	Katon	864	Sigurot	534	Teluk Berau	KAL-IV-02	Baruna Jaya I	543	Teluk Cirebon
811	Kakap	866	Cucut	535	Teluk Palong	KAL-IV-03	Baruna Jaya II	544	Teluk Sabang
812	Kerapu	867	Kobra	536	Teluk Sibolga	KAL-IV-04	Baruna Jaya III	561	Multatuli
813	Tongkol	868	Arakonda	537	Teluk Manado	KAL-IV-05	Baruna Jaya IV	901	Balikpapan
814	Barakuda	869	Patola	538	Teluk Hading	KAL-IV-06	Baruna Jaya VIII	902	Sambu
815	Sanca	870	Taliwangsa	539	Teluk Parigi	931	Burujulasad	903	Arun
816	Warakas			540	Teluk Lampung	932	Dewa Kember	908	Sungai Gerong
817	Panana			541	Teluk Jakarta	933	Jalanidhi	911	Sorong
818	Kalakae			542	Teluk Sangkuring			923	Soputan
819	Tedong Naga	501	Teluk Langsa	580	Dora			924	Leuser
820	Viper	502	Teluk Bayur	582	Kupeng			934	Lampo Estang
821	Pfion	503	Teluk Amboins	583	Dili			935	Tambora
822	Weling	504	Teluk Kau	584	Nusa Utara	711	Pulau Rengat	936	Bromo
823	Matacora	508	Teluk Tomini	590	Makassar	712	Pulau Rupert	961	Wegio

SUBMARINES

Notes: Two ex-German Type 206 submarines were taken over on 25 September 1997 with plans to refit them, followed by three others. Funds ran out in June 1998 and the whole project was then cancelled. New plans to acquire two submarines from South Korea were announced in October 2003. This probably points to a modified Cheng Bogo class. Talks have also, reportedly, taken place with the Russian government.

2 CAKRA TYPE 209/1300 CLASS

Name	No	Builders	Laid down	Launched	Commissioned
CAKRA	401	Howaldtswerke, Kiel	25 Nov 1977	10 Sep 1980	19 Mar 1981
NANGGALA	402	Howaldtswerke, Kiel	14 Mar 1978	10 Sep 1980	6 July 1981

Displacement, tons: 1,285 surfaced; 1,390 dived

Dimensions, feet (metres): 195.2 x 20.3 x 17.9
(59.5 x 6.2 x 5.4)

Main machinery: Diesel-electric; 4 MTU 12V 493 AZ80 GA31L diesels; 2,400 hp (m) (1.76 MW) sustained; 4 Siemens alternators; 1.7 MW; 1 Siemens motor; 4,600 hp (m) (3.38 MW) sustained; 1 shaft

Speed, knots: 11 surfaced; 21.5 dived

Range, n miles: 8,200 at 8 kt

Complement: 34 (6 officers)

Torpedoes: 8–21 in (533 mm) bow tubes. 14 AEG SUT Mod 0; dual purpose, wire-guided; active/passive homing to 12 km (6.5 n miles) at 35 kt; 28 km (15 n miles) at 23 kt; warhead 250 kg.

Countermeasures: ESM. Thomson-CSF DR 2000U; radar warning

Weapons control: Signal Sinbad system.

Radars: Surface search-Thomson-CSF Calypso; I-band

Sonars: Atlas Elektronik CSU 3-2; active/passive search and attack; medium frequency PRS-3/4, (integral with CSU) passive ranging.

Programmes: Ordered on 2 April 1977. Designed by Ingenieurkontor, Lübeck for construction by Howaldtswerke, Kiel and safe by Ferrostaal, Essen—all acting as a consortium.

Modernisation: Major refits at HDW spanning three years from 1986 to 1989. These refits were expensive and lengthy and may have discouraged further orders at

that time. *Cakra* refitted again at Surabaya from 1993 completing in April 1997, including replacement batteries and updated Sinbad TFCS. *Nanggala* received a similar refit from October 1997 to mid-1999. *Cakra* began a refit at Daewoo Shipyard, South Korea in 2004 which was completed in 2005. Work is reported to have included new batteries, overhaul of engines and modernisation of the combat system. A similar refit of *Nanggala* was completed in April 2006.

Structure: Have high-capacity batteries with GRP lead-acid cells and battery cooling supplied by Wilhelm Hagen AG. Diving depth, 240 m (790 ft).

Operational: Endurance, 50 days. Operational status of both boats is doubtful



NANGGALA

8/1999, van Ginderen Collection / 0080001

FRIGATES

Notes: There were reports in mid-2007 that three Russian Steregushchy-class frigates were to be procured but these have not been confirmed.

1 SAMADIKUN (CLAUD JONES) CLASS (FF)

Name	No	Builders	Laid down	Launched	Commissioned
MARTADINATA (ex-Charles Berry DE 1035)	342	American SB Co, Toledo, OH	29 Oct 1958	17 Mar 1959	25 Nov 1959

Displacement, tons: 1,720 standard; 1,968 full load

Dimensions, feet (metres): 310 x 38.7 x 18
(95 x 11.8 x 5.5)

Main machinery: 2 Fairbanks-Morse 38TD 8-1/8-12 diesels (not in 343), 7,000 hp (5.2 MW) sustained; 1 shaft

Speed, knots: 22

Range, n miles: 3,000 at 18 kt

Complement: 171 (12 officers)

Guns: 1 or 2 US 3 in (76 mm)/50 Mk 34; 50 rds/min to 12.8 km (7 n miles); weight of shell 6 kg.
2 USSR 37 mm/63 (twin); 160 rds/min to 9 km (5 n miles); weight of shell 0.7 kg.

Torpedoes: 6–324 mm Mk 32 (2 triple) tubes. Honeywell Mk 46; anti-submarine; active/passive homing to 11 km (5.9 n miles); at 40 kt; warhead 44 kg

Depth charges: 2 DC throwers.

Countermeasures: ESM: WLR-1C; radar warning

Weapons control: Mk 70 Mod 2 for guns.

Radars: Air search: Westinghouse SPS-6E; D-band; range 146 km (80 n miles) (for fighter)

Surface search: Raytheon SPS-6D; G/H-band, range 37 km (20 n miles)

Navigation: Racal Decca 1226; I-band

Fire control: Lockheed SPG-52; K-band

Sonars: SQS-45V; hull-mounted; active search and attack; medium/high frequency.

Programmes: Transferred from US 31 January 1974. Refitted at Subic Bay 1979–82



SAMADIKUN CLASS

10/2001, Chris Settler / 0121379

Modernisation: The Hedgehog A/S mortars have been removed, as have the 25 mm guns. Some have a second 76 mm gun vice the 37 mm.

Operational: It was planned that the Van Speijk class would replace these ships. Three have been deleted and the operational status of this last one is doubtful

6 AHMADYANI (VAN SPEIJK) CLASS (FFGHM)

Name	No	Builders	Laid down	Launched	Commissioned
AHMAD YANI (ex-Tjerk Hiddes)	351	Nederlandse Dok en Scheepsbouw Mij, Amsterdam	1 June 1964	17 Dec 1965	16 Aug 1967
SLAMET RIYADI (ex-Van Speijk)	352	Nederlandse Dok en Scheepsbouw Mij, Amsterdam	1 Oct 1963	5 Mar 1965	14 Feb 1967
YOS SUDARSO (ex-Van Galen)	353	Koninklijke Maatschappij de Schelde, Flushing	25 July 1963	19 June 1965	1 Mar 1967
OSWALD SIAHAAN (ex-Van Nes)	354	Koninklijke Maatschappij de Schelde, Flushing	25 July 1963	26 Mar 1966	9 Aug 1967
ABDUL HALIM PERDANAKUSUMA (ex-Evertsen)	355	Koninklijke Maatschappij de Schelde, Flushing	6 July 1965	18 June 1966	21 Dec 1967
KAREL SATSUITUBUN (ex-Isaac Sweers)	356	Nederlandse Dok en Scheepsbouw Mij, Amsterdam	5 May 1965	10 Mar 1967	15 May 1968

Displacement, tons: 2,225 standard; 2,835 full load

Dimensions, feet (metres): 372 x 41 x 13.8
(113.4 x 12.5 x 4.2)

Main machinery: 2 Caterpillar 3612 diesels (356); 12,512 hp (9.2 MW); 2 Caterpillar 3616 diesels (351, 351, 353, 356); 14,617 hp (10.9 MW); 2 SEMT Pielstick 12 PA6B (354); 14,000 hp (10.6 MW); 2 shafts

Speed, knots: 28.5

Range, n miles: 4,500 at 12 kt

Complement: 180

Missiles: SSM: 8 McDonnell Douglas Harpoon ●; active radar homing to 130 km (70 n miles) at 0.9 Mach; warhead 227 kg.

SAM: 2 twin Matra Simbad launchers for Mistral; IR homing to 4 km (2.2 n miles); warhead 3 kg.

Guns: 1 OTO Melara 3 in (76 mm)/62 compact ●; 85 rds/min to 16 km (8.7 n miles) anti-surface; 12 km (6.6 n miles); anti-aircraft; weight of shell 6 kg, 4 – 12.7 mm MGs

Torpedoes: 6 – 324 mm Mk 32 (2 triple) tubes ●. Honeywell Mk 46; anti-submarine; active/passive homing to 11 km (5.9 n miles) at 40 kt; warhead 44 kg.

Countermeasures. Decoys: 2 Kneibworth Corvus 8-tube trainable; radar distraction or centroid chaff to 1 km.

ESM. UA 8/9, UA 13 (355 and 356); radar warning. FHS D/F

Combat data systems. SEWACO V action data automation and Daisy data processing

Weapons control. Signaal LIOD optronic director. Mk 2 fitted in 354, 353 and 356. SWG-1A Harpoon LCS.

Radars: Air search: Signaal LW03 ●; D-band; range 219 km (120 n miles) for 2 m² target.

Air/surface search: Signaal DA05 ●; E/F-band; range 137 km (75 n miles) for 2 m² target.

AHMAD YANI

Navigation. Racal Decca 1229; I band.

Fire control: Signaal M 45 ●; I/J-band (for 76 mm gun and SSM)

Sonars: Signaal CWE 610; hull-mounted, active search and attack; medium frequency. VDS; medium frequency.

Helicopters: 1 NBO-105C ●.

Programmes: On 11 February 1986 agreement signed with the Netherlands for transfer of two of this class with an option on two more. Transfer dates: *Tjerk Hiddes*, 31 October 1986; *Van Speijk*, 1 November 1986; *Van Galen*, 2 November 1987; *Van Nes*, 31 October 1988. Contract of sale for the last two of the class signed 13 May 1989. *Evertsen* transferred 1 November 1989 and *Isaac Sweers* 1 November 1990. Ships provided with all spare parts but not towed arrays or helicopters.

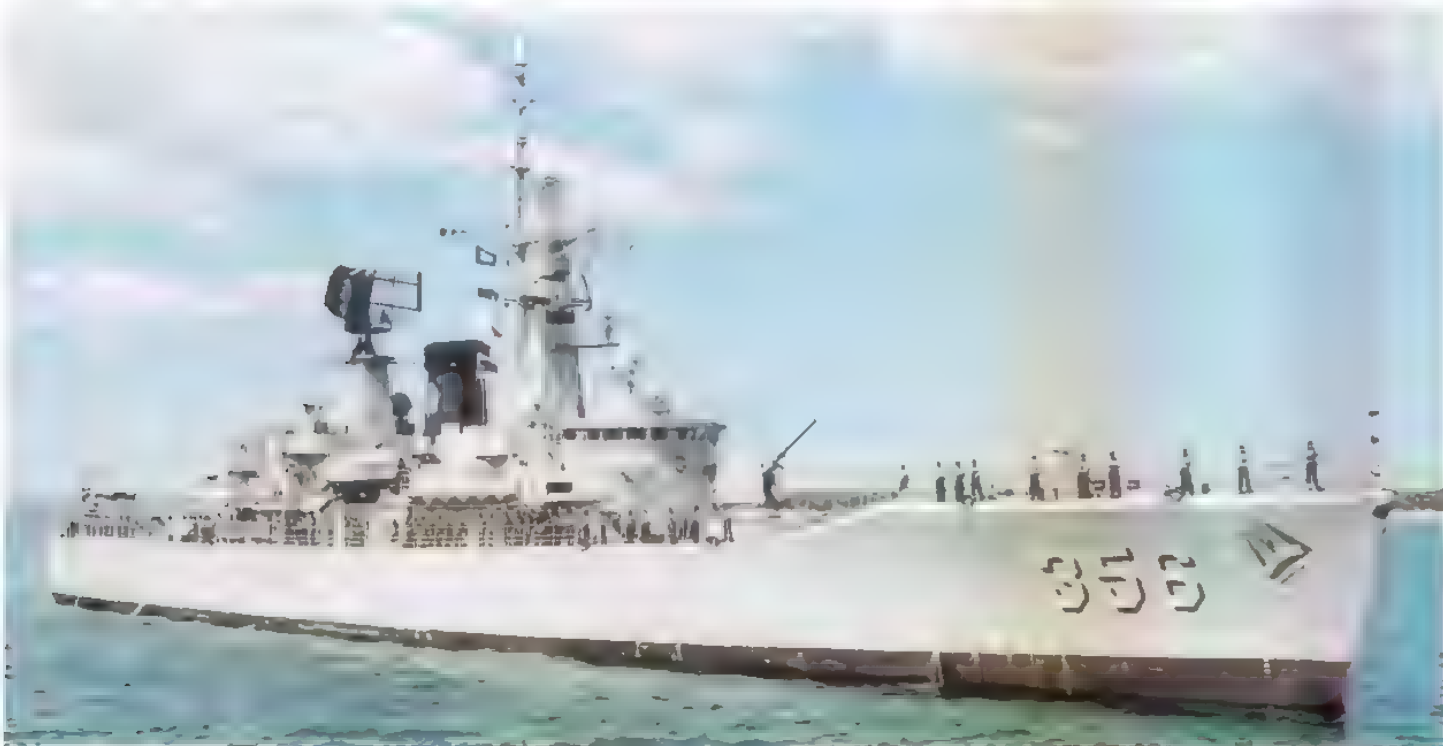
Modernisation: This class underwent mid-life modernisation at Rykswerf Den Helder from 1976. This included replacement of 4.5 in turret by 76 mm,

A/S mortar by torpedo tubes, new electronics and electrics, updating combat data system, improved communications, extensive automation with reduction in complement, enlarged hanger for Lynx and improved habitability. Harpoon for first two only initially because there was no FMS funding for the others. However the USN then provided sufficient SWG 1A panels for all of the class to be retrofitted with Harpoon missiles. LIOD optronic directors Mk 2 fitted in 354, 353 and 356 in 1996-97. Seacat replaced by Simbad twin launchers. *Ahmad Yani* and *Karel Satsuitubun* appear to have some additional superstructure in place of the Seacat launcher on the hanger roof. All six ships have been re-engined with diesel propulsion. 356 was refitted by Tesco Corp in 2003 and 354 by PT Mulia/PT Pal in 2008. 355 and 351 had been refitted by Tesco in mid-2007 and 352 and 353 are to be completed by Tesco by 2008

Operations: Operational availability has been drastically reduced by propulsion problems. Harpoon missiles are reported to be time-expired



(Scale 1 : 1,200), Ian Sturton / 115.8005



KAREL SATSUITUBUN

10/2004, D Pawlenko, RAN / 1044131



KAREL SATSUITUBUN

11/2004, Chns Gee / 1047873

CORVETTES

Notes: A programme for the procurement of indigenously built corvettes was launched at PT Pal Shipyard, Surabaya on 8 October 2004. The programme is believed to entail technology transfer from a foreign shipbuilder to enable local construction. Fincantieri was reported to be a strong contender for collaboration but apparent lack of progress with the project suggests that a decision is yet to be made and that another shipbuilder may yet be involved.

3 FATAHILLAH CLASS (FFG/FFGH)

Name	No	Builders	Laid down	Launched	Commissioned
FATAHILLAH	361	Wilton Fijenoord, Schiedam	31 Jan 1977	22 Dec 1977	18 July 1979
MALAHAYATI	362	Wilton Fijenoord, Schiedam	28 July 1977	19 June 1978	21 Mar 1980
NALA	363	Wilton Fijenoord, Schiedam	27 Jan 1978	11 Jan 1979	4 Aug 1980

Displacement, tons: 1,200 standard, 1,450 full load
Dimensions, feet (metres): 276 × 36.4 × 10.7
 (84 × 11.1 × 3.3)

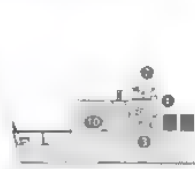
Main machinery: CODOG; 1 RR Olympus TM3B gas turbine; 25,440 hp (19 MW) sustained; 2 MTU 20V 956 TB92 diesels; 11,070 hp (m) (8.14 MW) sustained; 2 shafts; LIPS cp props
Speed, knots: 30. **Range, n miles:** 4,250 at 16 kt
Complement: 89 (11 officers)

Missiles: SSM: 4 Aerospatiale MM 38 Exocet ●; inertial cruise; active radar homing to 42 km (23 n miles) at 0.9 Mach; warhead 165 kg; sea-skimmer.

Guns: 1 Bofors 4.7 in (120 mm)/46 ●; 80 rds/min to 18.5 km (10 n miles); weight of shell 21 kg.
 1 or 2 Bofors 40 mm/70 (2 In *Nala*) ●; 300 rds/min to 12 km (6.6 n miles); weight of shell 0.96 kg.
 2 Rheinmetall 20 mm; 1,000 rds/min to 2 km anti-aircraft; weight of shell 0.24 kg.

Torpedoes: 6—324 mm Mk 32 or ILAS 3 (2 triple tubes (none in *Nala*) ●; 12 Mk 46 (or A244S); anti-submarine, active/passive homing to 11 km (5.9 n miles) at 40 kt; warhead 44 kg

A/S mortars: 1 Bofors 375 mm twin-barrelled trainable ●; 54 Erka; range 1,600 m and Nelli; range 3,600 m.



NALA



FATAHILLAH

(Scale 1 : 1,200), Ian Sturton / 0126692 / 0121374

Countermeasures: Decoys: 2 Knebworth Corvus 8-tubed trainable chaff launchers ●; radar distraction or centroid modes to 1 km. 1T-Mk 6; torpedo decoy.
ESM: MEL Susie 1 (UAA-1); radar intercept.
Combat data systems: Signaal SEWACO-RI action data automation.

Weapons control: Signaal LIROD optronic director.
Radars: Air/surface search: Signaal DA05 ●; E/F-band; range 137 km (75 n miles) for 2 m² target.
 Surface search: Racal Decca AC 1229 ●; I-band.
Fire control: Signaal WM28 ●; I/J-band, range 46 km (25 n miles).

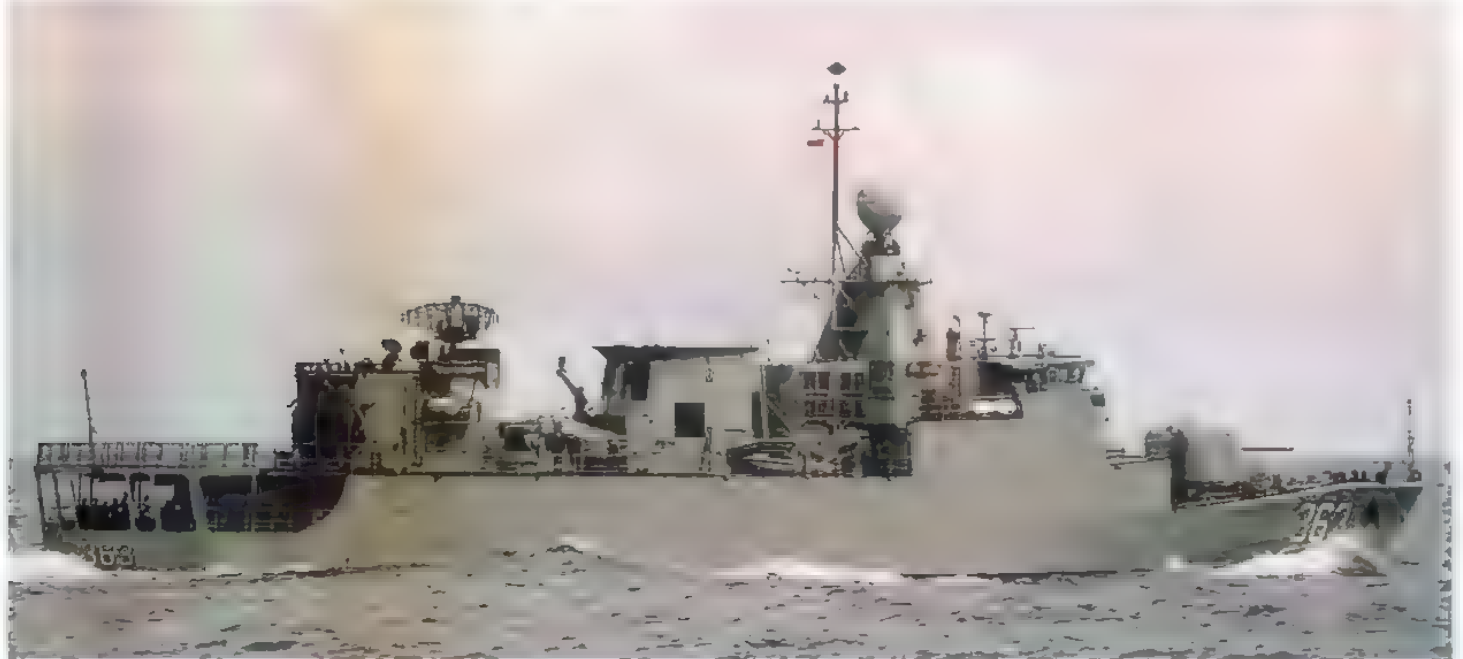
Sonars: Signaal PHS-32; hull-mounted; active search and attack; medium frequency.

Helicopters: 1 Westland Wasp (*Nala* only) ●.

Programmes: Ordered August 1975. Officially rated as Corvettes.

Structure: NEVESBU design. *Nala* is fitted with a folding hangar/landing deck.

Operational: These ships are the busiest of the larger warships. Three successful Exocet (locally modified after life-expiry) firings conducted on 25 August 2002.



NALA

6/2000, van Ginderen Collection J14584



FATAHILLAH

11/2004, Chris Gee J1047876

16 KAPITAN PATIMURA (PARCHIM I) CLASS (PROJECT 1331) (FS)

Name	No	Builders	Commissioned	Recommissioned
KAPITAN PATIMURA (ex-Prenzlau)	371 (ex-231)	Peenewerft, Wolgast	11 May 1983	23 Sep 1993
UNTUNG SUROPATI (ex-Ribnitz)	372 (ex-233)	Peenewerft, Wolgast	29 Oct 1983	23 Sep 1993
NUKU (ex-Waren)	373 (ex-224)	Peenewerft, Wolgast	23 Nov 1982	15 Dec 1993
LAMBUNG MANGKURAT (ex-Angermünde)	374 (ex-214)	Peenewerft, Wolgast	26 July 1985	12 July 1994
CUT NYAK DIEN (ex-Lübz)	375 (ex-P 6168, ex-221)	Peenewerft, Wolgast	12 Feb 1982	25 Feb 1994
SULTAN THAHA SYAIFUDDIN (ex-Bad Doberan)	376 (ex-222)	Peenewerft, Wolgast	30 June 1982	25 Feb 1995
SUTANTO (ex-Wismar)	377 (ex-P 6170, ex-241)	Peenewerft, Wolgast	9 July 1981	10 Mar 1995
SUTEDI SENOPUTRA (ex-Parchim)	378 (ex-242)	Peenewerft, Wolgast	9 Apr 1981	19 Sep 1994
WIRATNO (ex-Perleberg)	379 (ex-243)	Peenewerft, Wolgast	19 Sep 1981	19 Sep 1994
MEMET SASTRAWIRIA (ex-Butzow)	380 (ex-244)	Peenewerft, Wolgast	30 Dec 1981	2 June 1995
TJITADI (ex-Bergen)	381 (ex-213)	Peenewerft, Wolgast	1 Feb 1985	10 May 1996
HASAN BASRI (ex-Gustrow)	382 (ex-223)	Peenewerft, Wolgast	10 Nov 1982	10 May 1996
IMAN BONJOL (ex-Teterow)	383 (ex-P 6168, ex-234)	Peenewerft, Wolgast	27 Jan 1984	26 Apr 1994
PATI UNUS (ex-Ludwiglust)	384 (ex-232)	Peenewerft, Wolgast	4 July 1983	21 July 1995
TEUKU UMAR (ex-Grevesmühlen)	385 (ex-212)	Peenewerft, Wolgast	21 Sep 1984	27 Oct 1996
SILAS PAPARE (ex-Gadebusch)	386 (ex-P 6167, ex-211)	Peenewerft, Wolgast	31 Aug 1984	27 Oct 1996

Displacement, tons: 769 standard

Dimensions, feet (metres): 246.7 × 32.2 × 11.5
(75.2 × 9.8 × 3.5)

Main machinery: 1 Zvezda M 504A diesel; 4,700 hp (3.5 MW) for central line cp prop
2 Deutz TBD 620 V16 diesels (372, 373, 374, 377, 378, 381); 6,000 hp (4.5 MW)
or 2 MTU 16V 4000 M 90 diesels (371, 379, 380, 382, 383 and 386); 7,300 hp (5.4 MW)
or 2 CAT 3516B diesels (355, 376, 384, 385); 5,200 hp (3.9 MW); 2 outboard shafts

Speed, knots: 24

Range, n miles: 1,750 at 18 kt

Complement: 64 (9 officers)

Missiles: SAM: SA-N-5/8 launchers fitted in some. May be replaced by twin Simbad launchers.

Guns: 2 USSR 57 mm/75 AK 725 (twin) automatic; 120 rds/min to 12.7 km (6.8 n miles); weight of shell 2.8 kg.
2–30 mm (twin) automatic; 500 rds/min to 5 km (2.7 n miles) anti-aircraft; weight of shell 0.54 kg.
1–20 mm.

Torpedoes: 4–400 mm tubes automatic.

A/S mortars: 2 RBU 6000 12-barrelled trainable launchers automatic loading; range 6,000 m; warhead 31 kg.

Mines: Mine rails fitted.



KAPITAN PATIMURA

(Scale 1: 600), Ian Sturton / 0506007

Countermeasures: Decoys: 2 PK 16 chaff rocket launchers.
ESM: 2 Watch Dog; radar warning.

Radars: Air/surface search: Strut Curve automatic; F-band; range 110 km (60 n miles) for 2 m² target.

Navigation: TSR 333; I-band.

Fire control: Muff Cob automatic; G/H-band

IFF High Pole B

Sonars: MG 332T; hull-mounted; active search and attack; high frequency.

EikTail; VDS system on starboard side (in some hulls)

Programmes: Ex-GDR ships mostly paid off in 1991. Formally transferred on 4 January 1993 and became Indonesian ships on 25 August 1993. First three arrived Indonesia in November 1993.

Modernisation: All refitted prior to sailing for Indonesia. Range increased and air conditioning added to accommodation. SAM launchers can be carried. A re-engining programme was completed in 2005.



SILAS PAPARE

5/2005, Guy Toremans / 1153204



PATI UNUS

5/2005, Guy Toremans / 1153205

4 SIGMA CLASS (CORVETTES) (FS)

Name	No	Builders	Laid down	Launched	Commissioned
DIPONEGORO	365	Royal Schelde, Vlissingen	24 Mar 2005	16 Sep 2006	2 July 2007
SULTAN HASANUDDIN	366	Royal Schelde, Vlissingen	24 Mar 2005	16 Sep 2006	24 Nov 2007
SULTAN ISKANDAR MUDA	367	Royal Schelde, Vlissingen	8 May 2006	24 Nov 2007	18 Oct 2008
FRANS KASSIEPO	368	Royal Schelde, Vlissingen	8 May 2006	June 2008	7 Mar 2009

Displacement, tons: 1,692 full load
 Dimensions, feet (metres): 297.6 x 42.6 x 11.8
 (90.7 x 13.0 x 3.6)

Main machinery: 2 SEMT Pielstick 20 PA6B diesels;
 21,725 hp (16.2 MW); 2 shafts; cp props

Speed, knots: 28
 Range, n miles: 4,000 at 18 kt
 Complement: 80

Missiles: SAM: 2 quadruple Tetral launchers ●; MBDA
 Mistral, IR homing to 4 km (2.2 n miles); warhead 3 kg.
 SSM: 4 MBDA mm 40 Exocet Block II ●; inertial cruise;
 active radar homing to 70 km (40 n miles) at 0.9 Mach;
 warhead 165 kg; sea-skimmer.

Guns: 1 OTO Melara 3 in (76 mm)/62 Super Rapid ●;
 120 rds/min to 16 km (8.7 n miles); weight of shell 8 kg.
 2 Giat 20 mm ●

Torpedoes: 6—324 mm (2 B 515 triple) tubes ● Eurotorp
 Mu-90; active/passive homing to 25 km (13.5 n miles) at
 29/50 kt

Countermeasures: Decoys: 2 Terma SKWS 130 mm
 launchers.

ESM: Thales DR 3000; intercept.

ECM: Racal Scorpion; jammer.

Combat data systems: Tactics including Link Y.

Weapons control: LIROD Mk 2 optronic tracker ●.

Radars: Surface search: Thales MW 08 ●; G-band.

Navigation: Sperry Marine Bndgemaster E ●; E/F/I-band.

Sonars: Thales Kingclip, hull-mounted.

Helicopters: Platform only.

Programmes: Contract for the construction of two corvettes,
 both to be built in the Netherlands, signed on 7 January
 2004. The role of the ships is to conduct coastal security
 operations. Sea trials of *Diponegoro* started in April 2007
 and the ship arrived in Indonesia in September 2007.
Hasanuddin began sea-trials in November 2007. The
 option to build two further craft was exercised on
 18 May 2006. These were also built in the Netherlands
 and were delivered on 2 December 2008 and early 2009
 respectively.

Operational: Exocet is expected to be fitted by 2010.



DIPONEGORO

(Scale 1: 900), Ian Sturton / 1353094



DIPONEGORO

7/2007, Michael Nitz / 1187750



SULTAN ISKANDAR MUDA

10/2008*, Michael Nitz / 1353095



SULTAN HASANUDDIN

10/2008*, Michael Nitz / 1353096

SHIPBORNE AIRCRAFT

Notes: Six Mi-17 medium lift helicopters for the Indonesian Marine Corps were acquired from Russia in 2008.

Numbers/Type: 6 Dirgantara (MBB) NBO 105CB.

Operational speed: 113 kt (210 km/h).

Service ceiling: 9,845 ft (3,000 m).

Range: 407 n miles (754 km).

Role/Weapon systems: Surveillance/support aircraft. A further three for SAR. Sensors: Thomson-CSF AMASCOS surveillance system; Chlio FLIR. Weapons: Unarmed.



NBO 105C

11/1980 / 0080007

Numbers/Type: 3 Dirgantara (Aerospatiale) NAS-332 Super Puma

Operational speed: 151 kt (279 km/h).

Service ceiling: 15,090 ft (4,600 m).

Range: 335 n miles (620 km).

Role/Weapon systems: ASW and assault operations with secondary role in utility and SAR. ASVW development possible with Exocet or similar. Sensors: Thomson-CSF Omega radar and Alcatel dipping sonar in some. Weapons: ASW; two Mk 46 torpedoes or depth bombs.



SUPER PUMA (French colours)

6/1994 / 0080008

LAND-BASED MARITIME AIRCRAFT (FRONT LINE)

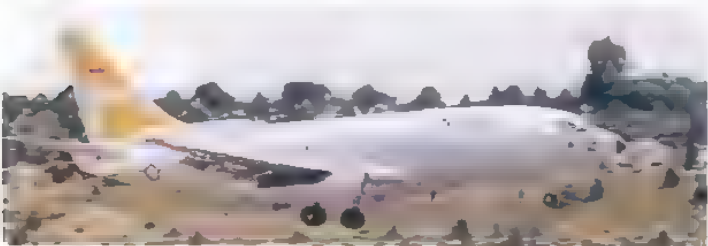
Numbers/Type: 3 Boeing 737-200 Surveiller

Operational speed: 462 kt (856 km/h).

Service ceiling: 50,000 ft (15,240 m).

Range: 2,530 n miles (4,688 km).

Role/Weapon systems: Land based for long-range maritime surveillance roles. Air Force manned. Sensors upgraded in 1993-94 to include IFF Sensors: Motorola APS-135(v) SLAM MR radar, Thomson-CSF Oceanmaster radar. Weapons: Unarmed.



BOEING 737

9/2003, Boeing / 0550018

Numbers/Type: 7 PZL Mielec M-28 Bryza.

Operational speed: 181 kt (335 km/h).

Service ceiling: 13,770 ft (4,200 m).

Range: 736 n miles (1,365 km).

Role/Weapon systems: Polish built aircraft based on the USSR Cash light transport. Contract on 18 August 2005 for seven maritime patrol aircraft to be delivered in late 2006. Sensors: PIT ARS-400M radar (SAR/ISAR modes).

Numbers/Type: 25/6 GAF Searchmaster Nomad B/Nomad L.

Operational speed: 168 kt (311 km/h).

Service ceiling: 21,000 ft (6,400 m).

Range: 730 n miles (1,352 km).

Role/Weapon systems: Nomad type built in Australia. Short-range maritime patrol, EEZ protection and anti-smuggler duties. 20 more acquired from Australian Army in August 1997 for use in maritime role. Not all are operational and NC-212 replacements are planned. Sensors: Nose-mounted search radar. Weapons: Unarmed.

Numbers/Type: 8 Northrop F-5E Tiger II.

Operational speed: 940 kt (1,740 km/h).

Service ceiling: 51,800 ft (15,790 m).

Range: 300 n miles (556 km).

Role/Weapon systems: Fleet air defence and strike fighter, formed 'naval co-operation unit' Planned to be replaced by BAe Hawk 200 in due course. Sensors: AI radar. Weapons: AD; two AIM-9 Sidewinder, two 20 mm cannon, Strike; 3,175 tons of underwing stores

Numbers/Type: 7 Dirgantara NC 212-200.

Operational speed: 240 kt (445 km/h).

Service ceiling: 26,600 ft (8,110 m).

Range: 669 n miles (1,240 km).

Role/Weapon systems: Surveillance aircraft first delivered in 1996. There are nine further transport aircraft. First aircraft augmented with Thales AMASCOS mission system delivered in mid-2005. Sensors: Thomson-CSF Ocean Master radar, Chlio FLIR. Weapons: ASV; may have Exocet AM 39.

Numbers/Type: 3 Dirgantara CN-235

Operational speed: 236 kt (437 km/h).

Service ceiling: 25,000 ft (7,620 m).

Range: 1,565 n miles (2,819 km).

Role/Weapon systems: Maritime Patrol aircraft, first of which delivered in 2008. Operated by the Air Force. Sensors: Thales Ocean Master radar, Elettronica ALR 733 RWR, Chlio thermal imager, CAE AN/ASQ-508 MAD

PATROL FORCES

4 DAGGER CLASS (FAST ATTACK CRAFT—MISSILE) (PTFG)

Name	No	Builders	Commissioned
MANDAU	621	Korea Tacoma, Masan	20 July 1979
RENCONG	622	Korea Tacoma, Masan	20 July 1979
BADIK	623	Korea Tacoma, Masan	Feb 1980
KERIS	624	Korea Tacoma, Masan	Feb 1980

Displacement, tons: 270 full load

Dimensions, feet (metres): 164.7 x 23.9 x 7.5 (50.2 x 7.3 x 2.3)

Main machinery: CODOG; 1 GE LM 2500 gas turbine; 23,000 hp (17.16 MW) sustained;

2 MTU 12V 331TC81 diesels; 2,240 hp(m) (1.65 MW) sustained; 2 shafts; cp props

Speed, knots: 41 gas, 17 diesel. **Range, n miles:** 2,000 at 17 kt

Complement: 43 (7 officers)

Missiles: SSM: 4 Aerospatiale MM 38 Exocet, inertial cruise; active radar homing to 42 km (23 n miles) at 0.9 Mach; warhead 165 kg; sea-skimmer.

Guns: 1 Bofors 57 mm/70 Mk 1; 200 rds/min to 17 km (9.3 n miles); weight of shell 2.4 kg.

Launchers for illuminants on each side

1 Bofors 40 mm/70; 300 rds/min to 12 km (6.6 n miles); weight of shell 0.96 kg

2 Rheinmetall 20 mm

Countermeasures: ESM: Thomson-CSF DR 2000S (in 623 and 624), radar intercept.

Weapons control: Selenia NA-18 optronic director

Radars: Surface search: Racal Decca 1226; I-band

Fire control: Signaal WM28; I/J-band

Programmes: PSMM Mk 5 type craft ordered in 1975.

Structure: Shorter in length and smaller displacement than South Korean units. Mandau has a different shaped mast with a tripod base.



RENCONG

10/1988 / 0052358

4 TODAK (PB 57) CLASS (NAV V) (LARGE PATROL CRAFT) (PBO)

Name	No	Builders	Commissioned
TODAK	803	PT Pal Surabaya	4 May 2000
HIU	804	PT Pal Surabaya	Sep 2000
LAYANG	805	PT Pal Surabaya	10 July 2002
LEMADANG (ex-Dorang)	806	PT Pal Surabaya	Aug 2004

Displacement, tons: 447 full load

Dimensions, feet (metres): 190.6 x 25 x 9.2 (58.1 x 7.6 x 2.8)

Main machinery: 2 MTU 16V 956 T892 diesels; 8,850 hp(m) (6.5 MW) sustained; 2 shafts

Speed, knots: 27. **Range, n miles:** 6,100 at 15 kt, 2,200 at 27 kt

Complement: 53

Missiles: SSM: 2 C-802 (YJ-83) (fitted in 804 and 805); mid-course guidance and active radar homing to 150 km (81 n miles) at 0.9 Mach; warhead 165 kg.

Guns: 1 Bofors SAK 57 mm/70 Mk 2; 220 rds/min to 14 km (7.6 n miles); weight of shell 2.4 kg.

1 Bofors SAK 40 mm/70; 300 rds/min to 12 km (6.6 n miles); weight of shell 0.96 kg.

2 Rheinmetall 20 mm.

Countermeasures: Decoys: CSEE Dagaie chaff launchers.

ESM: Thomson-CSF DR 3000 S1; intercept.

Combat data systems: TACTICOS type.

Weapons control: Signaal LIOD 73 R; Mk 2 optronic director.

Radars: Air/surface search, Thales Variant; I-band

Surface search: Thales Scout, I-band

Fire control: Signaal LIROD Mk 2; K-band.

Navigation: Kelvin Hughes KH 1007; I-band.

Comment: Ordered in mid-1993 from PT Pal Surabaya. Weapon systems ordered in November 1994. Much improved combat data system is fitted. The after gun was intended to be a second 57 mm but this was changed to a 40 mm. C-802/YJ-83 missiles have been installed in Layang and Hiui; the other two ships are to be similarly fitted



LAYANG

6/2007 / 1353097

4 KAKAP (PB 57) CLASS (NAV III AND IV) (LARGE PATROL CRAFT) (PBOH)

Name	No	Builders	Commissioned
KAKAP	811	Lürssen/PT Pal Surabaya	29 June 1988
KERAPU	812	Lürssen/PT Pal Surabaya	5 Apr 1989
TONGKOL	813	PT Pal Surabaya	Dec 1993
BARAKUDA (ex-Bervang)	814	PT Pal Surabaya	Aug 1995

Displacement, tons: 423 full load
Dimensions, feet (metres): 190.6 x 25 x 9.2 (58.1 x 7.6 x 2.8)
Main machinery: 2 MTU 16V 956 TB92 diesels; 8,850 hp/m (6.5 MW) sustained; 2 shafts
Speed, knots: 28. **Range, n miles:** 6,100 at 15 kt; 2,200 at 27 kt
Complement: 49 plus 8 spare berths
Guns: 1 Bofors 40 mm/70; 240 rds/min to 12.6 km (6.8 n miles); weight of shell 0.96 kg. 2—12.7 mm MGs
Countermeasures: ESM: Thomson-CSF DR 3000 S1; intercept.
Radars: Surface search: Racal Decca 2459; I-band
Navigation: KH 1007; I-band.
Helicopters: Platform for 1 NBO-105.

Comment: Ordered in 1982. First pair shipped from West Germany and completed at PT Pal Surabaya. Second pair assembled at Surabaya taking longer than expected to complete. The first three are NAV III SAR and Customs versions and by comparison with NAV I are very lightly armed and have a 13 x 7.1 m helicopter deck in place of the after guns and torpedo tubes. Vosper Thornycroft fin stabilisers are fitted. Can be used for Patrol purposes as well as SAR, and can transport two rifle platoons. There is also a fast seaboat with launching crane at the stern and two water guns for firefighting. The single NAV IV version has some minor variations and is used as Presidential Yacht manned by a special unit.



TONGKOL 2/2001, Settler/Steels / 0121380



BARAKUDA (NAV IV) 8/1995, van Ginderen Collection / 0080017

8 SIBARAU (ATTACK) CLASS (LARGE PATROL CRAFT) (PB)

Name	No	Builders	Commissioned
SIBARAU (ex-Bandolier)	847	Walkers, Australia	14 Dec 1968
SILJMAN (ex-Archer)	848	Walkers, Australia	15 May 1968
SIGALU (ex-Barricade)	857	Walkers, Australia	26 Oct 1968
SILEA (ex-Acute)	858	Evans Deakin	24 Apr 1968
SIRIBUA (ex-Bombard)	859	Walkers, Australia	5 Nov 1968
SIADA (ex-Barbette)	862	Walkers, Australia	16 Aug 1968
SIKUDA (ex-Attack)	863	Evans Deakin	17 Nov 1967
SIGUROT (ex-Assail)	864	Evans Deakin	12 July 1968

Displacement, tons: 146 full load
Dimensions, feet (metres): 107.5 x 20 x 7.3 (32.8 x 6.1 x 2.2)
Main machinery: 2 Paxman 16YJCM diesels; 4,000 hp (2.98 MW) sustained; 2 shafts
Speed, knots: 21
Range, n miles: 1,220 at 13 kt
Complement: 19 (3 officers)
Guns: 1 Bofors 40 mm/60. 1—12.5 mm MG
Countermeasures: ESM: DASA Telegon VIII; intercept
Radars: Surface search: Decca 916; I-band.

Comment: Transferred from Australia after refit-Bandolier 16 November 1973, Archer in 1974, Barricade March 1982, Acute 6 May 1983, Bombard September 1983, Attack 22 February 1985 (recommissioned 24 May 1985), Barbette February 1985, Assail February 1986. All carry rocket/flare launchers. Two similar craft with pennant numbers 860 and 861 were built locally in 1982/83 but have not been reported for some years.



SIGALU 4/1999 / 0080013

4 SINGA (PB 57) CLASS (NAV I AND II) (LARGE PATROL CRAFT) (PBO)

Name	No	Builders	Commissioned
SINGA	651	Lürssen/PT Pal Surabaya	Apr 1988
AJAK	653	Lürssen/PT Pal Surabaya	5 Apr 1989
PANDRONG	801	PT Pal Surabaya	1992
SURA	802	PT Pal Surabaya	1993

Displacement, tons: 447 full load (NAV I), 428 full load (NAV II)
Dimensions, feet (metres): 190.6 x 25 x 9.2 (58.1 x 7.6 x 2.8)
Main machinery: 2 MTU 16V 956 TB92 diesels; 8,850 hp/m (6.5 MW) sustained; 2 shafts
Speed, knots: 27. **Range, n miles:** 6,100 at 15 kt; 2,200 at 27 kt
Complement: 42 (6 officers)
Guns: 1 Bofors SAK 57 mm/70 Mk 2; 220 rds/min to 14 km (7.6 n miles); weight of shell 2.4 kg
 1 Bofors SAK 40 mm/70; 300 rds/min to 12 km (6.6 n miles); weight of shell 0.96 kg
 2 Rheinmetall 20 mm.
Torpedoes: 2—21 in (533 mm) Toro tubes (651 and 653) AEG SUT; anti-submarine; wire-guided, active/passive homing to 12 km (6.6 n miles) at 35 kt; 28 km (15 n miles) at 23 kt warhead 250 kg.
Countermeasures: Decoys. CSEE Dagaie single trainable launcher; automatic dispenser for IR flares and chaff; H/J-band.
ESM: Thomson-CSF DR 2000 S3 with Dalia analyser; intercept. DASA Telegon VIII D/F.
Weapons control: Thales LIROD 2 (801, 802) optronic director. Signaal WM22 72 RI WCS (651 and 653)
Radars: Surface search: Racal Decca 2459, I-band; Signal Scout; H/I-band (801 and 802)
Fire control: Signaal WM22; I/J-band (651 and 653).
Sonars: Signaal PMS 32 (NAV I); active search and attack; medium frequency.

Comment: Class ordered from Lürssen in 1982. First launched and shipped incomplete to PT Pal Surabaya for fitting out in January 1984. Second shipped July 1984. The first two are NAV I ASW versions with torpedo tubes and sonars. The second pair are NAV II AAW versions with an augmented gun armament, an improved surveillance and fire-control radar, but without torpedo tubes and sonars and completed later than expected in 1992-93. Vosper Thornycroft fin stabilisers are fitted.



SINGA (NAV I) 5/1999, G Toremans / 0080009



AJAK (NAV I) 5/1998, John Mortimer / 0057359



SURA 5/2000, M Declerck / 0104597

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1 PATROL CRAFT (PB)

Name	No	Builders	Launched	Commissioned
CUCUT (ex-Jupiter)	866 (ex-A 102)	Singapore SBEC	3 Apr 1990	19 Aug 1991

Displacement, tons: 170 full load
 Dimensions, feet (metres): 117.5 x 23.3 x 7.5 (35.8 x 7.1 x 2.3)
 Main machinery: 2 Dautz MWM TBD234V12 diesels; 1,360 hp(m) (1 MW) sustained; 2 shafts; bow thruster
 Speed, knots: 14. Range, n miles: 200 at 14 kt
 Complement: 33 (5 officers)
 Guns: 1 Oerlikon 20 mm GAM-BO1. 4—12.7 mm MGs
 Radars: Navigation. Recal Decca; I-band.

Comment: Designed as an underwater search and salvage craft, decommissioned from the Singapore Navy and transferred on 21 March 2002. Deployed as a patrol craft.



CUCUT (Singapore colours) 6/1994, van Ginderen Collection / 0084281

13 KAL-36 PATROL CRAFT (PB)

Name	No	Builders	Commissioned
KOBRA	867	Fasharkan, Mentigi	31 Mar 2003
ANAKONDA	868	Fasharkan, Jakarta	31 Mar 2003
PATOLA	869	PT Polindo, Tanjung Pinang	Oct 2003
BOA	807	Fasharkan, Mentigi	6 Aug 2004
WELANG	808	Fasharkan, Mentigi	6 Aug 2004
TALIWANGSA	870	Fasharkan, Manokwari	6 Aug 2004
SULUH PARI	809	Fasharkan, Mentigi	20 Jan 2005
KATON	810	Fasharkan, Mentigi	20 Jan 2005
SANCA	815	Fasharkan, Manokwari	20 Jan 2005
WARAKAS	816	Fasharkan, Jakarta	20 Jan 2005
PANANA	817	Fasharkan, Makassar	20 Jan 2005
KALAKAE	818	Fasharkan, Makassar	20 Jan 2005
TEDONG NAGA	819	Fasharkan, Jakarta	20 Jan 2005

Displacement, tons: 80 full load
 Dimensions, feet (metres): 118.1 x 23.0 x 4.4 (36 x 7.0 x 1.35)
 Main machinery: 3 MAN D2842 LE 410 diesels, 3,300 hp (2.46 MW); or 3 Caterpillar 3412E diesels, 3,600 hp (2.7 MW)
 Speed, knots: 38
 Complement: 18
 Guns: 1—20 mm 1—12.7 mm MG.
 Radars: Navigation I-band.

Comment: *Kobra* was the prototype vessel first demonstrated in late 2002. Glass fibre hull. There are some differences in armament and superstructure, some being fitted with a stern ramp for RIB. *Patola* funded by Bali province and others may have been similarly procured. Constructed by variety of shipbuilders and operated by the Indonesian Navy. Further craft are expected.



WARAKAS 6/2008* / 1353089

9 KAL-40 CLASS (PATROL CRAFT) (PB)

Name	No	Builders	Commissioned
VIPER	820	Fasharkan, Jakarta	18 Oct 2006
PITON	821	Fasharkan, Mentigi (Riau)	19 Oct 2006
WELING	822	Fasharkan, Mentigi (Riau)	19 Oct 2006
MATACORA	823	Fasharkan, Mentigi (Riau)	14 Mar 2008
TEDUNG SELAR	824	Fasharkan, Jakarta	14 Mar 2008
BOIGA	825	Fasharkan, Manokwari	1 Aug 2007
KRAIT	827	Fasharkan, Mentigi (Riau)	7 Jan 2009
TARIHU	828	Fasharkan, Mentigi (Riau)	7 Jan 2009
ALKURA	830	Fasharkan, Manokwari	2009

Displacement, tons: 100 full load
 Dimensions, feet (metres): 131.2 x 23.9 x ? (40.0 x 7.3 x ?)
 Main machinery: To be announced
 Speed, knots: 29
 Complement: 25
 Guns: 2—25 mm. 2—12.7 mm MGs.

Comment: A successor to the PC-38 class patrol craft and a building programme is in progress. There are variations in design and construction (GRP and aluminium).



KRAIT 11/2008* / 1353089

AMPHIBIOUS FORCES

Notes: This section includes some vessels of the Military Sealift Command-Kolnifamil.

3 + 2 MULTIROLE VESSELS (LPD/APCR)

Name	No	Builders	Laid down	Launched	Commissioned
DR SOEHARSO (ex-Tanjung Dalpala)	972	Dae Sun Shipbuilders, Pusan	2002	17 May 2003	Sep 2003
MAKASSAR	590	Dae Sun Shipbuilders, Pusan	2005	7 Dec 2006	29 Apr 2007
SURABAYA	591	Dae Sun Shipbuilders, Pusan	7 Dec 2006	23 Mar 2007	1 Aug 2007
—	—	PT Pal, Surabaya	19 Oct 2006	28 Aug 2008	2009
—	—	PT Pal, Surabaya	19 Oct 2006	2008	2010

Displacement, tons: 7,300 standard, 11,400 full load
 Dimensions, feet (metres): 400.00 x 72.2 x 16.1 (122.0 x 22.0 x 4.9)
 Main machinery: CODAD; 2 B&W 8L28/32A diesels; 5,250 hp (3.9 MW); 2 shafts
 Speed, knots: 15
 Range, n miles: 8,600 at 12 kt
 Complement: 126
 Military lift: 13 tanks; 507 troops; 2 LCVPs
 Guns: 1—57 mm. 2—40 mm (1 twin).
 Radars: Navigation: 2-I-band.
 Helicopters: 2 Super Puma

Programmes: Officially designated a Multipurpose Hospital Ship. Following delivery of the first vessel in mid-2003, a contract for a further four vessels was finalised on 21 December 2004. The first two of these are being built in South Korea and the second two in Indonesia. First steel was cut for the first Indonesian vessel on 19 October 2006. Structure: Has a docking well, capable of accommodating two LCU-23M stern and side ramps and hospital facilities.



DR SOEHARSO 6/2004, Daesun / 1047875



MAKASSAR 3/2007 / 1166451

2 TROOP TRANSPORT SHIPS (AP)

Name	No	Builders	Commissioned
TANJUNG NUSANIVE (ex-Kambuna)	973	Meyer Werft, Papenburg	1984
TANJUNG FATAGAR (ex-Rinjani)	974	Meyer Werft, Papenburg	1984

Measurement, tons: 13,954 grt
 Dimensions, feet (metres): 472.4 x 76.8 x 19.4 (144.0 x 23.4 x 5.9)
 Main machinery: 2 MaK diesels; 16,760 hp (12.5 MW); 2 shafts; bow thruster
 Speed, knots: 20
 Range, n miles: 5,500 at 12 kt
 Complement: 119
 Guns: To be announced.
 Radars: Navigation: I-band

Comment: Converted passenger ships originally delivered to the Directorate of Sea Communications, Jakarta, in 1984. Capable of transporting 1,600 passengers and used to serve the Indonesian islands in their civilian configuration. Acquired by the Indonesian Navy in early 2005, converted into troop transports and commissioned on 1 September 2005.

5 TROOP TRANSPORT SHIPS (AP)

Name	No	Builders	Commissioned
KARANG PILANG (ex-Ambuiu)	981	Lürssen Werft, Lemwerder	1998
KARANG TEKOK (ex-Mahakam)	982	Lürssen Werft, Lemwerder	1998
KARANG BANTENG (ex-Serayu)	983	Lürssen Werft, Lemwerder	1998
KARANG GALANG (ex-Cisadane)	984	Lürssen Werft, Lemwerder	1998
KARANG UNARANG (ex-Barito)	985	Lürssen Werft, Lemwerder	1998

Displacement, tons: 493 standard
 Dimensions, feet (metres): 229.0 x 34.1 x 6.6 (69.8 x 10.4 x 2.0)
 Main machinery: 4 MTU 16V 595 TE 70L diesels; 20,400 hp (15.2 MW); 2 Kamewa waterjets
 Speed, knots: 38 Range, n miles: 550 at 35 kt
 Guns: 2—20 mm.
 Radars: Navigation, I-band.

Comment: Converted passenger ferries of aluminium construction transferred from PT ASDP ferry company. Capable of transporting 600 troops and their equipment. Used to serve the Indonesian islands in their civilian configuration and acquired by the Indonesian Navy between September 2005 and April 2006.



KARANG GALANG 12/2006 / 1164967

7 LST 1-511 AND 512-1152 CLASSES (LST)

Name	No	Builders	Commissioned
TELUK LANGSA (ex-LST 1128)	501	Chicago Bridge	8 Mar 1946
TELUK BAYUR (ex-LST 616)	502	Chicago Bridge	29 May 1944
TELUK KAU (ex-LST 652)	504	Chicago Bridge	1 Jan 1945
TELUK TOMINI (ex-Inagua Crest, ex-Brunei, ex-Bledsoe County, LST 356)	508	Charleston, NY	22 Dec 1942
TELUK RATAI (ex-Teluk Sindora, ex-Inagua Shipper, ex-APB 44, ex-LST 678)	509	American Bridge, PA	30 June 1944
TELUK SALEH (ex-Clark County, LST 601)	510	Chicago Bridge	25 Mar 1944
TELUK BONE (ex-Iredell County, LST 839)	511	American Bridge, PA	6 Dec 1944

Displacement, tons: 1,653 standard; 4,080 full load
 Dimensions, feet (metres): 328 x 50 x 14 (100 x 15.2 x 4.3)
 Main machinery: 2 GM 12-567A diesels; 1,800 hp (1.34 MW); 2 shafts
 Speed, knots: 11.6 Range, n miles: 11,000 at 10 kt
 Complement: 119 (accommodation for 266)
 Military lift: 2,100 tons
 Guns: 7—40 mm. 2—20 mm (Teluk Langsa) 8—37 mm (remainder)
 Radars: Surface search, SPS-21 (Teluk Tomini, Teluk Sindora), SPS-53 (Teluk Saleh, Teluk Bone), SO-1 (Teluk Kau), SO-6 (Teluk Langsa).

Comment: Teluk Saleh and Teluk Bone transferred from USA in June 1961 (and purchased 22 February 1979). Teluk Kau and Teluk Langsa in July 1970. These ships are used as transports and stores carriers. All are probably in reserve. Bayur and Tomini serve with the Military Sealift Command.



TELUK RATAI 1/2005, David Boey / 1154407

1 LST

Name	No	Builders	Commissioned
TELUK AMBOINA	503	Sasebo, Japan	June 1961

Displacement, tons: 2,378 standard; 4,200 full load
 Dimensions, feet (metres): 327 x 50 x 15 (99.7 x 15.3 x 4.6)
 Main machinery: 2 MAN V6V 22/30 diesels; 3,425 hp(m) (2.52 MW); 2 shafts
 Speed, knots: 13.1 Range, n miles: 4,000 at 13.1 kt
 Complement: 88
 Military lift: 212 troops; 2,100 tons; 4 LCVP on davits
 Guns: 6—37 mm; anti-aircraft.

Comment: Launched on 17 March 1961 and transferred from Japan in June 1961. A faster copy of US LST 511 class with 30 ton crane forward of bridge. Serves with the Military Sealift Command.



TELUK AMBOINA 8/1995, van Ginderen Collection / 0080018

6 TACOMA TYPE (LSTH)

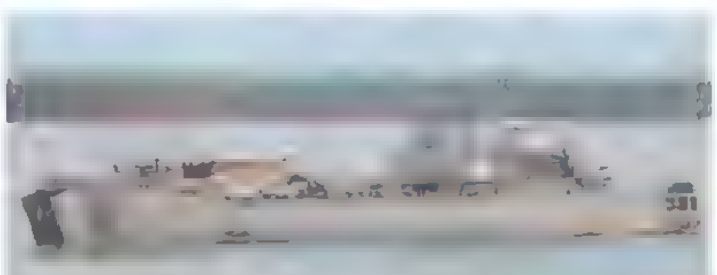
Name	No	Builders	Commissioned
TELUK SEMANGKA	512	Korea-Tacoma, Masan	20 Jan 1981
TELUK PENYU	513	Korea-Tacoma, Masan	20 Jan 1981
TELUK MANDAR	514	Korea-Tacoma, Masan	July 1981
TELUK SAMPIT	515	Korea-Tacoma, Masan	June 1981
TELUK BANTEN	516	Korea-Tacoma, Masan	May 1982
TELUK ENDE	517	Korea-Tacoma, Masan	2 Sep 1982

Displacement, tons: 3,750 full load
 Dimensions, feet (metres): 328 x 47.2 x 13.8 (100 x 14.4 x 4.2)
 Main machinery: 2 diesels, 12,800 hp(m) (9.41 MW) sustained; 2 shafts
 Speed, knots: 15
 Range, n miles: 7,500 at 13 kt
 Complement: 90 (13 officers)
 Military lift: 1,800 tons (including 17 MBTs); 2 LCVPs; 200 troops
 Guns: 2 or 3 Bofors 40 mm/70. 2 Rheinmetall 20 mm.
 Radars: Surface search: Raytheon; E/F-band (Teluk Banten and Teluk Ende); Navigation: Racal Decca; I-band.
 Helicopters: 1 Westland Wasp; 3 NAS-332 Super Pumas can be carried in last pair.

Comment: First four ordered in June 1979, last pair June 1981. No hangar in Teluk Semangka and Teluk Mandar. Two hangars in Teluk Ende. The last pair differ in silhouette having drowned exhausts in place of funnels and having their LCVPs carried forward of the bridge. They also have only two 40 mm guns and an additional radar fitted above the bridge. Battalion of marines can be embarked if no tanks are carried. Teluk Ende and Teluk Banten act as Command ships, the former also able to serve as a hospital ship.



TELUK BANTEN 1/2005, David Boey / 1154405



TELUK SAMPIT 1/2005, David Boey / 1154405



TELUK ENDE 5/2001 / 0126193

54 LANDING CRAFT (LCU)

DORE 580	KUPANG 582	DILI 583	NUSA UTARA 584	+50
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Displacement, tons: 400 full load
 Dimensions, feet (metres): 140.7 x 29.9 x 4.6 (42.9 x 9.1 x 1.4)
 Main machinery: 4 diesels; 2 shafts
 Speed, knots: 12
 Range, n miles: 700 at 11 kt
 Complement: 17
 Military lift: 200 tons

Comment: Details given are for LCU 582-584 built at Naval Training Centre, Surabaya in 1978-80. Military Sealift Command. LCU 580 is a smaller ship at 275 tons and built in 1968. About 20 LCM 6 type and 30 LCVPs are also in service.



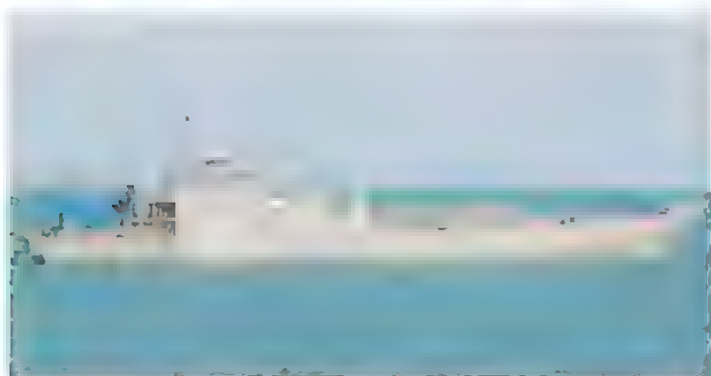
LCVP 8/1995, van Ginderen Collection / 0080020

12 FROSCH I CLASS (TYPE 108) (LSM)

Name	No	Commissioned	Recommissioned
TELUK GILIMANUK (ex-Hoyerswerda)	531 (ex-611)	12 Nov 1976	12 July 1994
TELUK CELUKAN BAWANG (ex-Hagenow)	532 (ex-632)	1 Dec 1976	25 Feb 1994
TELUK CENDRAWASIH (ex-Frankfurt/Oder)	533 (ex-613)	2 Feb 1977	9 Dec 1994
TELUK BERAU (ex-Eberswalde-Finow)	534 (ex-634)	28 May 1977	10 Mar 1995
TELUK PELENG (ex-Lubben)	535 (ex-631)	15 Mar 1978	23 Sep 1993
TELUK SIBOLGA (ex-Schwerin)	536 (ex-612)	19 Oct 1977	15 Dec 1993
TELUK MANADO (ex-Neubrandenburg)	537 (ex-633)	28 Dec 1977	2 June 1995
TELUK HADING (ex-Cottbus)	538 (ex-614)	26 May 1978	12 July 1994
TELUK PARIGI (ex-Anklam)	539 (ex-635)	14 July 1978	21 July 1995
TELUK LAMPUNG (ex-Schwedt)	540 (ex-636)	7 Sep 1979	26 Apr 1994
TELUK JAKARTA (ex-Eisenhüttenstadt)	541 (ex-615)	4 Jan 1979	19 Sep 1994
TELUK SANGKURING (ex-Grimmon)	542 (ex-616)	4 Jan 1979	9 Dec 1994

Displacement, tons: 1,950 full load
 Dimensions, feet (metres): 321.5 x 38.4 x 9.2 (98 x 11.1 x 2.8)
 Main machinery: 2 diesels; 5,000 hp(m) (3.68 MW); 2 shafts
 Speed, knots: 18
 Complement: 46
 Military lift: 600 tons
 Guns: 1—40 mm/60. 2—37 mm/63 (1 twin). 4—25 mm (2 twin)
 Mines: Can lay 40 mines through stern doors.
 Countermeasures: Decoys: 2 PK 16 chaff launchers
 Radars: Air/surface search: Strut Curve, F-band.
 Navigation: TSR 333; I-band.

Comment: All built by Peenewerft, Wolgast. Former GDR ships transferred from Germany on 25 August 1993. Demilitarised with all guns removed, but 37 mm guns have replaced the original 57 mm and 30 mm twin guns. All refitted in Germany prior to sailing. First two arrived Indonesia in late 1993, remainder throughout 1994 and 1995. *Teluk Lampung* damaged by heavy seas during transit in June 1994 but was repaired.



TELUK SANGKURING 1/2005, David Boey / 1154404



TELUK PELENG 1/2005, David Boey / 1164966

1 TRANSPORT SHIP (AP)

Name	No	Builders	Commissioned
TANJUNG KAMBANI (ex-Dong Yang 6)	971	Sanuki Shipbuilding, Japan	1982

Displacement, tons: 7,138
 Dimensions, feet (metres): 375.6 x 64.9 x 19.7 (114.5 x 19.8 x 6.0)
 Main machinery: 2 Mokka diesels; 8,200 hp (6.1 MW); 2 shafts; cp props
 Speed, knots: 18
 Complement: To be announced
 Military lift: To be announced
 Radars: Navigation 2 I-band.
 Helicopters: Platform for 2 medium.

Comment: Former Ro-Ro ferry converted for military use by Daesun Shipbuilders, Pusan, and delivered to the Indonesian Navy on 9 November 2000. Reported to be capable of carrying one battalion which may be disembarked by four LCVPs and/or helicopter.



TANJUNG KAMBANI 6/2007 / 1353100

MINE WARFARE FORCES

9 KONDOR II (TYPE 89) CLASS
(MINESWEEPERS—COASTAL) (MSC)

Name	No	Builders	Commissioned
PULAU ROTE (ex-Wolgast)	721	Peenewerft, Wolgast	1 June 1971
	(ex V 811)		
PULAU RAAS (ex-Hottstedt)	722 (ex-353)	Peenewerft, Wolgast	22 Dec 1971
PULAU ROMANG (ex-Fritzwalk)	723 (ex-325)	Peenewerft, Wolgast	26 June 1972
PULAU RIMAU (ex-Bitterfeld)	724 (ex 332, ex-M 2672)	Peenewerft, Wolgast	7 Aug 1972
KELABANG (ex-Pulau Rondo, ex-Zerbst)	826 (ex-725, ex-335)	Peenewerft, Wolgast	30 Sep 1972
PULAU RUSA (ex-Oranienburg)	726 (ex-341)	Peenewerft, Wolgast	1 Nov 1972
PULAU RANGSANG (ex-Jüterbog)	727 (ex-342)	Peenewerft, Wolgast	7 Apr 1973
KALA HITAM (ex-Pulau Raibu, ex-Sömmerda)	828 (ex-728, ex-311)	Peenewerft, Wolgast	9 Aug 1973
PULAU REMPANG (ex-Grimma)	729 (ex-336)	Peenewerft, Wolgast	10 Nov 1973

Displacement, tons: 310 full load
 Dimensions, feet (metres): 186 x 24.6 x 7.9 (56.7 x 7.5 x 2.4)
 Main machinery: 2 Russki Kolomna Type 40-DM diesels; 4,408 hp(m) (3.24 MW) sustained; 2 shafts; cp props
 Speed, knots: 17
 Range, n miles: 2,000 at 14 kt
 Complement: 31 (6 officers)
 Guns: 6—25 mm/80 (3 twin). 1—12.7 mm MG.
 Mines: 2 rails
 Radars: Navigation: TSR 333; I-band.
 Sonars: Bendix AQS 17 VDS; minehunting; active; high frequency (in some)

Comment: Former GDR minesweepers transferred from Germany in Russian dockship *Trans-Shelf* arriving 22 October 1993. Patrol duties take precedence over MCM and ex-Pulau Rondo and ex-Pulau Raibu formally converted in 2008 when new names and pennant numbers were allocated. There are some variations in armament. *Pulau Rempang*, *Pulau Rote* and *Pulau Romang* are also used for survey duties. ADI Dyads can be embarked for MCM



PULAU RIMAU 4/2004, Chris Sattler / 1344178



PULAU RONDO (old number) 4/2004, John Mortimer / 1153700



PULAU RUSA 8/1995, van Ginderen Collection / 0080071

2 PULAU RENGAT (TRIPARTITE) CLASS (MHSC)

Name	No	Builders	Launched	Commissioned
PULAU RENGAT	711	van der Giessen-de Noord	23 July 1987	26 Mar 1988
PULAU RUPAT	712	van der Giessen-de Noord	27 Aug 1987	26 Mar 1988

Displacement, tons: 502 standard, 568 full load
Dimensions, feet (metres): 168.9 x 29.2 x 8.2 (51.5 x 8.9 x 2.5)
Main machinery: 2 MTU 12V 396 TC82 diesels; 2,610 hp(m) (1.92 MW) sustained; 1 shaft; LIPS cp prop; auxiliary propulsion; 3 Turbomeca gas-turbine generators; 2 motors; 2,400 hp(m) (1.76 MW); 2 retractable Schottel propulsors; 2 bow thrusters; 150 hp(m) (110 kW)
Speed, knots: 16; 7 auxiliary propulsion
Range, n miles: 3,000 at 12 kt
Complement: 46 plus 4 spare berths

Guns: 2 Rheinmetall 20 mm. Matra Simbad SAM launcher may be added for patrol duties or a third 20 mm gun.
Countermeasures: MCM: OD3 Oropesa mechanical sweep gear; Fiskars F-82 magnetic and SA Marine AS 203 acoustic sweeps; Ibis V minehunting system, 2 PAP 104 Mk 4 mine disposal systems.
Combat data systems: Signal SEWACO-RI action data automation.
Radars: Navigation: Racal Decca AC 1229C; I-band.
Sonars: Thomson Sintra TSM 2022; active minehunting; high frequency

Programmes: First ordered on 29 March 1985, laid down 22 July 1985, second ordered 30 August 1985 and laid down 15 December 1985. More were to have been built in Indonesia up to a total of 12 but this programme was cancelled due to lack of funds
Structure: There are differences in design between these ships and the European Tripartites, apart from their propulsion. Deckhouses and general layout are different as they are required to act as minehunters, minesweepers and patrol ships. Hull construction is GRP shock-proven
Operational: Endurance, 15 days. Automatic operations, navigation and recording systems, Thomson-CSF Naviplot TSM 2050 tactical display. A 5 ton container can be shipped, stored for varying tasks-research; patrol; extended diving; drone control.



PULAU RUPAT 3/2004, Chris Sattler / 1044129

SURVEY AND RESEARCH SHIPS

1 RESEARCH SHIP (AGOR)

Name	No	Builders	Commissioned
BARUNA JAYA VIII	KAL-IV-06	Mjøllem & Karlson AS, Bergen	1998

Displacement, tons: 1,476 full load
Dimensions, feet (metres): 174.5 x 41.0 x 14.8 (53.2 x 12.5 x 4.3)
Main machinery: 1 Caterpillar 3516BTA diesel; 2,026 bhp (1.5 MW); 1 shaft; cp prop; 1 Schottel SPJ 82TL bow thruster
Speed, knots: 13
Range, n miles: 7,500 at 12 kt
Complement: 42 (11 officers) plus 23 scientific staff
Radars: Navigation, Furuno FAR-2835S; E/F-band
 Furuno FR-2110; I-band

Comment: Multipurpose survey vessel equipped to conduct fisheries research, geophysics and seabed mapping. Delivered to Indonesia on 28 September 1998. Sensors include Simrad SD570 sonar, EM 1000 multibeam echo sounder and EA 500 single beam echo sounder



BARUNA JAYA VIII 9/1998, Maritime Photographic / 0044067

4 RESEARCH SHIPS (AGS/AGOR)

Name	No	Builders	Commissioned
BARUNA JAYA I	KAL-IV-02	CMN, Cherbourg	10 Aug 1989
BARUNA JAYA II	KAL-IV-03	CMN, Cherbourg	25 Sep 1989
BARUNA JAYA III	KAL-IV-04	CMN, Cherbourg	3 Jan 1990
BARUNA JAYA IV	KAL-IV-05	CMN, Cherbourg	2 Nov 1995

Displacement, tons: 1,180 (1,425 IV) full load
Dimensions, feet (metres): 198.2 x 39.7 x 13.8 (60.4 x 12.1 x 4.2)
Main machinery: 2 Niigata/SEMT-Pielstick 5 PA5 L 255 diesels; 2,990 hp(m) (2.2 MW) sustained; 1 shaft; cp prop; bow thruster
Speed, knots: 14. **Range, n miles:** 7,500 at 12 kt
Complement: 37 (8 officers) plus 26 scientists

Comment: First three ordered from La Manche, Dieppe in February 1985 by the office of Technology, Ministry of Industry and Research. Badly delayed by the closing down of the original shipbuilders (ACM, Dieppe) and construction taken over by CMN at Cherbourg. Fourth of class ordered in 1993 to a slightly enlarged design and with a more enclosed superstructure. *Baruna Jaya I* is employed on hydrography, the second on oceanography and the third combines both tasks. *Baruna Jaya IV* is operated by the Agency responsible for developing new technology. All are part of the Naval Auxiliary Service.



BARUNA JAYA II 4/1998, John Mortimer / 0057362



BARUNA JAYA IV 11/1995, van Ginderen Collection / 0080023

1 HECLA CLASS (SURVEY SHIP) (AGSH)

Name	No	Builders	Commissioned
DEWA KEMBAR (ex-Hydra)	932	Yarrow and Co, Blythswood	5 May 1966

Displacement, tons: 1,915 light; 2,733 full load
Dimensions, feet (metres): 260.1 x 49.1 x 15.4 (79.3 x 15 x 4.7)
Main machinery: Diesel-electric; 3 Paxman 12VJZC diesels, 3,780 hp (2.82 MW); 3 generators; 1 motor, 2,000 hp(m) (1.49 MW); 1 shaft; bow thruster
Speed, knots: 14
Range, n miles: 12,000 at 11 kt
Complement: 123 (14 officers)
Guns: 2 – 12.7 mm MGs
Radars: Navigation: Kelvin Hughes Type 1006, I-band.
Helicopters: 1 Westland Wasp.

Comment: Transferred from UK 18 April 1986 for refit. Commissioned in Indonesian Navy 10 September 1986. SATCOM fitted. Two survey launches on davits.



DEWA KEMBAR 11/1997, van Ginderen Collection / 0012542

1 RESEARCH SHIP (AGORH)

Name	No	Builders	Commissioned
BURUJULASAD	931	Schlichting, Lübeck-Travemünde	1967

Displacement, tons: 2,165 full load
Dimensions, feet (metres): 269.5 × 37.4 × 11.5 (82.2 × 11.4 × 3.5)
Main machinery: 4 MAN V6V 22/30 diesels; 6,850 hp(m) (5.03 MW); 2 shafts
Speed, knots: 19.1. **Range, n miles:** 14,500 at 15 kt
Complement: 108 (15 officers) plus 28 scientists
Guns: 4—12.7 mm (2 twin) MGs.
Radars: Surface search: Decca TM 262; I-band
Helicopters: 1 Bell 47J.

Comment: *Burujulasad* was launched in August 1965; her equipment includes laboratories for oceanic and meteorological research and a cartographic room. Carries one LCVF and three surveying motor boats. A 37 mm gun was added in 1992 but by 1998 had been removed again.



BURUJULASAD 4/1988, John Mortimer / 0057361

1 RESEARCH SHIP (AGOR)

Name	No	Builders	Commissioned
JALANIDHI	933	Sasobo Heavy Industries	12 Jan 1963

Displacement, tons: 985 full load
Dimensions, feet (metres): 178.8 × 31.2 × 14.1 (53.9 × 9.5 × 4.3)
Main machinery: 1 MAN G6V 30/42 diesel; 1,000 hp(m) (736 kW); 1 shaft
Speed, knots: 11.5. **Range, n miles:** 7,200 at 10 kt
Complement: 87 (13 officers) plus 26 scientists
Radars: Navigation: Nikkon Denko; I-band. Furuno; I-band.

Comment: Launched in 1962. Oceanographic research ship with hydromet facilities and weather balloons. 3 ton boom aft. Operated by the Navy for the Hydrographic Office



JALANIDHI 8/1995, van Ginderen Collection / 0080024

TRAINING SHIPS

1 SAIL TRAINING SHIP (AXS)

Name	No	Builders	Commissioned
DEWARUCI	—	HC Stülcken & Sohn, Hamburg	9 July 1953

Displacement, tons: 810 standard; 1,500 full load
Dimensions, feet (metres): 136.2 pp; 191.2 oa × 31.2 × 13.9 (41.5; 58.3 × 9.5 × 4.2)
Main machinery: 1 MAN diesel; 600 hp(m) (441 kW); 1 shaft
Speed, knots: 10.5
Complement: 110 (includes 78 midshipmen)

Comment: Barquentine of steel construction. Sail area, 1,305 sq yards (1,091 sq m). Launched on 24 January 1953.



DEWARUCI 6/2005, Martin Mokrus / 1153201

1 SAIL TRAINING SHIP (AXS)

Name	Builders	Launched	Commissioned
ARUNG SAMUDERA (ex- <i>Adventurer</i>)	Hendrik Oosterbroek, Tauranga	July 1991	9 Jan 1996

Measurement, tons: 96 grt
Dimensions, feet (metres): 128 oa; 103.7 wl × 21.3 × 8.5 (39, 31.6 × 6.5 × 2.6)
Main machinery: 2 Ford 2725E diesels; 292 hp (218 kW); 2 shafts
Speed, knots: 10 (diesels)
Complement: 20 (includes trainees)

Comment: Three masted schooner acquired from New Zealand. Sail area 433.8 m².



ARUNG SAMUDERA 5/2000, A Campanera i Rovira / 0104601

1 KI HAJAR DEWANTARA CLASS (FGH/FFT)

Name	No	Builders	Laid down	Launched	Commissioned
KI HAJAR DEWANTARA	364	Split SY, Yugoslavia	11 May 1979	11 Oct 1980	31 Oct 1981

Displacement, tons: 2,050 full load
Dimensions, feet (metres): 317.3 × 36.7 × 15.7 (96.7 × 11.2 × 4.8)
Main machinery: CODOG; 1 RR Olympus TM38 gas turbine; 24,525 hp (18.3 MW) sustained;
 2 MTU 18V 956TB92 diesels; 11,070 hp(m) (8.14 MW) sustained, 2 shafts; cp props
Speed, knots: 26 gas; 20 diesels
Range, n miles: 4,000 at 18 kt; 1,150 at 25 kt
Complement: 76 (11 officers) plus 14 instructors and 100 cadets

Missiles: SSM. 4 Aerospaiale MM 38 Exocet ●; inertial cruise; active radar homing to 42 km (23 n miles) at 0.9 Mach; warhead 165 kg, sea-skimmer
Guns: 1 Bofors 57 mm/70 ●; 200 rds/min to 17 km (9.3 n miles); weight of shell 2.4 kg, 2 Rheinmetall 20 mm ●

Torpedoes: 2—21 in (533 mm) tubes ● AEG SUT; dual purpose, wire-guided, active/passive homing to 28 km (15 n miles) at 23 kt; 12 km (6.5 n miles) at 35 kt; warhead 250 kg.

Depth charges: 1 projector/mortar.
Countermeasures: Decoys. 2—128 mm twin-tubed flare launchers.
 ESM. MEL Susie; radar intercept.

Combat data systems: Signaal SEWACO-R1 action data automation.

Radars: Surface search: Racal Decca 1229 ●; I-band.

Fire control: Signaal WM28 ●; I/J-band.

Sonars: Signaal PHS-32; hull-mounted; active search and attack; medium frequency

Helicopters: Platform ●; for 1 NBO-105 helicopter

Programmes: First ordered 14 March 1978 from Split SY, Yugoslavia where the hull was built and engines fitted. Armament and electronics fitted in the Netherlands and Indonesia.

Structure: For the training role there is a classroom and additional wheelhouse, navigation and radio rooms. Torpedo tubes are fixed in the stern transom. Two LCVF-type ship's boats are carried

Operational: Used for training and troop transport.



KI HAJAR DEWANTARA (Scale 1 : 1,200), Ian Sturton / 0006149



KI HAJAR DEWANTARA 12/1992 / 0080005

AUXILIARIES

Notes: (1) The Don class depot ship *Ratulangi* 400 is in use as a floating workshop at Surabaya naval base, but is not seaworthy.
(2) There is also a small oiler *Sungai Gerong* 906.

1 COMMAND SHIP (AGFH)

Name	No	Builders	Launched	Commissioned
MULTATULI	561	Ishikawajima-Harima	15 May 1961	Aug 1961

Displacement, tons: 3,220 standard; 6,741 full load
Dimensions, feet (metres): 365.3 × 52.5 × 23 (111.4 × 16 × 7)
Main machinery: 1 Burmeister & Wain diesel; 5,500 hp(m) (4.04 MW); 1 shaft
Speed, knots: 18.5 **Range, n miles:** 6,000 at 16 kt
Complement: 135
Guns: 6 USSR 37 mm/63 (2 twin, 2 single); 160 rds/min to 9 km (5 n miles); weight of shell 0.7 kg.
8–12.7 mm MGs
Radars: Surface search: Ball End; E/F-band
Navigation: I-band.
Helicopters: 1 Bell 47J.

Comment: Built as a submarine tender. Original after 76 mm mounting replaced by helicopter deck with a hangar added in 1998. Living and working spaces air conditioned. Capacity for replenishment at sea (fuel oil, fresh water, provisions, ammunition, naval stores and personnel). Medical and hospital facilities. Used as fleet flagship (Eastern Force) and is fitted with ICS-3 communications.



MULTATULI 8/1995, van Ginderen Collection / 0080025

1 REPLENISHMENT TANKER (AOTL)

Name	No	Builders	Commissioned
SORONG	911	Trojir SY, Yugoslavia	Apr 1965

Displacement, tons: 8,400 full load
Dimensions, feet (metres): 367.4 × 50.5 × 21.6 (112 × 15.4 × 6.6)
Main machinery: 1 diesel; 1 shaft
Speed, knots: 15
Complement: 110
Cargo capacity: 4,200 tons fuel; 300 tons water
Guns: 4–12.7 mm (2 twin) MGs.
Radars: Navigation: Don; I-band.

Comment: Has limited underway replenishment facilities on both sides and stern refuelling.



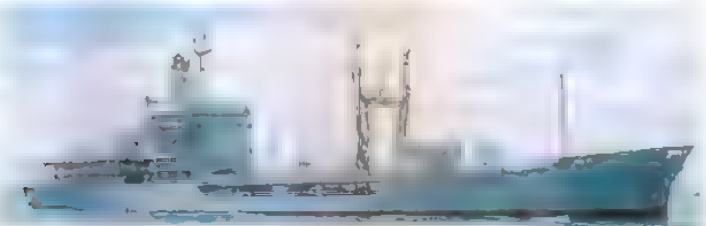
SORONG 8/1995, van Ginderen Collection / 0080026

1 ROVER CLASS (REPLENISHMENT TANKER) (AORLH)

Name	No	Builders	Commissioned
ARUN (ex-Green Rover)	903	Swan Hunter, Tyneside	15 Aug 1969

Displacement, tons: 4,700 light; 11,522 full load
Dimensions, feet (metres): 461 × 63 × 24 (140.6 × 19.2 × 7.3)
Main machinery: 2 SEMT-Pielstick 18 PA4 diesels; 15,360 hp(m) (11.48 MW); 1 shaft; Kamewa cp prop; bow thruster
Speed, knots: 19 **Range, n miles:** 15,000 at 15 kt
Complement: 49 (16 officers)
Cargo capacity: 6,600 tons fuel
Guns: 2 Bofors 40 mm/80, 2 Oerlikon 20 mm
Radars: Navigation: Kelvin Hughes Type 1006; I-band
Helicopters: Platform for Super Puma.

Comment: Transferred from UK in September 1992 after a refit. Small fleet tanker designed to replenish ships at sea with fuel, fresh water, limited dry cargo and refrigerated stores under all conditions while under way. No hangar but helicopter landing platform is served by a stores lift, to enable stores to be transferred at sea by 'vertical lift'. Capable of HIFR. Used as the Flagship for the Training Commander.



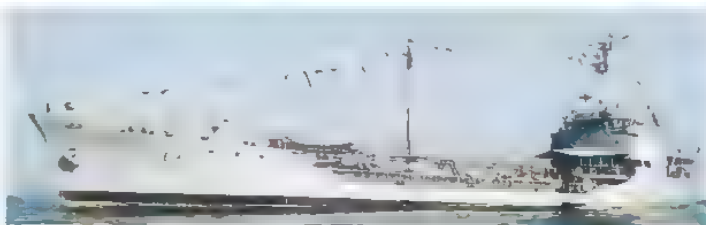
ARUN 10/2004, Chris Gee / 104/874

2 KHOBI CLASS (COASTAL TANKERS) (AOTL)

Name	No
BALIKPAPAN 901	SAMBU 902

Displacement, tons: 1,525 full load
Dimensions, feet (metres): 206.6 × 33 × 14.8 (63 × 10.1 × 4.5)
Main machinery: 2 diesels; 1,600 hp(m) (1.18 MW); 2 shafts
Speed, knots: 13. **Range, n miles:** 2,500 at 12 kt
Complement: 37 (4 officers)
Cargo capacity: 560 tons diesel
Guns: 4–14.5 mm (2 twin) MGs. 2–12.7 mm MGs.
Radars: Navigation: Neptun; I-band.

Comment: Balikpapan and Sambu are Japanese copies of the Khobi class built in the 1960s.



SAMBU 8/1995, van Ginderen Collection / 0080028

2 FROSCH II CLASS (TYPE 109) (SUPPORT SHIPS) (AKL/ARL)

Name	No	Builders	Commissioned
TELUK CIREBON (ex-Nordperd)	543 (ex-E 171)	Peenewerft, Wolgast	3 Oct 1979
TELUK SABANG (ex-Südperd)	544 (ex-E 172)	Peenewerft, Wolgast	26 Feb 1980

Displacement, tons: 1,700 full load
Dimensions, feet (metres): 297.6 × 36.4 × 9.2 (90.7 × 11.1 × 2.8)
Main machinery: 2 diesels, 4,408 hp(m) (3.24 MW) sustained; 2 shafts
Speed, knots: 18
Cargo capacity: 650 tons
Guns: 4–37 mm/63 (2 twin), 4–25 mm (2 twin).
Countermeasures: Decoys: 2 PK 16 chaff launchers.
Radars: Air/surface search: Strut Curve; F-band.
Navigation: I-band

Comment: Ex-GDR ships disarmed and transferred from Germany 25 August 1993. 5 ton crane amidships. In GDR service these ships had two twin 57 mm and two twin 25 mm guns plus Muff Cob fire-control radar. Both refitted at Rostock and recommissioned 25 April 1995. 37 mm guns fitted after transfer. Rocket launchers are mounted forward of the bridge.



TELUK SABANG 5/1995, Frank Behling / 0075856

1 TISZA CLASS (SUPPORT SHIP) (AKL)

Name
WAGIO 961

Displacement, tons: 2,400 full load
Dimensions, feet (metres): 258.4 × 35.4 × 15.1 (78.8 × 10.8 × 4.6)
Main machinery: 1 MAN diesel, 1,000 hp(m) (735 kW); 1 shaft
Speed, knots: 12 **Range, n miles:** 3,000 at 11 kt
Complement: 26
Cargo capacity: 875 tons dry; 11 tons liquid
Guns: 4–14.5 mm (2 twin) MGs
Radars: Navigation: Spin Trough; I-band

Comment: Built in Hungary. Transferred in 1963–64. Military Sealift Command since 1978.



TISZA CLASS 1/2005, David Booy / 1154403

TUGS

Notes: Two BIMA VIII class of 423 tons completed in 1991 are not naval. Names *Merapi* and *Merbabu*.

3 HARBOUR TUGS (YTM)

Name	No	Builders	Commissioned
LAMPO BATANG	934	Ishikawajima-Harima	Sep 1961
TAMBORA (Army)	935	Ishikawajima-Harima	June 1961
BROMO	936	Ishikawajima-Harima	Aug 1961

Comment: All of 250 tons displacement. There are a number of other naval tugs in the major ports.

1 NFI CLASS (ATF)

Name	No	Builders	Commissioned
SOPUTAN	923	Dae Sun SB & Eng, Busan	11 Aug 1996

Measurement, tons: 1,279 grt
 Dimensions, feet (metres): 217.2 x 39 x 17.1 (66.2 x 11.9 x 5.2)
 Main machinery: Diesel-electric; 4 SEMT-Pielstick diesel generators; 1 motor; 12,240 hp(m) (9 MW); 1 shaft; bow thruster
 Speed, knots: 13.5
 Complement: 42
 Radars: Navigation; Racal Decca; I-band

Comment: Ocean Cruiser class NFI. Bollard pull 120 tons.



SOPUTAN 8/1996, van Ginderen Collection / 0080031

1 FLEET TUG (ATF)

Name	No	Builders	Commissioned
LEUSER	924	PT Dok & Perkapalan Kodja Bahari, Jakarta	2002

Measurement, tons: 1,579 grt
 Dimensions, feet (metres): 234.6 x 42.6 x ? (71.5 x 13.0 x ?)
 Main machinery: 2 Pielstick 16PA5V diesels; 7,700 hp (5.7 MW); 2 shafts
 Speed, knots: 15
 Complement: To be announced
 Radars: Navigation; I-band.

Comment: Fleet tug also employed on hydrographic duties.

CUSTOMS

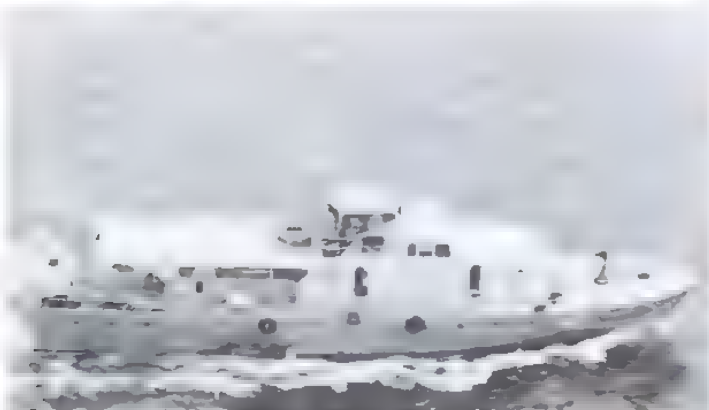
Notes: Identified by BC (Tax and Customs) preceding the pennant number.

14 COASTAL PATROL CRAFT (WPB)

BC 2001-2007 BC 3001-3007

Displacement, tons: 70.3 full load
 Dimensions, feet (metres): 93.5 x 17.7 x 5.5 (28.5 x 5.4 x 1.7)
 Main machinery: 2 MTU 12V 331 TC92 diesels, 2,660 hp(m) (1.96 MW) sustained; 2 shafts
 Speed, knots: 28-34
 Complement: 19
 Guns: 1-20 mm or 1-12.7 mm MG.

Comment: Built CMN Cherbourg. Delivered in 1980 and 1981



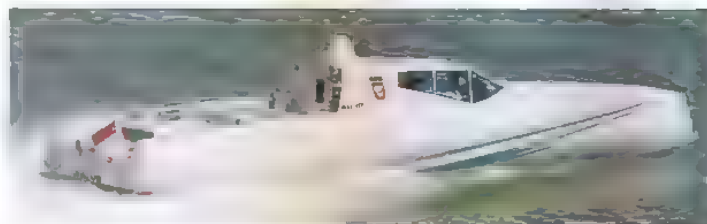
BC 2007 1/1990, 92 Wing RAAF / 0506011

10 LÜRSSEN VSV 15 CLASS (WHSIC)

BC 1601-1610

Displacement, tons: 11 full load
 Dimensions, feet (metres): 52.5 x 9.2 x 3.3 (16 x 2.8 x 1)
 Main machinery: 2 MTU diesels, 600 hp(m) (447 kW); 2 shafts
 Speed, knots: 50. Range, n miles: 750 at 30 kt
 Complement: 5 (1 officer)
 Guns: 1-7.62 mm MG.

Comment: Built in Germany and delivered between November 1998 and June 1999.



BC 1608 5/1999, Lürssen / 0080032

36 LÜRSSEN 28 METRE TYPE (WPB)

BC 4001-4006 BC 5001-5006 BC 6001-6006 BC 7001-7006 BC 8001-8006 BC 9001-9006

Displacement, tons: 68 full load
 Dimensions, feet (metres): 91.8 x 17.7 x 5.9 (28 x 5.4 x 1.8)
 Main machinery: 2 Deutz diesels; 2,720 hp(m) (2 MW); or 2 MTU diesels; 2,260 hp(m) (1.66 MW); 2 shafts
 Speed, knots: 30. Range, n miles: 1,100 at 15 kt, 860 at 28 kt
 Complement: 19 (6 officers)
 Guns: 1-12.7 mm MG

Comment: Lürssen design, some built by Fulton Marine and Scheepswerven van Langebrugge of Belgium, some by Lürssen Vegesack and some by PT Pal Surabaya (which also assembled most of them). Programme started in 1980. Some of these craft are operated by the Navy, the Police and the Maritime Security Agency



BC 7001 5/2000, van Ginderen Collection / 0104607

5 LÜRSSEN NEW 28 METRE TYPE (WHSIC)

BC 10001-10002 BC 20001-20003

Displacement, tons: 85 full load
 Dimensions, feet (metres): 92.5 x 21.7 x 4.6 (28.2 x 6.6 x 1.4)
 Main machinery: 2 MTU 16V 396 TE94 diesels; 2,955 hp(m) (2.14 MW) sustained; 2 shafts
 Speed, knots: 40. Range, n miles: 1,100 at 30 kt
 Complement: 11 (3 officers)
 Guns: 2-7.62 mm MGs
 Radars: Surface search; Furuno FR 8731. I-band

Comment: First pair built in Germany and delivered between May 1999 and November 1999. Last three built by PT Pal Surabaya and delivered between September 1999 and November 1999. Aluminium construction



BC 10001 5/1999, Lürssen / 0080034



BC 20001 9/1999, PT Pal / 0075857

COAST AND SEAWARD DEFENCE COMMAND

Notes: (1) Established in 1978 as the Maritime Security Agency to control the 200 mile EEZ and to maintain navigational aids. Comes under the Military Sea Communications Agency. Some craft have blue hulls with a diagonal thick white and thin red stripe plus KPLP on the superstructure. In addition to the craft listed there are large numbers of small harbour boats. (2) There are also a number of civilian manned vessels used for transport and servicing navigational aids.

2 DISASTER RESPONSE SHIPS (WPSO)**ARDA DEDALI ALUGARA**

Measurement, tons: 530 gross
 Dimensions, feet (metres): 196.8 × 26.2 × 10.5 (60.0 × 8.0 × 3.2)
 Main machinery: 2 MTU 16V4000 M60 diesels; 2 shafts; cp props
 Speed, knots: 19.3. Range, n miles: 3,000 at 17 kt
 Complement: To be announced
 Radars: Surface search/navigation: To be announced

Comment: Built by Niigata Shipbuilding & Repair Inc., a wholly owned subsidiary of Mitsui Engineering & Shipbuilding Co., *Arda Dedali* delivered to the Directorate General of Sea Communication (DGSC) on 27 January 2005. *Alugara* delivered in mid-2005. The ships are designed to undertake disaster relief operations and are equipped to deal with accidents at sea, including rescue and firefighting, and counter-pollution tasks. The ships are likely to be deployed in the Malacca/Singapore Strait region.

**ALUGARA** 6/2005, *Ships of the World* / 1153202**5 KUJANG CLASS (WPB)****KUJANG 201 PARANG 202 CELURIT 203 CUNDRIK 204 BELATI 205**

Displacement, tons: 162 full load
 Dimensions, feet (metres): 125.6 × 19.6 × 6.8 (38.3 × 6 × 2.1)
 Main machinery: 2 AGO SACM 195 V12 CZSHR diesels; 4,410 hp(m) (3.24 MW); 2 shafts
 Speed, knots: 28. Range, n miles: 1,500 at 18 kt
 Complement: 18
 Guns: 1–12.7 mm MG.

Comment: Built by SFCN, Villeneuve la Garenne. Completed April 1981 (*Kujang* and *Parang*), August 1981 (*Celurit*), October 1981 (*Cundrik*), December 1981 (*Belati*). Pennant numbers are preceded by PAT.

**CUNDRIK** 11/1998, *van Ginderen Collection* / 0052368**4 GOLOK CLASS (WSAR)****GOLOK 208 PANAN 207 PEDANG 208 KAPAK 209**

Displacement, tons: 190 full load
 Dimensions, feet (metres): 123 pp × 23.6 × 6.6 (37.5 × 7.2 × 2)
 Main machinery: 2 MTU 16V 652 TB91 diesels; 4,610 hp(m) (3.39 MW) sustained; 2 shafts
 Speed, knots: 25. Range, n miles: 1,500 at 18 kt
 Complement: 18
 Guns: 1 Rheinmetall 20 mm

Comment: All launched 6 November 1981. First pair completed 12 March 1982. Last pair completed 12 May 1982. Built by Deutsche Industrie Werke, Berlin. Fitted out by Schlichting, Travemünde. Used for SAR and have medical facilities. Pennant numbers preceded by PAT.

**KAPAK** 11/1998, *van Ginderen Collection* / 0052367**15 HARBOUR PATROL CRAFT (WPB)****PAT 01–15**

Displacement, tons: 12 full load
 Dimensions, feet (metres): 40 × 14.1 × 3.3 (12.2 × 4.3 × 1)
 Main machinery: 1 Renault diesel; 260 hp(m) (191 kW); 1 shaft
 Speed, knots: 14
 Complement: 4
 Guns: 1–762 mm MG

Comment: First six built at Tanjung Priok Shipyard 1978–79. Four more of a similar design built in 1993–94 by Mahalaya Utama Shipyard and delivered from 1995.

**HARBOUR PATROL CRAFT TYPE** 11/1998, *van Ginderen Collection* / 0052368**1 BUOY TENDER (ABU)**

Name	No	Builders	Commissioned
JADAYAT	–	Niigata Shipbuilding and Repair	10 Oct 2003

Measurement, tons: 858 grt
 Dimensions, feet (metres): 186.7 × 36.0 × 11.5 (56.9 × 11.0 × 3.5)
 Main machinery: 1 diesel, 985 hp (735 MW); 1 shaft
 Speed, knots: 10.5
 Complement: 45
 Radars: Navigation: I-band.

Comment: Funded by the Nippon Foundation through the Malacca Strait Council.

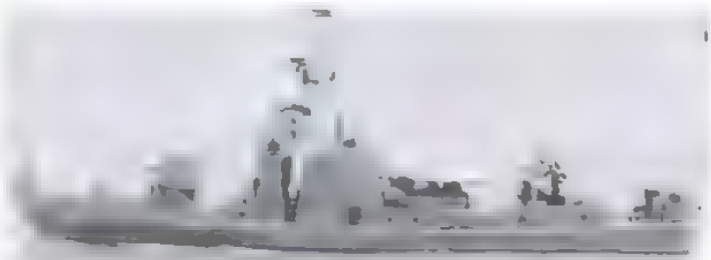
**JADAYAT** 7/2004, *Ian Edwards* / 1040696**NAVAL AUXILIARY SERVICE**

Notes: This is a paramilitary force of non-commissioned craft. They have KAL pennant numbers. About 24 vessels operate in the eastern Fleet and 47 in the western Fleet, and three belong to the Naval Academy. In addition, the Baruna Jaya ships listed under Survey Ships are also part of the NAS.

**NAS CRAFT** 4/1999, 0080035**65 KAL KANGEAN CLASS (COASTAL PATROL CRAFT) (WPB)**

Displacement, tons: 44.7 full load
 Dimensions, feet (metres): 80.4 × 14.1 × 3.3 (24.5 × 4.3 × 1)
 Main machinery: 2 diesels; 2 shafts
 Speed, knots: 18
 Guns: 2 USSR 25 mm/80 (twin), 2 USSR 14.5 mm (twin) MGs.

Comment: Ordered from Tanjung Uban Navy Yard in about 1984 and completed between 1987 and 1996. Numbers are uncertain. Have four figure pennant numbers in the 1101 series.

**KAL KANGEAN 1112** 10/1998, *Trevor Brown* / 0506008

6 CARPENTARIA CLASS (COASTAL PATROL CRAFT) (WPB)

201-208

Displacement, tons: 27 full load
Dimensions, feet (metres): 51.5 x 15.7 x 4.3 (15.7 x 4.8 x 1.3)
Main machinery: 2 MTU 8V 331 TC92 diesels; 1,770 hp(m) (1.3 MW) sustained; 2 shafts
Speed, knots: 29
Range, n miles: 950 at 18 kt
Complement: 10
Guns: 2—12.7 mm MGs
Radars: Surface search: Decca; I-band.

Comment: Built 1976-77 by Hawker de Havilland, Australia. Endurance, four to five days. Transferred from the Navy in the mid-1980s to the Police and now with the Naval Auxiliary Service



CARPENTARIA 203 8/1995, van Ginderen Collection 0080036

ARMY

Notes: The Army (ADRI) craft have mostly been transferred to the Military Sealift Command (Logistic Support).

27 LANDING CRAFT LOGISTICS (LCL)

ADRI XXXII-LVIII

Displacement, tons: 580 full load
Dimensions, feet (metres): 137.8 x 35.1 x 5.9 (42 x 10.7 x 1.8)
Main machinery: 2 Detroit 6-71 diesels; 348 hp(m) (260 kW) sustained; 2 shafts
Speed, knots: 10
Range, n miles: 1,500 at 10 kt
Complement: 15
Military lift: 122 tons equipment

Comment: A variety of LCL built in Tanjung Priok Shipyard 1979-82. Details are for Adri XL. XXXI sank in February 1993.



ADRI XXXIII 10/1999, David Boey / 0080037

POLICE

Notes: The police operate about 85 craft of varying sizes including 14 Bango class of 194 tons and 32 Hamilton water-jet craft of 7.9 m, 234 hp giving a speed of 28 kt. Lürssen type (619-623) are identical to Customs craft. Five Polish-built Kutiang class 36 m patrol craft with pennant numbers 638-642 and three Japanese built 27 m patrol craft with pennant numbers 648-650 entered service in 2007



POLICE 622 8/1995 0080038



POLICE 642 4/2007, J Cislak / 1170185

2 OFFSHORE PATROL CRAFT (PBO)

Name	No	Builders	Commissioned
BISMA	520	Astilleros Gondan, Castropol	May 2003
BALADEWA	521	Astilleros Gondan, Castropol	June 2003

Dimensions, feet (metres): 200.2 x 32.5 x 8.5 (61.0 x 9.9 x 2.6)
Main machinery: 2 MTU 12V 595TE 90 diesels, 8,700 hp (6.5 MW)
Speed, knots: 22. **Range, n miles:** 3,500 at 12 kt
Helicopters: Platform for one medium

Comment: Primary role Search and Rescue.



BISMA 5/2003, Astilleros Gondan / 0569211



Country Overview

Formerly a constitutional monarchy ruled by a shah, The Islamic Republic of Iran was established in 1979. With an area of 636,296 square miles, it is situated in the Middle East and is bordered to the north by Armenia, Azerbaijan and Turkmenistan, to the west by Iraq and Turkey and to the east by Afghanistan and Pakistan. It has a 1,318 n mile coastline with the Gulf, the Gulf of Oman and the Caspian Sea. The capital and largest city is Tehran. The principal Caspian ports are Bandar-e Anzali and Bandar-e Turkeman while those in the Gulf include the oil-shipping facilities on Kharg Island, Khorramshahr, Bandar-Khomeini and Bandar-Abbas on the strategic Strait of Hormuz. Territorial Seas (12 n miles) are claimed. An EEZ (200 n miles) has been claimed but the limits have not been defined.

Headquarters Appointments

Commander of Navy:
 Rear Admiral Habibollah Seyyari
Head of IRCG(N) (Sepah):
 Rear Admiral Morteza Saffari

Personnel

2009: 18,000 Navy (including 2,000 Naval Air and Marines), 20,000 IRGCN

Bases

Persian Gulf: Bandar Abbas (MHQ and 1st Naval District), Boushehr (2nd Naval District and also a Dockyard), Kharg Island, Qeshm Island, Bandar Lengeh
 Indian Ocean: Chah Bahar (Bandar Beheshti) (3rd Naval District and forward base)
 Caspian Sea: Bandar Anzali (4th Naval District)
 Pasdaran: Al Farsiyah, Haileh, Sirri, Abu Musa, Larak

Coast Defence

Three Navy and one IRGCN brigades with many fixed installations and command posts. Approximately 100 truck-mounted C 802 and 80 CSSC-3 (Seersucker) Chinese SSMs in at least four sites. The indigenously developed Ra'ad cruise missile and C-701 Kosak may be based at launching bases under construction at Bandar Abbas, Bandar Lengeh, Boushehr and Bandar Khomeini.

Mines

Stocks of up to 3,000 mines are reported including Chinese EM 52 rising mines

Strength of the Fleet

Type	Active	Building
Submarines	3	-
Mini Submarines	5	2
Frigates	3	1
Corvettes	2	-
Fast Attack Craft—Missile	22	1
Large Patrol Craft	6	-
Coastal Patrol Craft	120+	-
Landing Ships (Logistic)	7	-
Landing Ships (Tank)	5	-
Landing Craft (Tank)	-	3
Hovercraft	7	-
Replenishment Ship	1	-
Supply Ships	1 (1)	-
Support Ships	7	-
Water Tankers	4	-
Tenders	12	-

Prefix to Ships' Names

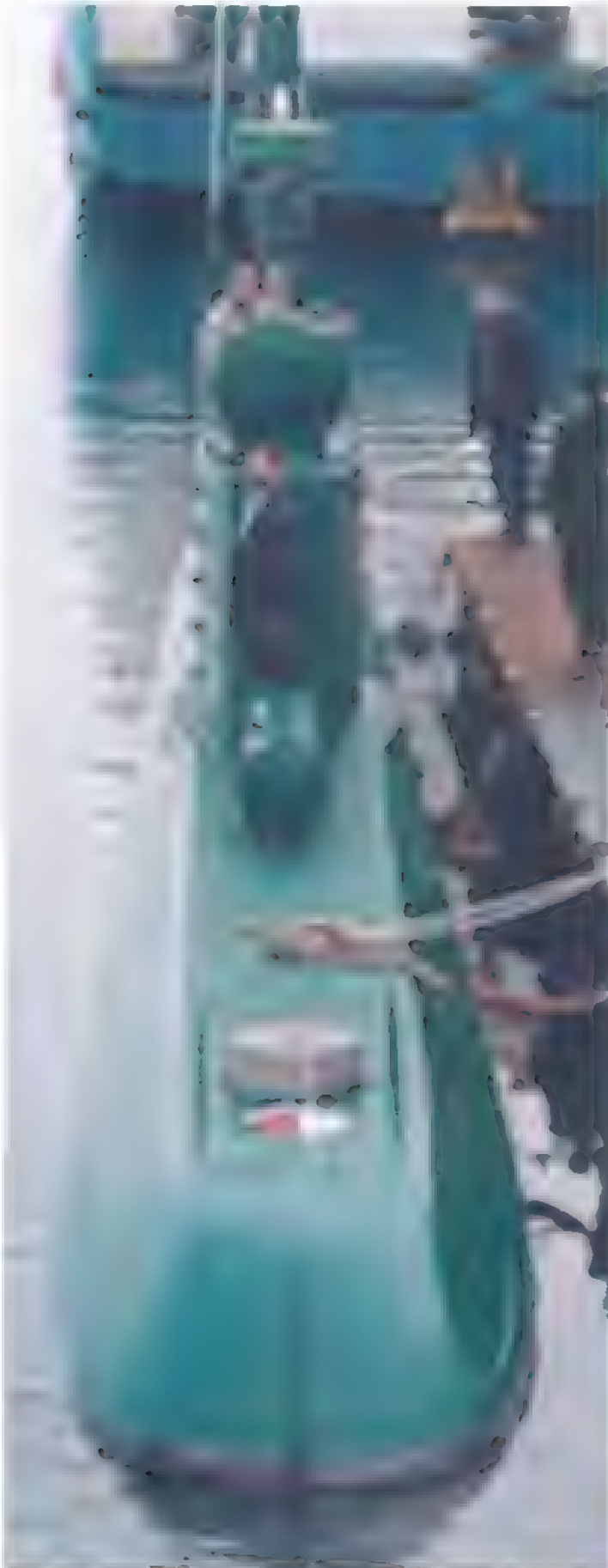
IS

Iran

5 + (1) YONO (IS 120) CLASS (MIDGET SUBMARINES) (SSM)

Displacement, tons: 115 surface; 123 dived
Dimensions, feet (metres): 95.1 x 9.0 x 8.2 (29.0 x 2.75 x 2.5)
Main machinery: Diesel-electric
Speed, knots: To be announced
Complement: 32
Torpedoes: 2-21 in (533 mm) tubes.
Sonars: To be announced

Programmes: Little is known about these submarines whose existence was first noted in February 2004. If indigenously built, as has been claimed, this would represent a significant technological development. It is more likely that another country, possibly North Korea, has been involved in the project. The first three submarines are known as *Qadir* 1, 2 and 3 and are likely to be employed in shallow areas of the Gulf such as the Strait of Hormuz. A fourth was launched on 28 November 2007 and a fifth on 27 November 2008. A sixth boat is reported to be under consideration.



YONO CLASS

3/2006 / 1164707

1 NAHANG CLASS (MIDGET SUBMARINES) (SSM)

Displacement, tons: To be announced
Dimensions, feet (metres): 82.0 x 7 x 7 (25.0 x 7 x 7)
Main machinery: To be announced
Speed, knots: To be announced
Complement: To be announced

Comment: Little is known about this submarine whose existence was noted April 2006. Dimensions are approximate. Whereas it was reported that perhaps two further boats were to be constructed, this is now considered unlikely. It is claimed that the submarine has been indigenously designed and built. The submarine is designed for shallow water operations and potential roles include acting as mothership to swimmer delivery vehicles. Sonars and torpedoes are not fitted



NAHANG CLASS

4/2006 / 1164701

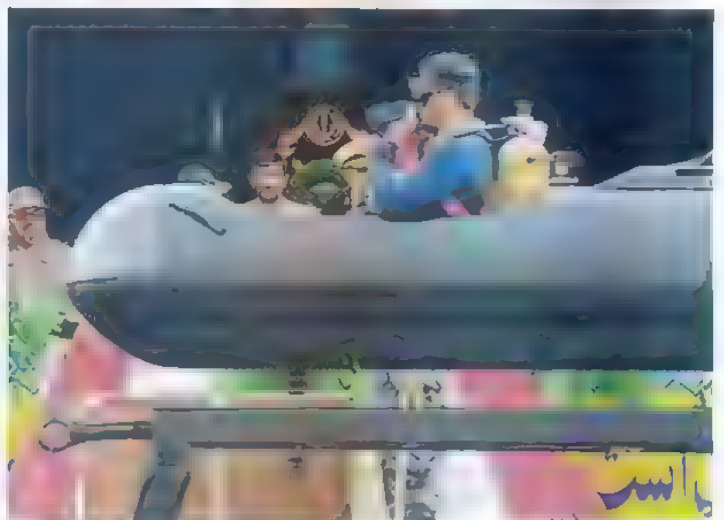
8 SWIMMER DELIVERY VEHICLES (LDW)

Comment: On 29 August 2000, the first Iranian built Swimmer Delivery Vehicle (SDV) *Al Sabehat* 15 was launched at Bandar Abbas. The 8 m craft can accommodate a two-man crew and has the capability to carry three additional divers. It is well suited to coastal reconnaissance, Special Forces insertion/extraction and mining (it can carry 14 limpet mines) of ports and anchorages but not to open water operations. Four further craft have been reported and three of a different design have also been observed. The Hengam-class LSLs act as motherships



AL SABEHAT 15

4/2006 / 1164700



SDV (new type)

4/2006 / 1164699

FRIGATES

3 + 1 ALVAND (VOSPER MK 5) CLASS (FFG)

Name	No	Builders	Laid down	Launched	Commissioned
ALVAND (ex-Saam)	71	Vosper Thornycroft, Woolston	22 May 1967	25 July 1968	20 May 1971
ALBORZ (ex-Zaaf)	72	Vickers, Barrow	3 Mar 1968	25 July 1969	1 Mar 1971
SABALAN (ex-Rostam)	73	Vickers, Newcastle & Barrow	10 Dec 1967	4 Mar 1969	28 Feb 1972
JAMARAN	-	Bandar Abbas		28 Nov 2007	2009

Displacement, tons: 1,350 full load
 Dimensions, feet (metres): 310 x 36.4 x 14.1 (screws)
 (94.5 x 11.1 x 4.3)

Main machinery: CODOG (71, 72, 73), 2 RR Olympus TM2A gas turbines; 40,000 hp (29.8 MW) sustained; 2 Paxman 16YJCM diesels; 3,800 hp (2.83 MW) sustained; 2 shafts; cp props; 2 diesels (Jamaran); 20,000 hp (14.9 MW); 2 shafts

Speed, knots: 39 gas; 18 diesel; 28 (Jamaran)
 Range, n miles: 3,650 at 18 kt; 550 at 36 kt
 Complement: 125 (accommodation for 146)

Missiles: SSM: 4 China C-802 (2 twin) ①; active radar homing to 120 km (66 n miles) at 0.9 Mach; warhead 165 kg; sea-skimmer.

Guns: 1 Vickers 4.5 in (114 mm)/55 Mk 8 ②; 25 rds/min to 22 km (12 n miles) anti-surface; 6 km (3.3 n miles) anti-aircraft; weight of shell 21 kg.
 2 Oerlikon 35 mm/90 (twin) ③; 550 rds/min to 6 km (3.3 n miles); weight of shell 1.55 kg.
 3 Oerlikon GAM-BO1 20 mm ④; 2 -12.7 mm MGs.

Torpedoes: 6 324 mm Mk 32 (2 triple) tubes ⑤

Countermeasures: Decoys: 2 UK Mk 5 rocket flare launchers.

ESM: Decca RDL 2AC; radar warning. Rascal FH 5 HF/DF.

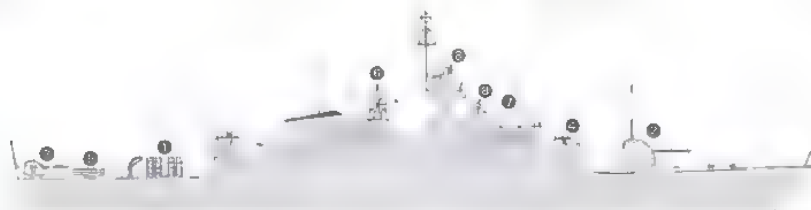
Radars: Air/surface search: Plessey AWS 1 ⑥; E/F-band, range 110 km (60 n miles).

Surface search: Rascal Decca 1226 ⑦; I-band.

Navigation: Decca 629; I-band.

Fire control: Contraves Sea Hunter ⑧; I/J-band

IFF: UK Mk 10.



ALVAND

(Scale 1 : 900), Ian Sturton / 1335484

Sonars: Graseby 174; hull-mounted; active search, medium/high frequency.
 Graseby 170; hull-mounted; active attack; high frequency.

Programmes: The first three units were ordered from UK Shipyards on 25 August 1966. A fourth unit, has been under construction at Bandar Abbas, and sea trials are expected to start in 2009. Known as the *Mowj* project, the design is almost certainly very similar to the original Vosper Mk 5 design. The weapons and sensor fit is likely to include a 76 mm gun, four C-802 missiles and, possibly, SM 1 launchers. The ship is to have all diesel propulsion. The design includes a flight deck aft.

Modernisation: Major refits including replacement of 4.5 in Mk 5 gun by Mk 8 completed 1977. Modifications in 1988 included replacing Seacat with a 23 mm gun and boat

deavits with minor armaments. By mid-1991 the 23 mm and both boats had been replaced by GAM-BO1 20 mm guns and the SSM launcher had effectively become a twin launcher. In 1996/97 two of the class had the Sea Killer SSM replaced by C-802 launchers and a new communications mast fitted between the two fire-control radars. The third has been similarly modified. *Sabalan* appears to be fitted with Rica Screen air/surface search radar. Torpedo tubes which replaced the mortars in *Alvand* were probably taken from decommissioned Babr class.

Structure: Air conditioned throughout. Fitted with Vosper stabilisers.

Operational: *Sahand* sunk by USN on 18 April 1988. *Sabalan* had her back broken by a laser-guided bomb in the same skirmish but was out of dock by the end of 1990 and was operational again in late 1991. ASW mortars probably unserviceable. All are active.



ALVAND

1/2002 / 0569203



SABALAN

2/1998 / 0052971

CORVETTES

2 BAYANDOR (PF 103) CLASS (FS)

Name	No	Builders	Laid down	Launched	Commissioned
BAYANDOR (ex-US PF 103)	81	Levingstone Shipbuilding Co, Orange, TX	20 Aug 1962	7 July 1963	18 May 1964
NAGHDI (ex-US PF 104)	82	Levingstone Shipbuilding Co, Orange, TX	12 Sep 1962	10 Oct 1963	22 July 1964

Displacement, tons: 900 standard; 1,135 full load
Dimensions, feet (metres): 275.6 × 33.1 × 10.2
 (84 × 10.1 × 3.1)
Main machinery: 2 Fairbanks-Morse 38TD8-1/8-9 diesels;
 5,250 hp (3.92 MW) sustained; 2 shafts
Speed, knots: 20
Range, n miles: 2,400 at 18 kt; 4,800 at 12 kt
Complement: 140

Guns: 2 US 3 in (76 mm)/60 Mk 34 ●; 50 rds/min to 12.8 km
 (7 n miles); weight of shell 6 kg.
 1 Bofors 40 mm/60 (twin) ●; 120 rds/min to 10 km
 (5.6 n miles); weight of shell 0.89 kg
 2 Oerlikon GAM-BO1 20 mm ●; 2 – 12.7 mm MGs.

Weapons control: Mk 63 for 76 mm gun. Mk 51 Mod 2 for
 40 mm guns.

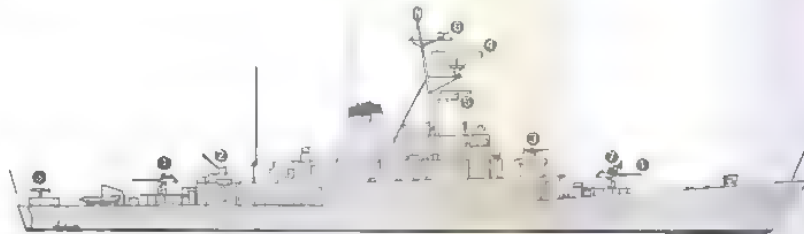
Radars: Air/surface search: Westinghouse SPS-6C ●;
 D-band; range 146 km (80 n miles) (for fighter).

Surface search: Racal Decca ●; I-band

Navigation Raytheon 1650 ●; I/J-band.

Fire control: Western Electric Mk 36 ●; I/J-band.

IFF. UPX-12B.



BAYANDOR

(Scale 1 : 900), Ian Sturton / 0506193

Sonars: EDO SQS-17A; hull-mounted; active attack; high frequency.

Programmes: Transferred from the USA to Iran under the Mutual Assistance programme in 1964.

Modernisation: Naghdi change of engines and reconstruction of accommodation completed in mid-1988. 23 mm gun and depth charge racks replaced by 20 mm

guns in 1990. Naghdi began a substantial modernisation programme in 2007. Upgrades are reported to include the replacement of the 76 mm gun with a modern weapon, installation of four C-802 missile tubes aft of the funnel and of Mk 32 torpedo tubes aft.

Operational: Milanian and Khanamaie sunk in 1982 during war with Iraq. Both remaining ships are very active. Sonars may have been removed.



BAYANDOR

2/1998 0052372

SHIPBORNE AIRCRAFT

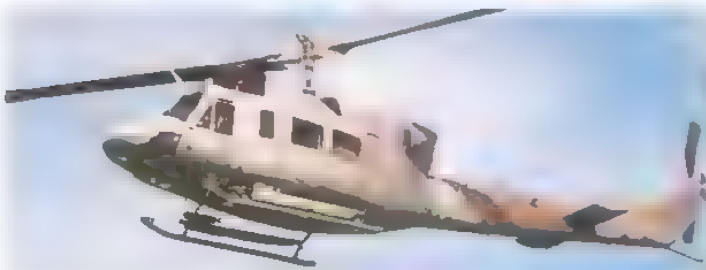
Numbers/Type: 9 Agusta AB 204ASW/212.

Operational speed: 104 kt (193 km/h).

Service ceiling: 11,500 ft (3,505 m).

Range: 332 n miles (615 km).

Role/Weapon systems: Mainly engaged in ASW operations in defence of oil installations. Numbers are uncertain. Sensors: APS 705 search radar, dipping sonar (if carried). Weapons: ASW; two China YU-2 torpedoes. ASV; two AS 12 missiles.



AB 212 (Spanish colours)

3/2002, A Campanera / Rovira / 0579019

Numbers/Type: 9 Agusta-Sikorsky ASH-3D Sea King.

Operational speed: 120 kt (222 km/h).

Service ceiling: 12,200 ft (3,720 m).

Range: 630 n miles (1,165 km).

Role/Weapon systems: Shore-based ASW helicopter to defend major port and oil installations. Six are reported serviceable. Can be embarked in Kharg. Sensors: Selenia search radar, dipping sonar. Weapons: ASW; four A244/S torpedoes or depth bombs. ASV; trials of an anti-ship missile 'Fajr-Darya' are reported to have taken place. Capabilities not known but could be a development of Sea Killer.



SEA KING

3/1997 0012549

LAND-BASED MARITIME AIRCRAFT (FRONT LINE)

Notes: (1) The Air Force also has up to six F-4 Phantoms equipped with C 80IK ASMs for the maritime role.

(2) Two F-27 Fokker Friendship aircraft are used in a utility MPA role.

(3) Two Dornier 228 are also in service but are reported not to be very active.

(4) The Iranian Air Force operates some 14 (plus 18 ex-Iraqi) Su-24 Fencer ground attack, some of which may be 'marinised' for an anti-ship role.

(5) An-140 transport aircraft are under licensed production at Esfahan. The first aircraft flew in January 2001. These are likely to be used as a multipurpose platform including replacement of the ageing P3F fleet.

(6) Approximately seven Harbin Y-12 utility aircraft are used for maritime patrol.

Numbers/Type: 6 Sikorsky RH/MH-53D Sea Stallion.

Operational speed: 125 kt (232 km/h).

Service ceiling: 11,100 ft (3,385 m).

Range: 405 n miles (750 km).

Role/Weapon systems: Surface search helicopter which could be used for mine clearance but so far has only been used for Logistic purposes. Can be carried on Hengam class flight deck. Sensors: Weather radar. Weapons: Unarmed.

Numbers/Type: 5 Lockheed C-130H-MP Hercules.

Operational speed: 325 kt (602 km/h).

Service ceiling: 33,000 ft (10,060 m).

Range: 4,250 n miles (7,876 km).

Role/Weapon systems: Long-range maritime reconnaissance role by Air Force which has a total of 23 of these aircraft. Sensors: Search/weather radar. Weapons: Unarmed.

Numbers/Type: 2 Lockheed P-3F Orion.

Operational speed: 410 kt (760 km/h).

Service ceiling: 28,300 ft (8,625 m).

Range: 4,000 n miles (7,410 km).

Role/Weapon systems: Air Force manned. One of the remaining two aircraft can be used for early warning and control duties for strikes. Replacements are being sought. Sensors: Search radar, sonobuoys. Weapons: ASW; various weapons can be carried. ASV; C-802 SSM.



P3F

12/2001, A Sharma 0526307

PATROL FORCES

Notes: (1) There are at least one 13 m (RIB 42SC), one 16.5 m (FB 55), two 12 m (FB 38), two 11 m (RIB 36) and two 16.7 m (RIB 55SC) craft used for maritime enforcement tasks. Designed by FB design of Italy, they are capable of 60-70 kt. Additional units to similar designs have been built in Iran.

(2) The test of a high-speed rocket-torpedo was announced on 2 April 2006. Known as Dalaam, the weapon appears to resemble the Russian Shkval which has a speed of 195 kt and a range of 3.75 n miles. Designed for close-quarter operations, the weapon may be fitted in some patrol craft.



RIB 42

6/2007, FB design / 1166564

10 THONDOR (HOUDONG) CLASS (FAST ATTACK CRAFT—MISSILE) (PTFG)

SHAHID MEHDAVI (ex-Fath) P 313-1
SHAHID KORD (ex-Nasr) P 313-2
SHAHID SHAFIHI (ex-Saf) P 313-3
SHAHID TOWSALI (ex-Ra'ad) P 313-4
SHAHID HEJAT ZADEH (ex-Fajr) P 313-5

SHAHID DARA (ex-Shams) P 313-6
SHAHID ABSALAN (ex-Me'raj) P 313-7
SHAHID RAHISI RAISI (ex-Falaq) P 313-8
SHAHID GOLZAM (ex-Hadid) P 313-9
SHAHID SAHRABI (ex-Qadr) P 313-10

Displacement, tons: 171 standard; 205 full load
Dimensions, feet (metres): 126.6 x 22.3 x 8.9 (38.6 x 6.8 x 2.7)
Main machinery: 3 diesels, 8,025 hp(m) (794 MW) sustained; 3 shafts
Speed, knots: 35
Range, n miles: 800 at 30 kt
Complement: 28 (3 officers)

Missiles: SSM, 4 China C-802, active radar homing to 120 km (66 n miles) at 0.9 Mach; warhead 165 kg; sea-skimmer.
Guns: 2—30 mm/85 (twin) AK 230 2—23 mm/87 (twin).
Radars: Surface search: China SR-47A; I-band.
Navigation: China RM 1070A; I-band
Fire control: Rice Lamp Type 341; I/J-band.

Programmes: Negotiations for sale started in 1991 but were held up by arguments over choice of missile. Built at Zhanjiang Shipyard. First five delivered in September 1994 by transporter vessel, second batch in March 1996. Original pennant numbers 301-310. More may be built in Iran under licence.

Structure: The hull is a shortened version of the Chinese Huangfen (Osa 1) class but the superstructure has a lattice mast to support two I-band radars and there is a separate director plinth for the fire-control system. A twin 23 mm gun is fitted aft of the mast.

Operational: Manned by the Pasdaran. Renamed in approximately 2006.



SHAHID GOLZAM

4/2006 / 1164698



SHAHID ABSALAN

4/2006 / 1164697

13 KAMAN (COMBATTANTE II) CLASS (FAST ATTACK CRAFT—MISSILE) (PGGF)

Name	No	Builders	Commissioned
KAMAN	P 221	CMN, Cherbourg	12 Aug 1977
ZOUBIN	P 222	CMN, Cherbourg	12 Sep 1977
KHADANG	P 223	CMN, Cherbourg	15 Mar 1978
PEYKAN	P 224	Bandar Anzali, Iran	2004
JOSHAN	P 225	Bandar Anzali, Iran	2006
FALAKHON	P 226	CMN, Cherbourg	31 Mar 1978
SHAMSHIR	P 227	CMN, Cherbourg	31 Mar 1978
GORZ	P 228	CMN, Cherbourg	22 Aug 1978
GARDOUNEH	P 229	CMN, Cherbourg	11 Sep 1978
KHANJAR	P 230	CMN, Cherbourg	1 Aug 1981
NEYZEH	P 231	CMN, Cherbourg	1 Aug 1981
TABARZIN	P 232	CMN, Cherbourg	1 Aug 1981
DERAFSH	P 233	Bandar Anzali, Iran	2008

Displacement, tons: 249 standard; 275 full load
Dimensions, feet (metres): 154.2 x 23.3 x 8.2 (47 x 7.1 x 1.9)
Main machinery: 4 MTU 16V 538 TB91 diesels; 12,280 hp(m) (9.03 MW) sustained; 4 shafts
Speed, knots: 37.5
Range, n miles: 2,000 at 15 kt; 700 at 33.7 kt
Complement: 31

Missiles: SSM: 2 or 4 China C-802 (1 or 2 twin); active radar homing to 120 km (66 n miles) at 0.9 Mach; warhead 165 kg; sea-skimmer or 4 McDonnell Douglas Harpoon (2 twin), active radar homing to 40 km (22 n miles) at 0.9 Mach; warhead 165 kg; sea-skimmer or Standard SM1-MR box launchers (Gorz).

Guns: 1 OTO Melara 3 in (76 mm)/62 compact; 85 rds/min to 16 km (8.7 n miles) anti-surface; 12 km (6.6 n miles) anti-aircraft, weight of shell 6 kg; 320 rounds
1 Breda Bofors 40 mm/70, 300 rds/min to 12 km (6.6 n miles); weight of shell 0.96 kg; 900 rounds. Some have a 23 mm or 20 mm gun in place of the 40 mm.
2—12.7 mm MGs

Countermeasures: ESM: Thomson-CSF TMV 433 Dalia; radar intercept.

ECM: Thomson-CSF Alligator; jammer.

Radars: Surface search/fire control: Signaal WM28; I/J-band.

Navigation: Racal Decca 1226; I-band.

IFF: UPZ-27N/APX-72.

Programmes: Twelve ordered in February 1974. The transfer of the last three craft was delayed by the French Government after the Iranian revolution. On 12 July 1981 France decided to hand them over. This took place on 1 August, on 2 August they sailed and soon after *Tabarzin* was seized by a pro-Royalist group off Cadiz. After the latter surrendered to the French in Toulon further problems were prevented by sending all three to Iran in a merchant ship. Further indigenously built craft have been developed for operations in the Caspian Sea. Known as the SINA 1 programme, the first vessel (*Paykan*) was launched on 29 September 2003, the second (*Joshan*) commissioned in 2006 and a third (*Derafsh*) in 2008. Additional units may be built.

Modernisation: Most of the class fitted with C-802 SSM in 1996-98. *Gorz* has been used for trials, first with Harpoon, and now with SM 1 launchers taken from the deleted Sumner class destroyers.

Structure: Portable SA-7 launchers may be embarked in some.

Operational: The original *Paykan* P 224 was sunk in 1980 by Iraq, *Joshan* P 225 in April 1988 by the US Navy. The new *Paykan* P 224, *Joshan* P 225 and *Derafsh* P 233 are based in the Caspian Sea.



GARDOUNEH (with Harpoon)

11/2001, Royal Australian Navy / 0520433



SHAMSHIR

4/2006 / 1164696



GORZ (with SM1)

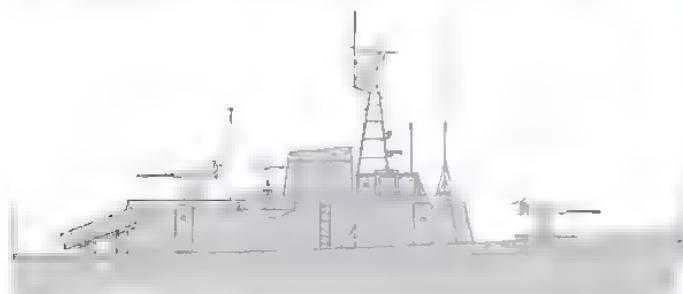
12/2002 / 0569204

3 PARVIN (PGM-71) CLASS (LARGE PATROL CRAFT) (PC)

Name	No	Builders	Commissioned
PARVIN (ex-PGM 103)	211	Peterson Builders Inc	1967
BAHRAM (ex-PGM 112)	212	Peterson Builders Inc	1969
NAHID (ex-PGM 122)	213	Peterson Builders Inc	1970

Displacement, tons: 98 standard; 148 full load
Dimensions, feet (metres): 101 x 21.3 x 8.3 (30.8 x 6.5 x 2.5)
Main machinery: 8 GM 6-71 diesels; 2,040 hp (1.52 MW) sustained; 2 shafts
Speed, knots: 22
Range, n miles: 1,140 at 17 kt
Complement: 20
Missiles: SSM, 2 launchers.
Guns: 1 Bofors 40 mm/60. 1 GAM BO1 20 mm. 2—12.7 mm MGs.
Depth charges: 4 racks (8 US Mk 6).
Radars: Surface search: I-band.
Sonars: SQS-17B; hull-mounted active attack; high frequency.

Comment: The heavier 40 mm gun is mounted aft and the 20 mm forward to compensate for the large SQS-17B sonar dome under the bows. Mousetrap A/S mortar removed. Two units have been modified with two missile launchers (of unknown type). Two GAM BO1 20 mm guns are carried in this variant.



PARVIN CLASS (SSM variant) (Scale 1 : 400), Ian Sturton / 1186563



PARVIN 1/2002, A Sharma / 0528306

3 KAYVAN (CAPE) CLASS (LARGE PATROL CRAFT) (PB)

KAYVAN 201 (ex-61)	TIRAN 202 (ex-63)	MAHAN 204 (ex-64)
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Displacement, tons: 98 standard, 148 full load
Dimensions, feet (metres): 95 x 20.2 x 6.6 (28.9 x 6.2 x 2)
Main machinery: 24 Cummins NYHMS-1200 diesels; 2,120 hp (1.58 MW); 2 shafts
Speed, knots: 21
Range, n miles: 2,324 at 8 kt
Complement: 15
Guns: 1 Bofors 40 mm/60. 2 USSR 23 mm/80 (twin) 2—12.7 mm MGs.

Comment: Three patrol craft originally built by the US Coast Guard, Curtis Bay, Maryland in the 1950s were withdrawn from Iranian service in approximately 1995. It is reported that they have been refitted and recommissioned. Details are as for the craft in 1994 but it is likely that machinery and armament may now be different.



MAHAN (old number) 6/1975, Iranian Navy / 1293457

10 US MK III CLASS (COASTAL PATROL CRAFT) (PB)

Displacement, tons: 41.6 full load
Dimensions, feet (metres): 65 x 18.1 x 6 (19.8 x 5.5 x 1.8)
Main machinery: 3 GM 8V-71TI diesels; 690 hp (515 kW) sustained; 3 shafts
Speed, knots: 30
Range, n miles: 500 at 28 kt
Complement: 8
Guns: 1—20 mm GAM BO1. 1—12.7 mm MG.
Radars: Surface search: RCA LN66, I band.

Comment: Twenty ordered from Marinette Marine Corporation, Wisconsin, USA, the first delivered in December 1975 and the last in December 1976. A further 50 were ordered in 1976 to be shipped out and completed in Iran. It is not known how many were finally assembled. Six lost in the Gulf War, others have been scrapped. These last 10 are based at Boushehr and Bandar Abbas. Continue to be active.



US Mk III 5/1999, 0080041

10 PASHE (MIG-G-1900) CLASS (COASTAL PATROL CRAFT) (PBF)

Displacement, tons: 30 full load
Dimensions, feet (metres): 64 x 13.8 x 3 (19.5 x 4.2 x 0.9)
Main machinery: 2 MWM TBD 234 V12 diesels; 1,646 hp(m) (1.21 MW); 2 shafts
Speed, knots: 36
Complement: 8
Guns: 2—23 mm/80 (twin).
Radars: Surface search, I-band.

Comment: Building in Iran to a modified US Mk II design. Numbers uncertain. Pasdaran craft.



MIG-G-1900 1992, Iranian Marine Industries / 0080047

20 GHAEM (MIG-S-1800) CLASS (COASTAL PATROL CRAFT) (PB)

Displacement, tons: 60 full load
Dimensions, feet (metres): 61.3 x 18.9 x 3.4 (18.7 x 5.8 x 1.1)
Main machinery: 2 MWM TBD 234 V12 diesels; 1,646 hp(m) (1.21 MW); 2 shafts
Speed, knots: 18
Complement: 10
Guns: 1 Oerlikon 20 mm 2—7.62 mm MGs
Radars: Surface search, -band.

Comment: Assembled in Iran as general purpose patrol craft. Numbers uncertain. Pasdaran craft.



GHAEM CLASS 1996, Joolae Marine Industries / 0506299

15 PEYKAAP I (IPS 16) CLASS (COASTAL PATROL CRAFT) (PTF)

Displacement, tons: 13.75 standard
 Dimensions, feet (metres): 53.5 x 12.3 x 2.3 (16.3 x 3.75 x 0.7)
 Main machinery: 2 diesels; 2,400 hp (1.79 MW); surface piercing propeller
 Speed, knots: 52
 Complement: 3
 Guns: 1—12.7 mm MG
 Torpedoes: 2 lightweight

Comment: Up to 15 of this class in service with the Pasdaran. Built in North Korea, six craft were reported to have been delivered on 8 December 2002 on the Iranian freighter *Iran Meead*. An apparently stealthy craft whose unusual armament of 324 mm lightweight torpedoes suggest a ship-disabling role.



PEYKAAP I CLASS 4/2006 / 116469b

10 TIR (IPS 18) CLASS (COASTAL PATROL CRAFT) (PTF)

Displacement, tons: 28.1 standard
 Dimensions, feet (metres): 69.4 x 18.9 x 2.8 (21.1 x 5.8 x 0.9)
 Main machinery: 3 diesels; 3,600 hp (2.7 MW)
 Speed, knots: 52
 Complement: 6
 Guns: 1—12.7 mm MG.
 Torpedoes: 2—533 mm (unknown type)

Comment: Up to ten of this class in service with the Pasdaran. Built in North Korea, two craft were reported to have been delivered on 8 December 2002 on the Iranian freighter *Iran Meead*. Anti-surface ship role.



TIR and BOGHAMMAR 1/2006, RAAF / 1167756

3 GAHJAE CLASS (SEMI-SUBMERSIBLE CRAFT) (PTF)

Displacement, tons: 7 approx
 Dimensions, feet (metres): 49.2 x 9.8 x 2.3 (15.0 x 3.0 x 0.7)
 Speed, knots: 50 approx
 Torpedoes: 2 lightweight

Comment: Originally reported as the Taedong-C semi-submersible torpedo boat, three of these craft were reported delivered from North Korea on 8 December 2002 on the Iranian freighter *Iran Meead*. The stealthy design appears to be based on the Peykaap class inshore patrol craft on which the dimensions, which are speculative, are based. The concept of operations is likely to include a high speed surface approach to a target before submerging to a depth of about 3 m to conduct the attack phase using a snort mast.



GAHJAE CLASS (artist's impression) 10/2005 / 1151765

25 PEYKAAP II (IPS 16 MOD) CLASS (COASTAL PATROL CRAFT) (PTG)

Displacement, tons: 13.75 approx
 Dimensions, feet (metres): 55.8 x 12.3 x 2.3 (17.0 x 3.75 x 0.7)
 Main machinery: 2 diesels, 2,400 hp (1.79 MW), surface piercing propeller
 Speed, knots: 52 approx
 Missiles: 2 FL-10 launchers

Comment: Slightly larger versions of the torpedo-armed Peykaap I class armed with FL-10 or C-701 (Kosar) or C-704 (Nasr) missiles. Approximately 25 of this class in service with the Pasdaran. Probably built in Iran as a development of the original North Korean design.



PEYKAAP II 6/2008* / 1335384

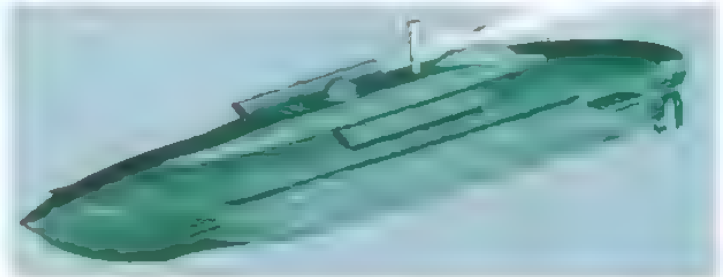
3 KAJAMI CLASS (SEMI-SUBMERSIBLE CRAFT) (PTF)

Displacement, tons: 30 approx
 Dimensions, feet (metres): 68.9 x 7 x 7 (21.0 x 7 x 7)
 Speed, knots: 50 approx

Comment: Originally reported as the Taedong-B high-speed infiltration craft, two of these craft were reported delivered from North Korea on 8 December 2002 on the Iranian freighter *Iran Meead*. Little is known about the design of the craft except that its concept of operations is likely to include a high speed surface approach to a target before submerging to a depth of about 3 m to conduct the attack phase using a snort mast.



KAJAMI 6/2006 / 1164691



KAJAMI (submerged approach) (artist's impression) 10/2005 / 1151765b

15 TARLAN CLASS (INSHORE PATROL CRAFT) (PTF)

Displacement, tons: 8.5 standard
 Dimensions, feet (metres): 39.0 x 10.2 x 2.1 (11.9 x 3.1 x 0.65)
 Main machinery: 2 diesels; 1,320 hp (985 kW); 2 surface piercing propellers
 Speed, knots: 50
 Complement: 2

Comment: A new class of indigenously built inshore attack craft first reported in 2005. Design features include an aluminium, catamaran hull, probably adapted from a commercial craft, and a 1.5 m high pedestal in the after part of the vessel. This might support a wire/laser guided weapon similar to an Anti-Tank Guided Missile (ATGM). Numbers of craft are uncertain but are likely to increase.



TARLAN CLASS (under construction) 6/2007 / 1166572

6 US MK II CLASS (COASTAL PATROL CRAFT) (PB)

Displacement, tons: 22.9 full load
 Dimensions, feet (metres): 49.9 x 15.1 x 4.3 (15.2 x 4.6 x 1.3)
 Main machinery: 2 GM 8V-71TI diesels, 480 hp (343 kW) sustained; 2 shafts
 Speed, knots: 28. Range, n miles: 750 at 26 kt
 Complement: 8
 Guns: 2—12.7 mm MGs
 Radars: Surface search, SPS-6; I-band

Comment: Twenty-six ordered from Peterson, USA in 1976-77. Six were for the Navy and the remainder for the Imperial Gendarmerie. All were built in association with Arvandan Maritime Corporation, Abadan. The six naval units operate in the Caspian Sea. Of the remaining 20, six were delivered complete and the others were only 65 per cent assembled on arrival in Iran. Some were lost when the Iraq Army captured Koramshahr. Others have been lost at sea. Numbers uncertain.



US MK II 3/1996 0080043

9 C 14 CLASS (PTGF)

611-614 +5

Displacement, tons: 17 standard
Dimensions, feet (metres): 44.8, 45.1 MRL x 15.7 x 2.3 (13.65; 13.75 x 4.8 x 0.7)
Main machinery: 2 diesels; 2,300 hp (1.7 MW), 2 surface piercing propellers
Speed, knots: 50
Complement: 5
Missiles: SSM 4 FL-10 (2 twin) launchers
Guns: 1—20 mm, 1—12.7 mm MG
Weapons control: Optronic director.
Radars: Surface search, I-band.

Comment: There are two known variants of this catamaran-hulled class, the prototype of which was reported delivered in late 2000 and commissioned in 2001. Five missile-armed craft are operated by the Pasdaran. The type of missile has not been confirmed but is probably FL-10. Four (611-614) slightly longer (13.75 m) craft are fitted with MRL on the bridge roof and are operated by the navy. Further craft of both variants are likely.



C 14 (missile variant) 2001, China State Shipbuilding Corporation / 0098378



C 14 (MRL variant) 3/2006 / 1164690

30 BOGHAMMAR CRAFT (PBF)

Displacement, tons: 6.4 full load
Dimensions, feet (metres): 41.2 x 8.6 x 2.3 (13 x 2.7 x 0.7)
Main machinery: 2 Seatek 6-4V-9 diesels; 1,160 hp (853 kW); 2 shafts
Speed, knots: 46. Range, n miles: 500 at 40 kt
Complement: 5/6
Guns: 3—12.7 mm MGs, 1 RPG-7 rocket launcher or 106 mm recoilless rifle, 1-12-barrelled 107 mm rocket launcher (MRL)
Radars: Surface search; I-band.

Comment: Ordered in 1983 and completed in 1984-85 for Customs Service. Total of 51 delivered. Used extensively by the Pasdaran. Maximum payload 450 kg. Speed is dependent on load carried. They can be transported by Amphibious Lift Ships and can operate from bases at Farsi, Sirri and Abu Musa Islands with a main base at Bandar Abbas. Re-engined with Seatek diesels from 1991. There are also a further 10-11 m craft with similar characteristics. Known as TORAGH boats and manned by the Pasdaran and the Navy. Numbers approximate.

20 ASHOORA I (MIG-G-0800) CLASS (INSHORE PATROL CRAFT) (PBF)

Displacement, tons: 1.3 full load
Dimensions, feet (metres): 22.3 x 7.4 x 1.2 (6.7 x 2.3 x 0.4)
Main machinery: 2 outboards; 240 hp (179 kW)
Speed, knots: 40+
Complement: 4
Guns: Various, but can include 1-12-barrelled 107 mm MRL or 1—12.7 mm MG

Comment: Boston Whaler type craft based on a Watercraft (UK) design. Numerous indigenously constructed GRP hulls. Numbers uncertain. Manned by the Pasdaran and the Navy.



ASHOORA I 6/1988 / 0509014

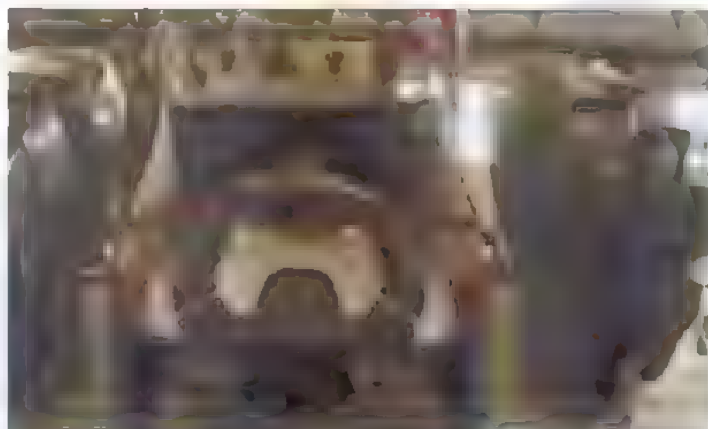
RIVER ROADSTEAD PATROL AND HOVERCRAFT (PBR)

Comment: Numerous craft used by the Revolutionary Guard include:

Type 2: Dimensions, feet (metres): 22.0 x 7.2 (6.7 x 2.2); single outboard engine; 1-12.7 mm MG
 Type 3: Dimensions, feet (metres): 16.4 x 5.2 (5.0 x 1.6); single outboard engine; small arms.
 Type 4: Dimensions, feet (metres): 13.1-26.2 x 7.9 (4-8 x 1.6); two outboard engines; small arms.
 Type 5: Dimensions, feet (metres): 24.6 x 9.2 (7.5 x 2.8); assault craft.
 Type 6: Dimensions, feet (metres): 30.9 x 11.8 (9.4 x 3.6); single outboard engine; 1-12.7 mm MG.
 Dhows: Dimensions, feet (metres): 77.1 x 20 (23.5 x 6.1); single diesel engine; mine rails.
 Yunus: Dimensions, feet (metres): 27.6 x 9.8 (8.4 x 3); speed 32 kt.
 Ashoora II: Dimensions, feet (metres): 26.6 x 7.9 (8.1 x 2.4); two outboards; speed 42 kt; 1-762 mm MG.
 Kuch: Dimensions, feet (metres): 29.5 x 9.8 (9.0 x 3.0); two outboards; stern dock for jet ski.
 Jet Skis: RPGs



TYPE 4 6/2007 / 1166575

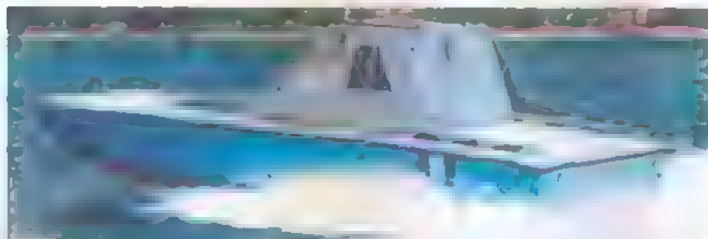


KUCH (with stern dock) 6/2007 / 1166576

20 MURCE (MIG-G-0900) CLASS (INSHORE PATROL CRAFT) (PBI)

Displacement, tons: 3.5 full load
Dimensions, feet (metres): 30.2 x 9.2 x 1.6 (9.2 x 2.8 x 0.45)
Main machinery: 2 Volvo Penta diesels; 1,260 hp (940 kW)
Speed, knots: 30
Complement: 3
Guns: 3—12.7 mm MGs, 1 RPG-7 rocket launcher or 106 mm recoilless rifle, 1-12-barrelled 107 mm rocket launcher (MRL).
Radars: Surface search; I-band.

Comment: Built by MIG, the unarmed variant has been produced in relatively large numbers since the mid-1990s. This approximate number of armed variant is believed to be in Pasdaran or naval service.

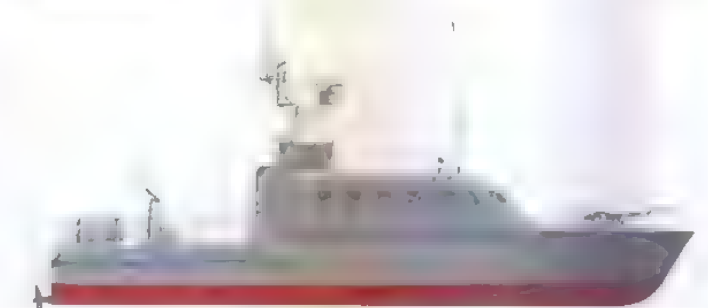


MURCE CLASS 6/2000, MIG / 0126375

10 KASHDOM II CLASS (INSHORE PATROL CRAFT) (PBF)

Displacement, tons: 17.5 approx
Dimensions, feet (metres): 52.5 x 9.8 x 3.6 (16.0 x 3.0 x 1.1)
Main machinery: 2 diesels; 2,400 hp (1.8 MW); surface piercing propeller
Speed, knots: 50 approx
Complement: 5
Guns: 1—23 mm, 1—12.7 mm MG

Comment: Probably a development of the C 14 class design, the catamaran-hulled inshore patrol craft. A MRL launcher may also be mounted on the cabin roof. Numbers are approximate.



KASHDOM II (artist's impression) 6/2008 / 1335383

10 MK 13 PATROL CRAFT (PTGF)

Displacement, tons: To be announced
Dimensions, feet (metres): 45.9 x 7 x 7 (14 x 7 x 7)
Speed, knots: To be announced
Missiles: SSM: 2 FL-10 launchers
Torpedoes: 2–324 mm tubes.

Comment: Approximately four new monohull patrol craft, possibly built in China, delivered in 2006. Armed with both anti ship missiles and torpedoes.



MK 13 CRAFT 6/2007 / 11665/4

3 SEWART CLASS (INSHORE PATROL CRAFT) (PBR)

MAHNAVI-HAMRAZ MAHNAVI-TAHERI MAHNAVI-VAHEDI

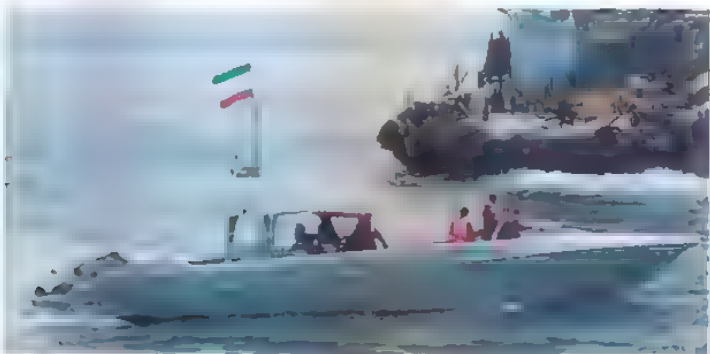
Displacement, tons: 9.1 approx
Dimensions, feet (metres): 40.0 x 12.1 x 3.3 (12.2 x 3.7 x 1.0)
Main machinery: 2 GM diesels, 348 hp (260 kW); 2 shafts
Speed, knots: 31 approx
Complement: 6
Guns: 1–12.7 mm MG

Comment: Surviving craft of about nine craft acquired from the US for the then Coast Guard in about 1953. Previously reported as having been decommissioned. Some were transferred to Sudan in 1975. Possibly based in the Caspian Sea

1 MIL 55 CLASS (INSHORE PATROL CRAFT) (PBF)

Displacement, tons: 15.3
Dimensions, feet (metres): 53.9 x 9.3 x 2.75 (16.43 x 2.85 x 0.84)
Main machinery: 2 Isotta Fraschini diesels; 2,400 hp (1.8 MW); surface piercing propeller
Speed, knots: 72 approx
Complement: 5

Comment: Designed by FB design of Italy. Delivered in 2003. Kevlar monohull fast inshore patrol craft for maritime law enforcement tasks.



MIL 55 4/2006 / 1164694

2 MIL 40 CLASS (INSHORE PATROL CRAFT) (PTF)

Displacement, tons: 6 approx
Dimensions, feet (metres): 42.3 x 8.7 x 2.7 (12.9 x 2.64 x 0.82)
Main machinery: 2 Isotta Fraschini diesels; 1,320 hp (984 kW); surface piercing propeller
Speed, knots: 62
Complement: 3

Comment: Designed by FB design of Italy. Delivered in 2002. Kevlar monohull fast inshore patrol craft for maritime law enforcement tasks. The craft can be equipped with a centrally mounted machine-gun forward or with two laterally mounted guns.



MIL 40 4/2006 / 1164693

AMPHIBIOUS FORCES

Notes: (1) Commercial LSLs have been built at Bandar Abbas. These include two 1,151 grt ships, *Chavoush* launched in December 1995 and *Chalak* in June 1996. (2) There are an unknown number of small Wing-In-Ground (WIG) vehicles, possibly for operations in the Caspian Sea. (3) Two indigenously built LCTs were launched on 28 May 2006. Construction is reported to have started in 2005. The 49 x 11.6 m craft are capable of transporting 800 tons of equipment. (4) The launch of a 50 m landing craft, *Liyan 110*, was announced in 2008. While described as a commercial craft, the vessel has military applications. In addition, a number of other landing craft are reported to be under consideration.



WIG 6/2004 / 1044357

4 HENGAM CLASS (LSLH)

Name	No	Builders	Commissioned
HENGAM	511	Yarrow (Shipbuilders) Ltd, Clyde	12 Aug 1974
LARAK	512	Yarrow (Shipbuilders) Ltd, Clyde	12 Nov 1974
TONB	513	Yarrow (Shipbuilders) Ltd, Clyde	21 Feb 1985
LAVAN	514	Yarrow (Shipbuilders) Ltd, Clyde	16 Jan 1985

Displacement, tons: 2,540 full load
Dimensions, feet (metres): 305 x 49 x 7.3 (93 x 15 x 2.4)
Main machinery: 4 Paxman 12YJCM diesels (*Hengam, Larak*); 3,000 hp (2.24 MW) sustained; 2 shafts. 4 MTU 16V 652 TB81 diesels (*Tonb, Lavan*); 4,800 hp(m) (3.38 MW) sustained, 2 shafts
Speed, knots: 14.5
Range, n miles: 4,000+ at 12 kt
Complement: 80
Military lift: Up to 9 tanks depending on size; 600 tons cargo; 227 troops; 10 ton crane

Guns: 4 Bofors 40 mm/60 (*Hengam and Larak*). 8 USSR 23 mm/80 (4 twin) (*Tonb and Lavan*). 2–12.7 mm MGs.
 1 BM-21 multiple rocket launcher
Countermeasures: Decoys: 2 UK Mk 5 rocket flare launchers
Raders: Navigation: Racal Decca 1229, I-band.
 IFF SSR 1520 (*Hengam and Larak*).
 Tacan: URN 25
Helicopters: Can embark 1 Sikorsky MH-53D

Programmes: Named after islands in the Gulf. First two ordered 25 July 1972. Four more ordered 20 July 1977. The material for the last two ships of the second order had been ordered by Yarrows when the order was cancelled in early 1979. *Tonb* carried out trials in October 1984 followed by *Lavan* later in the year and both were released by the UK in 1985 as 'Hospital Ships'
Structure: Smaller than British *Sir Lancelot* design with no through tank deck. Rocket launcher mounted in the bows.
Operational: Two LCVPs and a number of small landing craft can be carried. Can act as Depot Ships for MCMV and small craft and have been used to ferry Pasdaran small craft around the Gulf. The ships may also be used as training platforms for swimmer delivery vehicles.



TONB 6/2004 / 1044354



TONB 10/2004 / 1151271

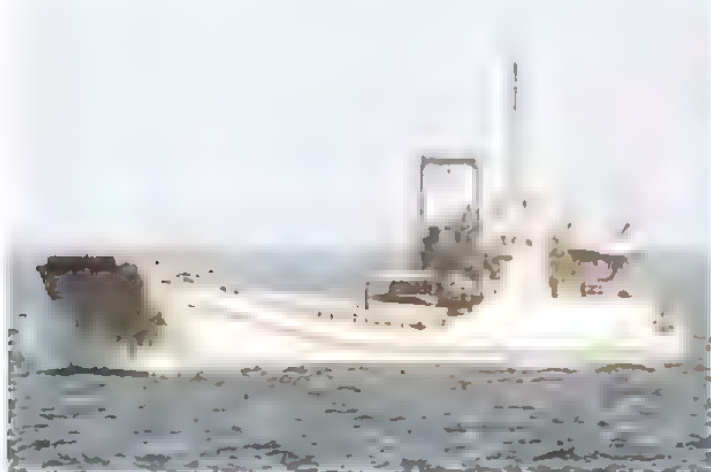
378 Iran/Amphibious forces – Auxiliaries

3 IRAN HORMUZ 24 CLASS (LST)

FARSI 24 SARDASHT 25 SAB SAHEL 26

Displacement, tons: 2,014 full load
Dimensions, feet (metres): 239.8 × 46.6 × 8.2 (73.1 × 14.2 × 2.5)
Main machinery: 2 Daihatsu 6DLM 22 diesels, 2,400 hp(m) (1.76 MW); 2 shafts
Speed, knots: 12
Complement: 30 plus 110 borths
Military lift: 9 tanks, 140 troops

Comment: Built at Inchon, South Korea in 1985–86 and as with the Iran Hormuz 21 class officially classed as Merchant Ships. Have been used to support Pasdaran activities



IRAN HORMUZ 24

5/1999 / 00300149

6 KARBALA (MIG-S-3700) CLASS (LSL)

FOUQUE 101 HORMUZ 505 - 507
 QESHM 504 FORUR 506 - 508

Displacement, tons: 276 full load
Dimensions, feet (metres): 121.4 × 26.2 × 4.9 (37 × 8 × 1.5)
Main machinery: 2 MWM TBD 234 V8 diesels, 879 hp(m) (646 kW); 2 shafts
Speed, knots: 10
Range, n miles: 400 at 10 kt
Complement: 8
Military lift: 140 tons of vehicles

Comment: *Fouque* assembled in Iran by Martyr Darvishi Marine, Bandar Abbas. Launched in June 1998. Others of the class are in commercial service and more can be taken over by the Navy if required. Two others for the Navy were launched in September 1985 and a further three have also been reported.



KARBALA CLASS

1994, Iranian Marine Industries / 0080049

2 IRAN HORMUZ 21 CLASS (LST)

HEJAZ 21 KARABALA 22

Displacement, tons: 1,280 full load
Measurement, tons: 750 dwt
Dimensions, feet (metres): 213.3 × 39.4 × 8.5 (65 × 12 × 2.6)
Main machinery: 2 MAN V12V-12 5/14 or 2 MWM TBD 604 V12 diesels; 1,460 hp(m) (1.07 MW); 2 shafts
Speed, knots: 9
Complement: 12
Military lift: 600 tons

Comment: Officially ordered for 'civilian use' and built by Ravenstein, Netherlands in 1984–85. Both are manned by the Pasdaran. A local version is assembled as the MIG-S-5000 for commercial use. One was launched in mid-1995 at Boushehr and a second in 1997.

6 WELLINGTON (BH.7) CLASS (HOVERCRAFT) (UCAC)

101–106

Displacement, tons: 53.8 full load
Dimensions, feet (metres): 78.3 × 45.6 × 5.6 (skirt) (23.9 × 13.9 × 1.7)
Main machinery: 1 RR Proteus 15 M/541 gas turbine; 4,250 hp (3.17 MW) sustained
Speed, knots: 70; 30 in Sea State 5 or more
Range, n miles: 620 at 66 kt
Guns: 2 Browning 12.7 mm MGs.
Radars: Surface search: Decca 1226; I-band.

Comment: First pair are British Hovercraft Corporation 7 Mk 4 commissioned in 1970 71 and the next four are Mk 5 craft commissioned in 1974 75 Mk 5 craft fitted for, but not with Standard missiles. Some refitted in UK in 1984. Can embark troops and vehicles or normal support cargoes. The Iranian Aircraft Manufacturing Industries (HESA) is reported to be able to maintain these craft in service.



WELLINGTON MK V

4/2006 / 1164h/8

1 IRAN CLASS (HOVERCRAFT) (UCAC)

Displacement, tons: 10 full load
Dimensions, feet (metres): 48.4 × 25.3 × 15.9 (14.8 × 7.7 × 4.8)
Main machinery: 1 gas turbine
Speed, knots: 60

Comment: The first of a new Iran class was completed in March 2000 and is probably based on the old SRN-6 class on which the approximate dimensions are based. Reports suggest a military lift of 2 tons and 26 troops.



IRAN CLASS

6/2004 / 1044355

AUXILIARIES

Notes: (1) There is also an inshore survey vessel *Abnegor*
 (2) Two 65 ton training vessels of Kialas-C-Qasem class are reported to have commissioned mid-2000. There may be further craft. No other details are known.

4 KANGAN CLASS (WATER TANKERS) (AWT)

KANGAN 411 TAHERI 412 SHAHID MARJANI AMIR

Displacement, tons: 12,000 full load
Measurement, tons: 9,430 dwt
Dimensions, feet (metres): 485.6 × 70.5 × 16.4 (148 × 21.5 × 5)
Main machinery: 1 MAN 7L52/55A diesel, 7,385 hp(m) (5.43 MW) sustained; 1 shaft
Speed, knots: 15
Complement: 14
Cargo capacity: 9,000 m³ of water
Guns: 2 USSR 23 mm/80 (twin). 2 – 12.7 mm MGs
Radars: Navigation: Decca 1229; I-band.

Comment: The first two were built in Mazagon Dock, Bombay in 1978 and 1979. The second pair to a slightly modified design was acquired in 1991–92 but may be civilian manned. Some of the largest water tankers afloat and can be used to supply remote coastal towns and islands. Accommodation is air conditioned. All have a 10 ton boom crane.



TAHERI

5/1989 / 0506013

12 HENDIJAN CLASS (TENDERS) (PBO)

HENDIJAN 1401	GAVATAR 1404	KALAT 1407	NAYBAND 1410
SIRIK 1402	MOOAM 1405	GENAVEH 1408	MACHAM
KONARAK 1403	BAHREGAN (ex-Geno) 1406	ROSTANI 1409	KORAMSHAHR

Displacement, tons: 460 full load
 Dimensions, feet (metres): 166.7 × 28.1 × 11.5 (50.8 × 8.6 × 3.5)
 Main machinery: 2 Mitsubishi S16MPTK diesels; 7,600 hp(m) (5.15 MW); 2 shafts
 Speed, knots: 25
 Complement: 15 plus 90 passengers
 Cargo capacity: 40 tons on deck; 95 m³ of liquid/solid cargo space
 Guns: 1—20 mm (sometimes fitted in patrol craft) 2—12.7 mm MGs.
 Radars: Navigation: Racal Decca or China RM 1070A; I-band.

Comment: First eight built by Damen, Netherlands 1988–91. Remainder built at Bandar Abbas under the MIG S-4700 programme. Last pair launched on 28 November 1995. Reports of three more being built may be caused by confusion with new corvettes. Various descriptions in the Iranian press as 'frigates' or 'patrol ships'; they are regularly used for coastal surveillance. One is used as a training ship. Pennant numbers in the 1400 series.



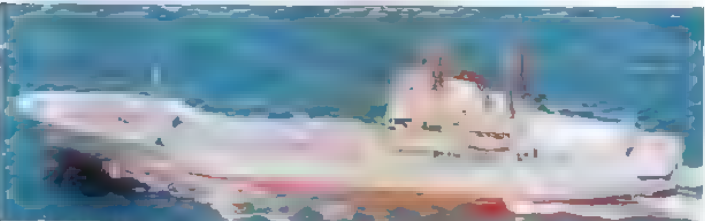
NAYBAND 6/2004 / 1044358

2 FLEET SUPPLY SHIPS (AORLH)

Name	No	Builders	Commissioned
BANDAR ABBAS	421	C Lühring Yard, Brake, West Germany	Apr 1974
BUSHEHR	422	C Lühring Yard, Brake, West Germany	Nov 1974

Displacement, tons: 4,673 full load
 Measurement, tons: 3,250 dwt; 3,186 gross
 Dimensions, feet (metres): 354.2 × 64.4 × 14.8 (108 × 16.6 × 4.5)
 Main machinery: 2 MAN 6L 62/55 diesels; 12,060 hp(m) (8.86 MW) sustained; 2 shafts
 Speed, knots: 20 Range, n miles: 3,500 at 16 kt
 Complement: 59
 Guns: 3 GAM-BO1 20 mm can be carried. 2—12.7 mm MGs.
 Radars: Navigation: 2 Decca 1226; I-band.
 Helicopters: 1 AB 212.

Comment: Bandar Abbas launched 11 August 1973, Boushehr launched 23 March 1974. Combined tankers and store-ships carrying victualling, armament and general stores. There are no RAS facilities. Telescopic hangar. Both carry 2 SA-7 portable SAM and 20 mm guns have replaced the former armament. Bandar Abbas damaged by an explosion in early 1989 but has been repaired.



BANDAR ABBAS 10/2004 / 1151276

1 SUPPORT VESSEL (AGG)

Name	No	Builders	Commissioned
HAMZAH (ex-Shahsavar)	802	NV Beela's Scheepwerven, Bolnes, Netherlands	1936

Displacement, tons: 530
 Dimensions, feet (metres): 176 × 25.3 × 10.5 (53.7 × 7.7 × 3.2)
 Main machinery: 2 diesels
 Missiles: 4 China C-802; active radar homing to 120 km (66 n miles) at 0.9 Mach; warhead 165 kg, sea skimmer
 Guns: 1—20 mm. 1—12.7 mm MG.

Comment: Former Imperial Yacht converted for support duties in the Caspian Sea. Armed with C-802 missiles.



HAMZAH 12/2006 / 1167429

6 DELVAR CLASS (SUPPORT SHIPS) (AEL/AKL/AWT)

DAYLAM (AWT) 424	CHARAK (AKL) 481
DELVAR (AEL) 471	CHIROO (AKL) 482
SIRJAN (AEL) 472	SOROO (AKL) 483

Measurement, tons: 890 gross, 765 dwt
 Dimensions, feet (metres): 210 × 34.4 × 10.9 (64 × 10.5 × 3.3)
 Main machinery: 2 MAN G6V 23.5/33ATL diesels; 1,560 hp(m) (1.15 MW); 2 shafts
 Speed, knots: 11
 Complement: 20
 Guns: 1 GAM-BO1 20 mm. 2 12.7 mm MGs.
 Radars: Navigation: Decca 1226; I-band

Comment: All built by Karachi SY in 1980–82. Delvar and Sirjan are ammunition ships. Dayer and Dilim water carriers and the other three are general cargo ships. The water carriers have only one crane (against two on the other types), and have rounded sterns (as opposed to transoms). Re-armed.



DAYLAM 5/2003, A Sharma / 0569202



CHARAK 10/1997 / 0012563

1 REPLENISHMENT SHIP (AORH)

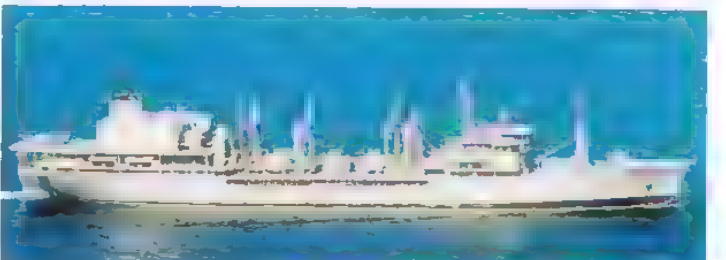
Name	No	Builders	Commissioned
KHARG	431	Swan Hunter Ltd, Wallsend	5 Oct 1984

Displacement, tons: 11,064 light; 33,014 full load
 Measurement, tons: 9,367 dwt; 18,582 gross
 Dimensions, feet (metres): 679 × 86.9 × 30 (207.2 × 26.5 × 9.2)
 Main machinery: 2 Babcock & Wilcox boilers; 2 Westinghouse turbines; 26,870 hp (19.75 MW); 1 shaft
 Speed, knots: 21.5
 Complement: 248
 Guns: 1 OTO Melara 76 mm/62 compact. 4 USSR 23 mm/80 (2 twin). 2—12.7 mm MGs.
 Radars: Navigation: Decca 1229; I-band
 Tacan: URN 20.
 Helicopters: 3 Sea Kings (twin hangar).

Comment: Ordered October 1974. Laid down 27 January 1976. Launched 3 February 1977. Ship handed over to Iranian crew on 25 April 1980 but remained in UK. In 1983 Iranian Government requested this ship's transfer. The UK Government delayed approval until January 1984. On 10 July 1984 began refit at Tyne Ship Repairers. Trials began 4 September 1984 and ship was then delivered without guns which were subsequently fitted. A design incorporating some of the features of the British OI class but carrying ammunition and dry stores in addition to fuel. Inmarsat fitted.



KHARG 5/1997 / 0052379



KHARG 6/1998 / 0052380

2 FLOATING DOCKS

400 (ex-US ARD 29, ex-FD 4) DOLPHIN

Dimensions, feet (metres) 487 × 80.2 × 32.5 (149.9 × 24.7 × 10) (400)
786.9 × 172.1 × 58.4 (240 × 52.5 × 17.8) (Dolphin)

Comment: 400 is an ex-US ARD 12 class built by Pacific Bridge, California and transferred in 1977; lift 3,556 tons. *Dolphin* built by MAN-GHH Nordenham, West Germany and completed in November 1985; lift 28,000 tons.

TUGS

17 HARBOUR TUGS (YTB/YTM)

HAAMOON	DEHLORAN	HARI-RUD
ALBAN	KHANDAG	ABAD
ASLAM	MENAB	HANGAM
DARYAVAND #	ATRAK	KARKHEH
HIRMAND	ILAM	ARAS
SERD-RUD	ARVAND	

Comment: All between 70 and 90 ft in length, built since 1984



Iraq

Country Overview

The Republic of Iraq was proclaimed in 1958 following a coup d'état. With an area of 188,754 square miles, it is situated in the Middle East and is bordered to the north by Turkey, to the east by Iran (with which it was at war 1980–88), to the west by Jordan and Syria and to the south by Saudi Arabia (with which it jointly administers the Neutral Zone) and Kuwait (which it invaded and occupied 1990–91 until expelled in the Gulf War 1991). It has a 31 n mile coastline with the Gulf. Baghdad is the capital and largest city. There are two ports on the Khawr Abd Allah Channel at Umm Qasr and Khawr al Zubayr. Territorial Seas (12 n miles) are claimed. An EEZ has not been claimed.

In the wake of the US-led occupation in March–April 2003, Iraq remained under coalition control until 30 June 2004 when full authority was handed over to an Iraqi Interim Government. Following elections on 30 January 2005, a new constitution was ratified by public referendum on 15 October 2005. This was followed by a general election on 15 December 2005 to elect a permanent Iraqi National Assembly. All naval coastal defence units, surface ships and aircraft were destroyed or disabled during the war and are unlikely to be resurrected. An oiler (*Agnadeen*) at Alexandria could be reclaimed but this is unlikely to be a high priority. The Iraqi Coastal Defence Force (ICDF), now known as the Iraqi Navy, was formally established at Umm Qasr on 30 September 2004. Key tasks include defence of the Khawr al Amaya (KAAOT) and Al Basra (ABOT) offshore oil terminals.

Headquarters Appointments

Commander Iraqi Navy:
Commodore Muhammed Jawad

Bases

Al Basra (Navy HQ), Khor Az Zubayr, Umm Qasr.

Personnel

2009 1,166 (176 officers) (including 400 naval infantry)

PATROL FORCES

Notes: (1) The force structure is to be augmented by the procurement of two Offshore Support Vessels (OSVs) and 15 patrol craft (PB). The OSVs, to be built to the ISD Malaysia P 570 design, are to be capable of acting as mother-ships for the PBs operating in the vicinity of offshore oil platforms. The PBs to be built to the ISD P 340 design, are to be capable of remaining at sea for 48 h.

(2) Plans to re-activate the two Assad-class corvettes, under care and maintenance at La Spezia since 1990, have been cancelled and the ships are likely to be sold or scrapped.

5 PREDATOR CLASS (INSHORE PATROL CRAFT) (PB)

P 101–105

Displacement, tons: To be announced
Dimensions, feet (metres): 88.9 × 9.2 × 5.9 (27.1 × 2.8 × 1.8)
Main machinery: 2 MTU 12V 396 TE742; 4,025 hp (3 MW)
Speed, knots: 32
Complement: 6
Guns: 1–7.62 mm MG

Comment: Built at Wuhan by Nanhua High-Speed Engineering Company and originally acquired in 2002. Maintained in dry-dock at Jebel Ali, UAE, until the first two were commissioned on 4 April 2004. Three further craft followed in May 2004. Acquisition and refit costs funded by the US. The craft were used initially for training of Iraqi personnel but are used increasingly for patrol duties as the navy develops. Based at Umm Qasr



P 102

5/2004, US Navy / 0580627



P 104

8/2008*, Shaun Jones / 1335385

2 + 2 DICIOTTI CLASS (OFFSHORE PATROL VESSELS) (PBO)

Displacement, tons: 391
Dimensions, feet (metres): 175.2 × 26.6 × 6.6 (53.4 × 8.1 × 2.0)
Main machinery: 2 Isotta Fraschini V1716 T2 MSD diesels, 6,335 hp (4.7 MW); 2 shafts
Speed, knots: 23. **Range, n miles:** 2,100 at 16 kt
Complement: 38 (4 officers)
Guns: 1 OTO Melara 30 mm. 2–12.7 mm MGs. 4–7.62 mm MGs.
Radars: Surface search; E/F-band
Navigation: I-band

Comment: Contract signed with Fincantieri, Muggiano in September 2006 for the construction of four vessels for delivery June 2009–March 2010. Two to be built at Riva Trigoso and two at Muggiano. The steel-hulled design is based on Diciotti (mod Saettia) class vessels in service with the Italian Coast Guard and is generally similar to the ship supplied to Malta in 2005 but with a stern ramp for launching an 11 m RIB. The contract included a training and logistic support package and some additional ex-Italian Coast Guard craft.



DICIOTTI CLASS (Maltese colours)

10/2005, Air Squadron, AFM / 1133090

2 TYPE 200 (INSHORE PATROL CRAFT) (PBO)

– P 701 (ex-CP 247)

– P 702 (ex-CP 250)

Displacement, tons: 22
Dimensions, feet (metres): 49.2 × 14.4 × 5.2 (15.0 × 4.4 × 1.6)
Main machinery: 2 Isotta Fraschini D36-SS-6V diesels; 1,380 hp (1.0 MW); 2 shafts
Speed, knots: 31
Range, n miles: 350 at 31 kt
Complement: 7
Radars: Navigation; I-band.

Comment: Former Italian Coast Guard craft built by Navatecnica Anzio, 1977–81. Transferred to Iraq in 2006 as part of the contract to procure four Diciotti-class offshore patrol craft

4 TYPE 2010 (INSHORE CRAFT) (PBR)

– P 203 (ex-CP 2036)

– P 204 (ex-CP 2037)

– P 205 (ex-CP 2067)

– P 206 (ex-CP 2069)

Displacement, tons: 11
Dimensions, feet (metres): 41.0 × 11.8 × 4.3 (12.5 × 3.6 × 1.3)
Main machinery: 2 AIFO 8362SRM27 diesels, 550 hp (398 kW); 2 shafts
Speed, knots: 25
Range, n miles: 600 at 12 kt
Complement: 4
Radars: Navigation; I-band.

Comment: Former Italian Coast Guard craft built 1973–85 GRP construction. Transferred to Iraq in 2006 as part of the contract to procure four Diciotti-class offshore patrol craft. Others of the class have been transferred to Albania

26 DEFENDER CLASS (RESPONSE BOATS) (PBF)

Displacement, tons: 2.7 full load
Dimensions, feet (metres): 25.0 x 8.5 x 8.8 (7.6 x 2.6 x 2.7)
Main machinery: 2 Honda outboard motors; 450 hp (335 kW)
Speed, knots: 46
Range, n miles: 175 at 35 kt
Complement: 4
Guns: 1 12.7 mm M.G.
Radars: To be announced.

Comment: High-speed inshore patrol craft of aluminium construction and foam collar built by SAFE Boats International, Port Orchard, Washington. Acquired from the US government and delivered by early 2009. The new patrol craft are to be used for patrol of the Khor Abd Allah waterway.



DEFENDER CLASS (USCG colours)

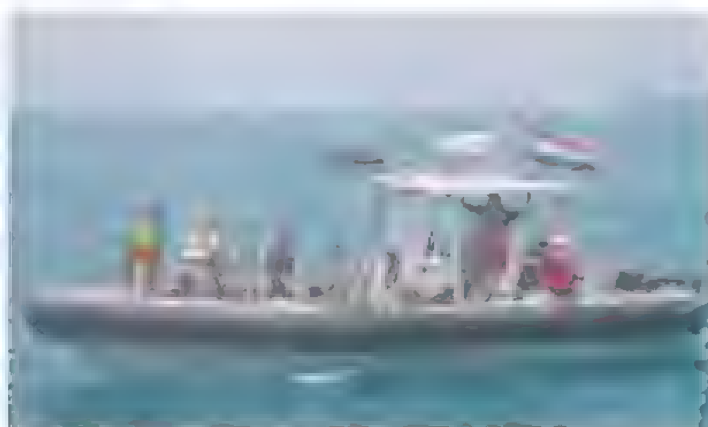
10/2003, Frank Findler / 0572752

24 SEASPRAY ASSAULT BOATS (PB)

F 1-F 24

Displacement, tons: To be announced
Dimensions, feet (metres): 31.2 x 11.1 x 1.6 (9.5 x 3.4 x 0.5)
Main machinery: 2 Mercury outboards, 500 hp (375 kW)
Speed, knots: 50
Range, n miles: 450 at 17 kt
Complement: 5
Radars: Navigation: I-band.

Comment: 24 craft donated by the UAE government in 2005. Designed by Sea Spray Aluminium Boats.



ASSAULT BOAT

9/2008*, Jane's / Tim Fish / 1294/48

Ireland**AN SEIRBHIS CHABHLAIGH****Country Overview**

The Republic of Ireland comprises about five sixths of the island of Ireland. Situated west of Great Britain, the country consists of the provinces of Leinster, Munster, Connaught and three counties of the province of Ulster. The remaining six counties of Ulster form Northern Ireland, a constituent part of the United Kingdom. With an area of 27,136 square miles, the country has a 783 n mile coastline with the Atlantic Ocean and Irish Sea. Dublin is the capital, largest city and principal port. There is another major port at Cork. Territorial waters (12 n miles) are claimed. A 200 n mile Fishery zone has also been claimed.

Headquarters Appointments

Flag Officer Commanding Naval Service:
Commodore F Lynch

Bases

Haulbowline Island, Cork Harbour-Naval HQ. Base and Dockyard

Personnel

(a) 2009: 1,144 (189 officers)
 (b) Voluntary service
 (c) Reserves: 400 (one unit in each of the following cities: Dublin, Waterford, Cork and Limerick)

Fishery Protection

In late 2004 and early 2005, all ships were fitted with the new Lirguard system. This system incorporates the

previously separate functions of the database, GIS database display, Vessel Monitoring System (VMS) and legislation browser. This system will be updated several times daily by satellite link from the Fisheries Monitoring Centre (FMC) at Haulbowline. These will provide a near real-time display and analysis tool of fishing activity to allow more intelligent and efficient use of the ships in the Fishery Protection role. Research is also continuing into the incorporation of VMS data with data from Earth Observation (EO) technology.

Prefix to Ships' Names

LÉ (Long Éirennach = Irish Ship)

PATROL FORCES

Notes: The Naval Service Replacement Programme is for the replacement of all eight patrol ships by 2025. The P 21 class is the first to be replaced by 2012. A Request for Proposals (RfP) for one 130-140 m Extended Patrol Vessel (EPV) and two 80-90 m Offshore Patrol Vessels (OPV) was issued on 24 August 2007. The EPV is to have a flight deck and to be capable of carrying troops, vehicles and equipment while the OPVs are required for standard EEZ roles. The RfP contains an option for a second EPV and a third OPV, these may be considered as replacements for *Eithne* and/or for the *Peacock* class in about 2015. The *Roisin* class is expected to be replaced in about 2025. A contract for the first three vessels is expected in 2009 with a view to delivery by 2012.

1 EITHNE CLASS (PSOH)

Name	No	Builders	Laid down	Launched	Commissioned
EITHNE	P 31	Verolme, Cork	15 Dec 1982	19 Dec 1983	7 Dec 1984

Displacement, tons: 1,760 standard; 1,910 full load
Dimensions, feet (metres): 285 x 39.4 x 14.1
 (80.8 x 12 x 4.3)
Main machinery: 2 Ruston 12RKC diesels; 6,800 hp
 (5.07 MW) sustained; 2 shafts, cp props
Speed, knots: 20+; 19 normal
Range, n miles: 7,000 at 15 kt
Complement: 73 (10 officers)

Guns: 1 Bofors 57 mm/70 Mk 1; 200 rds/min to 17 km
 (9.3 n miles); weight of shell 2.4 kg.
 2 Rheinmetall 20 mm/20. 2-7.62 mm M.Gs.
 2 Wallop 57 mm launchers for illuminants.

Weapons control: Signaal LIOD director. 2 Signaal optical sights.

Radars: Air/surface search: Signaal DA05 Mk 4, E/F-band
 Surface search: Kelvin Hughes; E/F-band
 Navigation: 2 Kelvin Hughes; 6000A; I-band
 Tacan: MEL RRB transponder

Helicopters: Not routinely carried.

Programmes: Ordered 23 April 1982 from Verolme, Cork, this was the last ship to be built at this yard.

Structure: Fitted with retractable stabilisers. Closed circuit TV for flight deck operations. Satellite navigation and communications. CTD tactical displays.

Operational: Helicopter no longer operational. Two Delta 75 m inboard diesel RIBs fitted in addition to two 5.4 m RIBs in 2003. Long refit (SLEP) in 1998/99.



EITHNE

8/2008*, Maritime Photographic / 1335752

2 ROISIN CLASS (PSO)

Name	No	Builders	Laid down	Launched	Commissioned
ROISIN	P 51	Appledore Shipbuilders, Bideford	Dec 1998	12 Aug 1999	15 Dec 1999
NIAMH	P 52	Appledore Shipbuilders, Bideford	June 2000	10 Feb 2001	18 Sep 2001

Displacement, tons: 1,700 full load
Dimensions, feet (metres): 258.7 × 45.9 × 12.8
 (78.9 × 14 × 3.9)
Main machinery: 2 Wärtsilä 16V26 diesels, 6,800 hp(m)
 (5 MW) sustained; 2 shafts; LIPS cp props, bow thruster;
 462 hp(m) (340 kW)
Speed, knots: 23
Range, n miles: 6,000 at 15 kt
Complement: 44 (6 officers)
Guns: 1 OTO Melara 3 in (76 mm)/62, 85 rds/min to 16 km
 (8.6 n miles); weight of shell 6 kg
 2–12.7 mm MGs, 4–7.62 mm MGs.
Weapons control: Radamec 1500 optronic director.
Radars: Surface search: Kelvin Hughes; E/F-band
Navigation: Kelvin Hughes, I-band



NIAMH

9/2008, B Prézeln / 1335/91

Programmes: Contract for first ship signed on 16 December 1997 with 65 per cent of EU funding. Option on a second of class taken up on 6 April 2000.

Operational: Designated Large Patrol Vessel, the design is a modification of the Mauritius ship *Vigilant* but without

the hangar or flight deck. Two Delta 6.5 m and one Avon 5.4 m RIBs are carried. CTD tactical displays.

3 P 21 CLASS (OFFSHORE PATROL VESSELS) (PSO)

Name	No	Builders	Launched	Commissioned
EMER	P 21	Verolme, Cork	4 Aug 1977	16 Jan 1978
AOIFE	P 22	Verolme, Cork	12 Apr 1979	29 Nov 1979
AISLING	P 23	Verolme, Cork	3 Oct 1979	21 May 1980

Displacement, tons: 1,019.5
Dimensions, feet (metres): 213.7 × 34.4 × 14 (65.2 × 10.5 × 4.4)
Main machinery: 2 SEMT-Pielstick 6 PA6 L 280 diesels; 4,800 hp (3.53 MW); 1 shaft; bow thruster (*Aoife* and *Aisling*)
Speed, knots: 17. **Range, n miles:** 4,000 at 17 kt; 6,750 at 12 kt
Complement: 47 (6 officers)

Guns: 1 Bofors 40 mm/L 70; 300 rds/min to 12 km (8.5 n miles); weight of shell 0.88 kg
 2 GAM-B01 20 mm; 900 rds/min to 2 km.
 2–12.7 mm MGs, 2–7.62 mm MGs
Radars: Surface search: Kelvin Hughes I-band
Navigation: Kelvin Hughes Nucleus 6000A; I-band.

Modernisation: New search radars were fitted in 1994/95. CTD tactical display fitted
Structure: Stabilisers fitted. *Aoife* and *Aisling* are equipped with a bow thruster. Inmarsat SATCOM fitted.

Operational: *Emer* refitted in 1995, *Aoife* in 1996/97 and *Aisling* in 1997/98. Sonars have been removed



AISLING

6/2008, Frank Findler, 1335/90



AISLING

6/2008, Martin Mokrus / 1335789

2 P 41 PEACOCK CLASS (COASTAL PATROL VESSELS) (PSO)

Name	No	Builders	Commissioned
ORLA (ex-Swift)	P 41	Hall Russell, Aberdeen	3 May 1985
CIARA (ex-Swallow)	P 42	Hall Russell, Aberdeen	17 Oct 1984

Displacement, tons: 712 full load
Dimensions, feet (metres): 204.1 × 32.8 × 8.9 (62.6 × 10 × 2.7)
Main machinery: 2 Crossley SEMT-Pielstick 18 PA6 V 280 diesels; 14,400 hp(m) (10.58 MW) sustained; 2 shafts; auxiliary drive; Schottel prop; 191 hp(m) (133 kW)
Speed, knots: 25. **Range, n miles:** 2,500 at 17 kt
Complement: 39 (5 officers)

Guns: 1–3 in (76 mm)/62 OTO Melara compact; 85 rds/min to 16 km (8.6 n miles); weight of shell 6 kg
 2–12.7 mm MGs, 4–7.62 mm MGs.

Weapons control: Radamec 1500 optronic director (for 76 mm)
Radars: Surface search: Kelvin Hughes; I-band
Navigation: Kelvin Hughes Nucleus 5000A/6000A, I-band.

Programmes: *Orla* launched 11 September 1984 and *Ciara* 31 March 1984. Both served in Hong Kong from mid-1985 until early 1988. Acquired from UK and commissioned 21 November 1988. Others of the class acquired by the Philippines in 1997

Modernisation: New radars fitted in 1993. CTD tactical display fitted.
Structure: Have loiter drive. Displacement increased after building by the addition of more electronic equipment.



CIARA

6/2005, D Jones, Irish Navy 1133505

LAND-BASED MARITIME AIRCRAFT

Notes: Five civilian operated Sikorsky S-61 helicopters provide long-range SAR services. They are based at Dublin, Shannon, Waterford and Sligo.

Numbers/Type: 2 Casa CN-235 MP Persuader.

Operational speed: 210 kt (384 km/h)

Service ceiling: 24,000 ft (7,315 m).

Range: 2,000 n miles (3,218 km).

Role/Weapon systems: EEZ surveillance. First one delivered in June 1992 but returned to Spain in 1995. Two more delivered in December 1994. Sensors: Search radar Bendix APS 604(V)5, FLIR. Weapons: Unarmed



CN-235 MP

7/2003, Paul Jackson 0568896

AUXILIARIES

Notes: (1) In addition there are a number of mostly civilian manned auxiliaries including: *Seabhac* a small tug acquired in 1983; *Fainleog*, *David F* (built in 1962) and *Fiach Dubh* passenger craft, the last two taken over after lease in 1988 and the first in 1983; *Taite* a Dufour 35 ft sail training yacht bought in 1979 and an elderly training yacht *Creidne*. (2) *Granuaile* is an 80 m lighthouse tender with a helicopter flight deck forward operated by the Commissioners of Irish Lights. Launched on 14 August 1999 this ship replaced a previous vessel of the same name on 23 March 2000.



GRANUAILE

3/2000, Commissioners of Irish Lights / 0093593

Israel

HEYL HAYAM



Country Overview

Established in 1948, The State of Israel is situated on the eastern shore of the Mediterranean Sea and has borders to the north with Lebanon, to the north-east with Syria, to the east with Jordan and to the south-west with Egypt. It has coastlines with the Mediterranean (142 n miles) and with the Gulf of Aqaba (5 n miles) in the northern Red Sea. A land area of 8,463 square miles includes East Jerusalem and other territory (including Gaza Strip, the West Bank region of Jordan, the Golan Heights area of south-western Syria) annexed in 1967. Jerusalem is the largest city but, although claimed as the capital, is not so recognised by the United Nations. Many nations maintain embassies at Tel Aviv. Haifa is the principal port. Territorial seas (12 n miles) are claimed but an EEZ is not claimed.

Headquarters Appointments

Commander-in-Chief
Vice Admiral Eli Marom
Chief of Naval Staff:
Rear Admiral Noam Feig
Head of Naval Operations Command:
Rear Admiral Yochay Ben Yosef

General

Less than 5 per cent of Israeli defence budget is allocated to the Navy.

Personnel

2009
(a) 9,500 (880 officers) of whom 2,500 are conscripts.
Includes a Naval Commando of 300
(b) 3 years' national service for Jews and Druzes

Notes: An additional 5,000 Reserves available on mobilisation.

Haifa, Ashdod, Eilat
(The repair base at Eilat has a synchrolift)

Coast Defence

There are ten integrated coastal radar and electro-optical surveillance stations. These are to be converted to an unmanned, remote-controlled system employing a wideband communications network.

Prefix to Ships' Names

INS (Israeli Naval Ship)

SUBMARINES

3 + 2 DOLPHIN (TYPE 800) CLASS (SSK)

Name	No	Builders	Laid down	Launched	Commissioned
DOLPHIN	–	Howaldtswerke/Thyssen Nordseewerke	7 Oct 1994	12 Apr 1996	27 July 1999
LEVIATHAN	–	Howaldtswerke/Thyssen Nordseewerke	13 Apr 1995	25 Apr 1997	15 Nov 1999
TEKUMA	–	Howaldtswerke/Thyssen Nordseewerke	12 Dec 1996	26 June 1998	25 July 2000
–	–	Thyssenkrupp Marine Systems	2007	2009	2012
–	–	Thyssenkrupp Marine Systems	2008	2010	2013

Displacement, tons: 1,640 surfaced; 1,900 dived
Dimensions, feet (metres): 188 × 22.3 × 20.3
(57.3 × 6.8 × 6.2)

Main machinery: 3 MTU 16V 396 SE 84 diesels; 4,243 hp(m)
(3.12 MW) sustained; 3 alternators; 2.91 MW; 1 Siemens motor; 3,875 hp(m) (2.85 MW) sustained; 1 shaft

Speed, knots: 20 dived; 11 snorkeling

Range, n miles: 8,000 at 8 kt surfaced, 420 at 8 kt dived

Complement: 30 (6 officers)

Missiles: SSM: Sub Harpoon; UGM-84C; active radar or GPS homing to 130 km (70 n miles) at 0.9 Mach; warhead 227 kg. SAM: Fitted for Triton anti-helicopter system.

Torpedoes: 4 – 25.6 in (650 mm) and 6 – 21 in (533 mm) bow tubes. STN Atlas DM2A4 Seehecht; wire-guided active homing to 13 km (7 n miles) at 35 kt; passive homing to 28 km (15 n miles) at 23 kt; warhead 260 kg Total of 16 torpedoes and 5 SSMs. The four 650 mm tubes may be for SDVs, but could carry torpedoes if liners are fitted

Mines: In lieu of torpedoes.

Countermeasures: ESM: Elbit Timnex 4CH(V)2; intercept.

Weapons control: STN/Atlas Elektronik ISUS 90-1 TCS.

Radars: Surface search: Eita; I-band.

Sonars: Atlas Elektronik CSU 90; hull-mounted; passive/active search and attack.

Atlas Elektronik PRS-3; passive ranging

FAS-3; flank array; passive search

Programmes: In mid-1988 Ingalls Shipbuilding Division of Litton Corporation was chosen as the prime contractor for two IKL-designed Dolphin class submarines to be built in West Germany with FMS funds by HDW in conjunction with Thyssen Nordseewerke. Funds approved in July 1989 with an effective contract date of January 1990 but the project was cancelled in November 1990 due to pressures on defence funds. After the Gulf War in April 1991 the contract was resurrected, this time with German funding for two submarines with an option on a third taken up in July 1994. A contract for the construction of two further modified Dolphin class submarines was signed on 6 July 2006. The new submarines are to be about 10 m longer in order to incorporate air-independent propulsion. The boats are to be built at HDW and TNSW. Israel is to fund two thirds of the budget while the German government is



DOLPHIN

6/1999, Michael Nitz / 0080958

to fund the remaining third. Construction of the first boat is reported to have started in 2007 to meet a delivery date of 2012 but the construction timetable is speculative

Modernisation: Installation of air-independent propulsion in the first three boats is under consideration.

Structure: Diving depth, 350 m (1,150 ft). Similar to German Type 212 in design but with a 'wet and dry' compartment for underwater swimmers. Two Kollmorgen periscopes. Probably fitted for Triton anti-helicopter SAM system

Operational: Endurance, 30 days. Used for interdiction, surveillance and special boat operations. Development of

a submarine-launched cruise missile would complete the final part of a triad of nuclear deterrents. However, while Israel probably has the expertise and technology to deploy SLCM, little information exists to confirm or deny such a programme. Adaptation of the indigenous Delilah and Popeye groups of missiles is a possible option although encapsulation of the missile would pose a significant challenge. Painted blue/green to aid concealment in the eastern Mediterranean. Some other NT 37E torpedoes are embarked until full Seehecht outfits are available. The boats form Flotilla 7 based at Haifa



LEVIATHAN

4/2006, M Declerck / 1158549

For details of the latest updates to *Jane's Fighting Ships* online and to discover the additional information available exclusively to online subscribers please visit
jfs.janes.com

CORVETTES

Notes: A Request for Information was issued in September 2003 for the acquisition of up to three multimission corvettes. This programme was temporarily superseded in 2004 by a proposal to procure a 13,000 ton amphibious ship, but re-emerged as the priority due to budget realities. Plans for a SAAR 5+ design have been overtaken

by ambitions to join the US Navy's Littoral Combat Ship (LCS) programme. A two-year feasibility study to establish whether the LCS seaframe could serve as a basis for future Israeli surface combatants was launched in December 2005. This was followed by a Combat System Configuration phase which was launched in

September 2007. This is to examine the compatibility of Israeli-made combat systems with the LCS platform. The main focus is the requirement for a multifunction radar to integrate with the combat management system in addition to SM-2 or Barak 8 area missiles and Barak point defence system.

3 EILAT (SAAR 5) CLASS (FSGHM)

Name	No	Builders	Laid down	Launched	Commissioned
EILAT	501	Ingalls, Pascagoula	24 Feb 1992	9 Feb 1993	24 May 1994
LAHAV	502	Ingalls, Pascagoula	25 Sep 1992	20 Aug 1993	23 Sep 1994
HANIT	503	Ingalls, Pascagoula	5 Apr 1993	4 Mar 1994	7 Feb 1996

Displacement, tons: 1,075 standard; 1,295 full load

Dimensions, feet (metres): 278.9 x 39.0 x 10.5
(85.0 x 11.9 x 3.2)

Main machinery: CODOG; 1 GE LM 2500 gas turbine, 30,000 hp (22.38 MW) sustained; 2 MTU 12V 1163 TB82 diesels; 6,600 hp (m) (4.86 MW) sustained; 2 shafts, Kamewa cp props

Speed, knots: 33 gas; 20 diesels

Range, n miles: 3,500 at 17 kt

Complement: 64 (16 officers) plus 10 (4 officers) aircrew

Missiles: SSM: 8 McDonnell Douglas Harpoon (2 quad) launchers; active radar homing to 130 km (70 n miles) at 0.9 Mach; warhead 227 kg.

SAM: 2 Israeli Industries Barak I (vertical launch) 2 x 32 cells; command line of sight radar or optical guidance to 10 km (5.5 n miles) at 2 Mach; warhead 22 kg (see Operational).

Guns: OTO Melara 3 in (76 mm) M62 compact; 85 rds/min to 16 km (8.7 n miles); weight of shell 6 kg.

The main gun is interchangeable with a Bofors 57 mm gun or Vulcan Phalanx CIWS.

2 Sea Vulcan 20 mm CIWS; range 1 km.

Torpedoes: 6 - 324 mm Mk 32 (2 triple) tubes; Honeywell Mk 46; anti-submarine; active/passive homing to 11 km (5.9 n miles) at 40 kt; warhead 44 kg. Mounted in the superstructure.

Countermeasures: Decoys, 3 Elbit/Deseaver 72-barrelled chaff and IR launchers; Rafael ATC 1 towed torpedo decoy

ESM: Elisra NS 9003; intercept. Tadiran NATACS

ECM: 2 Rafael 1010; Elisra NS 9005; jammers.

Combat data systems: Elbit NTCCS using Elta EL/S-9000 computers. Reshet datalink.

Weapons control: 2 Elop MSIS optronic directors.

Radars: Air search: Elta EL/M-2218S; E/F-band



EILAT

(Scale 1 : 900), Ian Sturton / 1151070

Surface search: Cardion SPS-55; I-band.

Navigation: I-band.

Fire control: 3 Elta EL/M-2221 GM STGR; I/K/J-band

Sonars: EDO Type 796 Mod 1; hull-mounted; search and attack; medium frequency. Rafael towed array (fitted for)

Helicopters: 1 Dauphin SA 366G or Sea Panther can be carried.

Programmes: A design by John J McMullen Associates Inc for Israel Shipyards, Haifa in conjunction with Ingalls Shipbuilding Division of Litton Corporation which was authorised to act as main contractor using FMS funding. Contract awarded 8 February 1989. All delivered to Israel for combat system installation, first two completed in 1996 and last one in mid-1997. Major refits of these ships are reported to be under consideration. The option for a fourth SAAR 5 was not taken up and plans to procure a further five new ships (SAAR 5+) under similar FMS

funding are now unlikely to be taken forward in view of the requirement for multimission ships.

Structure: Steel hull and aluminum superstructure. Stealth features including resilient mounts for main machinery, funnel exhaust cooling, Radar Absorbent Material (RAM), NBC washdown and Prairie Masker Bubbler system. A secondary operations room is fitted aft. There are some flag capabilities. Plans to carry Gabriel SSMs have been scrapped because of topweight problems. The planned third MSIS director has not yet been seen on the platform aft of the air search radar.

Operational: Endurance, 20 days. The main role is to counter threats in shipping routes. ICS-2 integrated communications system. The position of the satellite aerial suggests that the SAM after VLS launchers are not used. Barak has still to be installed, because of lack of funds. For the same reason the normal Harpoon load may be reduced to four. Hanit damaged by missile attack off Lebanon on 14 July 2006. Repairs were completed on 6 August 2006. All three ships allocated to Flotilla 3.



EILAT

4/2006, M Declerck / 1158548



HANIT

12/2007, M Declerck / 0533767

SHIPBORNE AIRCRAFT

Numbers/Type: 7 Eurocopter AS 565SA Sea Panther.
Operational speed: 165 kt (305 km/h).
Service ceiling: 18,700 ft (5,700 m).
Range: 483 n miles (895 km).
Role/Weapon systems: Built by American Eurocopter in Texas. Three delivered by October 1998 with one more in 1999. Roles include reconnaissance, targetting and SAR. Sensors: Telephonics search radar; Elop MSIS for OTH. Weapons: Unarmed.



AS 565SB 6/2002, Adolfo Ortega Gil / 0567461

LAND-BASED MARITIME AIRCRAFT

Notes: (1) Army helicopters can be used including Cobras and Apaches.
 (2) Two C-130 aircraft used for maritime surveillance. There are also two EC-130 Elint aircraft.

Numbers/Type: 3 IAI 1124N Sea Scan.
Operational speed: 471 kt (873 km/h).
Service ceiling: 45,000 ft (13,725 m).
Range: 2,500 n miles (4,633 km).
Role/Weapon systems: Acquired in 1977. Air Force manned. Coastal surveillance tasks with long endurance, used for intelligence gathering. Sensors: Elta EL/M-2022 radar, IFF, MAD, Sonobuoys, and various EW systems of IAI manufacture.



SEA SCAN 6/1994, R A Cooper / 0503199

PATROL FORCES

Notes: (1) There are about 12 'Firefish' type fast attack boats in service with Special Forces.
 (2) A 50 ft (15.2 m) shallow draft Stealth craft was built in a Vancouver Shipyard and delivered in late 1998. A second, an Alligator craft, was completed by Oregon Iron Works, Portland in 1999 and painted dark green. Two diesels giving 35 kt and a Rafael optronic surveillance system are included. Crew of five.

8 + 2 SUPER DVORA MK III CLASS (PTFM)

830-835 +1
Displacement, tons: 72 full load
Dimensions, feet (metres): 89.9 x 18.7 x 3.6 (27.4 x 5.7 x 1.1)
Main machinery: 2 MTU 12V 4000 diesels, 2 Ameson ASD15 surface drives (830-835), 2 Rolls Royce Kamewa 63S11 waterjets (batch 2)
Speed, knots: 45
Range, n miles: 1,000 at cruising speed
Complement: 5
Guns: 1 Bushmaster 25 mm M242 chain gun. 1–20 mm. 2–7.62 mm MGs.
Weapons control: ELOP optronic director.
Radars: Surface search: I-band.

Comment: An order for six craft was made with IAI-Ramta on 13 January 2002. The first was delivered in July 2004 and entered service in November 2004. The second and third were delivered on 13 July 2005 and a further three on 18 September 2006. An option for another four craft was exercised in 2005. The first of these was delivered in November 2007 and the remainder are to enter service by late 2009.



SUPER DVORA III 4/2006, IAI RAMTA / 1130539

8 HETZ (SAAR 4.5) CLASS (FAST ATTACK CRAFT—MISSILE) (PGGM)

Name	Builders	Launched	Commissioned
ROMAT	Israel Shipyards, Haifa	30 Oct 1981	Oct 1981
KESHET	Israel Shipyards, Haifa	Oct 1982	Nov 1982
HETZ (ex-Nirit)	Israel Shipyards, Haifa	Oct 1990	Feb 1991
KIDON	Israel Shipyards, Haifa	1993	7 Feb 1994
TARSHISH	Israel Shipyards, Haifa	1995	June 1995
YAFFO	Israel Shipyards, Haifa	1998	1 July 1998
HEREV	Israel Shipyards, Haifa	2002	June 2002
SUFA	Israel Shipyards, Haifa	2002	Aug 2002

Displacement, tons: 488 full load
Dimensions, feet (metres): 202.4; 190.3 (Romat, Keshet, Hetz) x 24.9 x 8.2 (58.0, 61.7 x 7.6 x 2.5)
Main machinery: 4 MTU 16V 538TB93 or 4 MTU 16V 396TE diesels; 16,600 hp (12.2 MW); 4 shafts
Speed, knots: 31. **Range, n miles:** 3,000 at 17 kt; 1,500 at 30 kt
Complement: 53

Missiles: SSM: 4 McDonnell Douglas Harpoon ●; active radar homing to 130 km (70 n miles) at 0.9 Mach; warhead 227 kg.
 6 IAI Gabriel II (removed from some ships) ●; radar or optical guidance; semi-active radar plus anti-radiation homing to 36 km (19.4 n miles) at 0.7 Mach; warhead 75 kg.
SAM: Israeli Industries Barak I (vertical launch) ●; 32 or 16 cells in 2- or 4-8 pack launchers; command line of sight radar or optical guidance to 10 km (5.5 n miles) at 2 Mach; warhead 22 kg. Most fitted for but not with.
Guns: 1 OTO Melara 3 in (76 mm)/62 ●; 85 rds/min to 18 km (8.7 n miles); weight of shell 6 kg.
 2 Oerlikon 20 mm; 800 rds/min to 2 km.
 1 Rafael Typhoon 25 mm (Herev).
 1 General Electric/General Dynamics Vulcan Phalanx 6-barrelled 20 mm Mk 15 ●; 3,000 rds/min combined to 15 km anti-missile.
 2 or 4–12.7 mm (twin or quad) MGs.
Countermeasures: Decoys: Elbit/Deseaver 72-barrelled launchers for chaff and IR flares ●.
ESM/ECM: Eilsra NS 9003/5; intercept and jammer.
Combat data systems: IAI Reshet datalink.
Weapons control: Galileo OG 20 optical director; Elop MSIS optronic director ●.
Radars: Air/surface search: Thomson-CSFT-H-D 1040 Neptune ●; G-band.
Fire control: 2 Elta EL/M-2221 GM STGR ●; I/K/J-band.

Programmes: Hetz started construction in 1984 as the fifth of the SAAR 4 class but was not completed, as an economy measure. Taken in hand again in 1989 and fitted out as the trials ship for some of the systems installed in the Eilat class.

Modernisation: Romat and Keshet were modernised to same standard as Hetz in what was called the Nirit programme. The remaining craft were new build and some of these have been given names previously allocated to decommissioned/transferred SAAR 4s.
Structure: The CIWS is mounted in the eyes of the ship replacing the 40 mm gun. The eight pack Barak launchers are fully containerised and require no deck penetration or onboard maintenance. They are fitted aft in place of two of the Gabriel launchers where these are still fitted. The fire-control system for Barak is fitted on the platform aft of the bridge on the port side. Davit can be installed aft of the Gabriel missiles for special forces boats.



HETZ (Scale 1 : 600), Ian Sturton / 0126347



HEREV 4/2006, M Declerck / 1158547



KESHET 4/2006, M Declerck / 1158546

15 DABUR CLASS (COASTAL PATROL CRAFT) (PC)

850	853	864	868	902	906	910
851	860-862	865	873	905	909	

Displacement, tons: 39 full load
Dimensions, feet (metres): 64.9 × 18 × 5.8 (19.8 × 5.5 × 1.8)
Main machinery: 2 GM 12V-71TA diesels; 840 hp (627 kW) sustained; 2 shafts
 About 8 have more powerful GE engines.
Speed, knots: 19; 30 (GE engines) **Range, n miles:** 450 at 13 kt
Complement: 6/9 depending on armament

Guns: 2 Oerlikon 20 mm, 800 rds/min to 2 km.
 2—12.7 mm MGs. Carl Gustav 84 mm portable rocket launchers.
Torpedoes: 2—324 mm tubes. Honeywell Mk 46; anti-submarine; active/passive homing to 11 km (5.9 n miles) at 40 kt, warhead 44 kg.
Depth charges: 2 racks in some.
Weapons control: Elop optronic director.
Radars: Surface search: Decca Super 101 Mk 3 or HDWS, I-band.
Sonars: Active search and attack; high frequency.

Programmes: Twelve built by Sewart Seacraft USA and remainder by Israel Aircraft Industries (RAMTA) between 1973 and 1977. Final total of 34. Likely to be phased out as new fast attack craft enter service.

Structure: Aluminium hull. Several variations in the armament. Up to eight of the class are fitted with more powerful General Electric engines to increase speed to 30 kt.

Operational: These craft have been designed for overland transport. Good rough weather performance. Portable rocket launchers are carried for anti-terrorist purposes. Not considered fast enough to cope with modern terrorist speedboats and some have been sold as Super Dvora commissioned. Two based at Eilat, remainder at Ashdod. In course of replacement by the Super Dvora III as they enter service and operational numbers are uncertain.

Sales: Four to Argentina in 1978; four to Nicaragua in 1978 and three more in 1996; six to Chile in 1991 and four more in 1995. Five also given to Lebanon Christian Militia in 1976 but these were returned.



DABUR

12/1998 / 0075807

2 RESHEF (SAAR 4) CLASS (FAST ATTACK CRAFT—MISSILE) (PTG)

Name	Builders	Launched	Commissioned
NITZHON	Israel Shipyards, Haifa	10 July 1978	Sep 1978
ATSMOUT	Israel Shipyards, Haifa	3 Dec 1978	Feb 1978

Displacement, tons: 415 standard, 450 full load
Dimensions, feet (metres): 190.6 × 25 × 8 (58 × 7.8 × 2.4)
Main machinery: 4 MTU/Bazán 16V 956 TB91 diesels; 15,000 hp (11.03 MW) sustained; 4 shafts
Speed, knots: 32 **Range, n miles:** 1,650 at 30 kt; 4,000 at 17.5 kt
Complement: 45

Missiles: SSM: 2-4 McDonnell Douglas Harpoon (twin or quad) launchers; active radar homing to 130 km (70 n miles) at 0.9 Mach; warhead 227 kg
 4-6 Gabriel II; radar or TV optical guidance, semi-active radar plus anti-radiation homing to 36 km (20 n miles) at 0.7 Mach; warhead 75 kg
 Harpoons fitted with Israeli homing systems. The Gabriel II system carries a TV camera which can transmit a homing picture to the firing ship beyond the radar horizon. The missile fit currently varies in training boats-2 Harpoon, 5 Gabriel II.

Guns: 2 Oerlikon 20 mm; 800 rds/min to 2 km.
 1 General Electric/General Dynamics Vulcan Phalanx 6-barrelled 20 mm Mk 15; 3,000 rds/min combined to 1.5 km anti-missile.
 2—12.7 mm MGs.

Torpedoes: 6—324 mm (2 triple) tubes.
Countermeasures: Decoys: 1-45-tube, 4- or 6-24-tube, 4 single-tube chaff launchers.
ESM/ECM: Eltra NS 9003/5; intercept and jammer

Combat data systems: IAI Reshet datalink.

Radars: Air/surface search: Thomson-CSF TH-D 1040 Neptune; G-band; range 33 km (18 n miles) for 2 m² target.

Fire control: Selenia Orion RTN 10X; I/J-band.

Sonars: EDO 780; VDS; fitted in both ships.

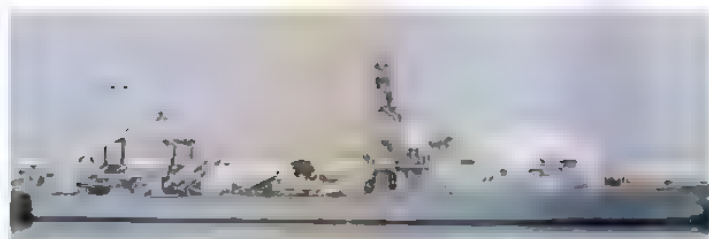
Modernisation: Some of the class modernised to Nirit standards and transferred to the Saar 4.5 class. Gabriel III SSM did not go into production.

Sales: Nine built for South Africa in Haifa and Durban. One transferred to Chile late 1979, one in February 1981, and two more in June 1997. Two transferred to Sri Lanka in 2000.



NITZHON

4/2006, M Declerck / 1158544



ATSMOUT

4/2006, M Declerck / 1158545

13 SUPER DVORA MK I AND MK II CLASSES (FAST ATTACK CRAFT—GUN) (PTFM)

811-819 (Mk I)	820-823 (Mk II)
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Displacement, tons: 54 full load
Dimensions, feet (metres): 71 × 18 × 5.9 screws (21.6 × 5.5 × 1.8) (Mk I)
 82 × 18.4 × 3.6 (25 × 5.6 × 1.1) (Mk II)
Main machinery: 2 Detroit 16V-82TA diesels; 1,380 hp (1.03 MW) sustained; 2 shafts (Mk I)
 2 MTU 12V 396 TE94 diesels; 4,175 hp (3.07 MW) sustained; 2 ASD 16 drives (Mk II)
Speed, knots: 36 or 46 (Mk II)
Range, n miles: 1,200 at 17 kt
Complement: 10 (1 officer)

Missiles: SSM Hellfire; range 8 km (4.3 n miles); can be carried.
Guns: 2 Oerlikon 20 mm/80 or 1 Bushmaster 25 mm/87 Mk 96 or 3 Typhoon 12.7 mm (triple) MGs.
 2—12.7 or 7.62 mm MGs. 1—84 mm rocket launcher.

Depth charges: 2 racks.

Weapons control: Elop MSIS optronic director

Radars: Surface search: Raytheon; I-band.

Programmes: An improvement on the Dabur design ordered in March 1987 from Israel Aircraft Industries (RAMTA). First started trials in November 1988, and first two commissioned in June 1989. First 10 are Mk I. From 820 onwards the ships are fitted with more powerful engines for a higher top speed and surface drives which greatly reduce maximum draft. First Mk II commissioned in 1993.

Structure: All gun armament and improved speed and endurance compared with the prototype Dvora. SSM, depth charges, torpedoes or a 130 mm MRL can be fitted if required.

Operational: Two (Mk II) are based at Eilat, the remainder at Haifa. The 25 mm or 12.7 mm Gatling guns can be operated by joystick control from the bridge. Hellfire SSM is sometimes carried.

Sales: Six Mk I sold to Sri Lanka in 1988 and four to Eritrea in 1993. One Mk II to Sri Lanka in 1995 and three more in 1996. One to Slovenia in 1996 and a second in 1997. Two to India in 1997, with more building under licence in India.



SUPER DVORA II 821

4/2006, M Declerck / 1158543



SUPER DVORA I 819

4/2006, M Declerck / 1158547



SUPER DVORA I 817

4/2006, M Declerck / 1158541

3 + 2 SHALDAG CLASS (FAST ATTACK CRAFT—GUN) (PBF)

840 841 +1
Displacement, tons: 58 full load
Dimensions, feet (metres): 81.4 x 19.7 x 3.9 (24.8 x 6 x 1.2)
Main machinery: 2 Deutz 620 TB 18V or MTU 396 TE diesels; 5,000 hp(m) (3.68 MW); 2 LIPS or MJP water-jets
Speed, knots: 50
Range, n miles: 700 at 32 kt
Complement: 10
Guns: 1 Rafael Typhoon 25 mm, 1—20 mm.
Weapons control: ELOP compass optronic director Typhoon GFCS.
Radars: Surface search, MD 3220 Mk II; I-band

Comment: Order in January 2002 for two craft, with option for two further hulls, made from Israel Shipyards, Haifa. Details reflect those in Sri Lankan service and are thus speculative. Both delivered in late 2003. An option for a further three craft was exercised in 2005. The first of these was delivered in early 2008 and the other two are to enter service by late 2009.



SHALDAG CLASS 8/2005, *Jane's* / 0589534

3 STINGRAY INTERCEPTOR CLASS (PBF)

Displacement, tons: 10.5 full load
Dimensions, feet (metres): 39.4 x 14.5 x 2.9 (12 x 4.4 x 0.9)
Main machinery: 2 Caterpillar marine diesels; 2 shafts
Speed, knots: 35
Range, n miles: 300 at cruising speed
Complement: 5
Radars: Surface search; I-band

Comment: Catamaran design of GRP construction built by Stingray Marine of Durbanville, Western Cape and delivered in 1997 and 1998. Based at Eilat.



STINGRAY INTERCEPTOR 2000, *Stingray Marine* / 0104866

8 TZIRA (DEFENDER) CLASS (RESPONSE BOATS) (PBF)

Displacement, tons: 2.7 full load
Dimensions, feet (metres): 27.0; 31.0 (Batch 2) x 8.5 x 8.8 (8.2; 9.5 x 2.6 x 2.7)
Main machinery: 2 Honda outboard motors; 450 hp (335 kW)
Speed, knots: 46
Range, n miles: 175 at 35 kt
Complement: 4
Guns: 1—12.7 mm MG.
Radars: To be announced

Comment: High-speed inshore patrol craft of aluminium construction and foam collar built by SAFE Boats International, Port Orchard, Washington. Four delivered in September 2005. To be operated by the port-protection unit on border protection and counter-terrorism operations. The craft are two feet longer than those operated by the USCG. A further four Batch 2 craft, built to a lengthened 9.5 m design, were ordered on 9 March 2006

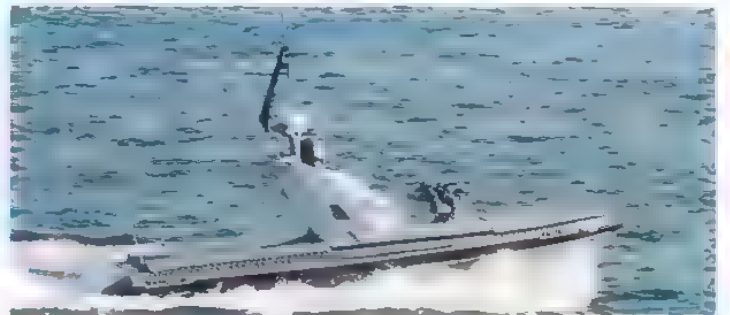


TZIRA CLASS 4/2006, *Richard Scott/NAVYPIX* / 1130534

1 RAFAEL PROTECTOR (UNMANNED SURFACE VEHICLE) (USV)

Displacement, tons: To be announced
Dimensions, feet (metres): 29.5 x ? x ? (9.0 x ? x ?)
Main machinery: 1 diesel; 1 waterjet propulsor
Speed, knots: 30+
Guns: 1 Mini-Typhoon stabilised 12.7 mm MG.
Weapons control: Toplite EO sensor pod

Comment: Developed jointly by Rafael and Aeronautics Defense Systems, Protector was first revealed in June 2003. It is an unmanned patrol craft based on an 9 m Rigid Inflatable Boat (RIB) with composite-materials superstructure that encloses the sensor pod, navigation radar, GPS antenna and gyro-stabilised inertial navigation system. Five video channels are used to transmit the outputs from the Toplite and two deck-mounted cameras back to a remote operator. The vessel also carries microphones and loudspeakers, allowing the operator to hail the crew of a suspicious vessel. With an endurance of about eight hours, it can be controlled by line-of-sight communications from ship or shore for various missions such as force protection, anti-terror surveillance and reconnaissance, mine warfare and electronic warfare. Several systems were earmarked to begin evaluation tests with the Israeli Navy but these were subsequently bought by Singapore in 2004. A series of IN operational evaluations began in 2005.



PROTECTOR 6/2005, *Rafael* / 1116232

AUXILIARIES

Notes: (1) Two new construction landing ships are required by the Navy to transport troops. No funds available. A Newport class Peoria LST 1183 was authorised for lease from the US but was sunk as a target in 2004.
 (2) A Ro-Ro ship *Quashet* is used as a training ship and for research and development. Built in Japan in 1979 and formerly used as a general purpose cargo ship.
 (3) Two former merchant ships *Nir* and *Naharya* are used as alongside tenders in Haifa and Eilat respectively
 (4) A 19 m Alligator class semi-submersible craft was reported delivered in 1998. It is likely to be used for special forces operations.

2 STOLLERGRUND CLASS (TYPE 745) (AG)

Name	No	Builders	Commissioned
BAT YAM (ex-Kalkgrund)	— (ex-Y 865)	Krögerwerft	23 Nov 1989
BAT GALIM (ex-Band)	— (ex-Y 867)	Krögerwerft	28 May 1990

Displacement, tons: 450 full load
Dimensions, feet (metres): 126.8 x 30.2 x 10.5 (38.6 x 9.2 x 3.2)
Main machinery: 1 Deutz-MWM BV6M628 diesel; 1,690 hp(m) (1.24 MW) sustained; 1 shaft; bow thruster
Speed, knots: 12. **Range, n miles:** 1,000 at 12 kt
Complement: 7 plus 6 trials personnel

Comment: Ex-German Navy trials and support vessels transferred to the Israeli Navy in December 2005. Both ships are fitted with I-band radars and an intercept sonar. Likely to be based at Haifa



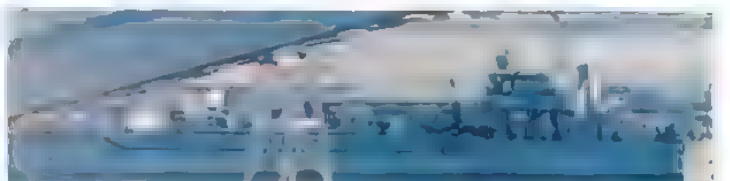
BAT GALIM 12/2005, *Michael Nitz* / 1153206

1 ASHDOD CLASS (LCT)

Name	No	Builders	Commissioned
ASHDOD	61	Israel Shipyards, Haifa	1986

Displacement, tons: 400 standard; 730 full load
Dimensions, feet (metres): 205.5 x 32.8 x 5.8 (62.7 x 10 x 1.8)
Main machinery: 3 MWM diesels; 1,900 hp(m) (1.4 MW); 3 shafts
Speed, knots: 10.5
Complement: 20
Guns: 2 Oerlikon 20 mm

Comment: Used as a trials ship for Barak VLS. Based at Ashdod but refitted at Eilat in 1999. Operational status doubtful.



ASHDOD 3/1989 / 0080070



Italy

MARINA MILITARE

Country Overview

Italy is situated in southern Europe and comprises, in addition to the Italian mainland, the islands of Sardinia, Sicily, Elba and many smaller islands. Enclaves within mainland Italy are the independent countries of San Marino and Vatican City. With an area of 116,341 square miles, it is bordered to the north by France, Switzerland, Austria and Slovenia. It has a 2,700 n mile coastline with the Mediterranean, Ionian, Adriatic, Tyrrhenian Sea and Ligurian Seas. The capital and largest city is Rome while the principal ports are Genoa, Naples, Trieste, Taranto, Palermo and Venice. Territorial waters (12 n miles) are claimed but an EEZ has not been claimed.

Headquarters Appointments

Chief of Naval Staff:
Admiral Paolo la Rosa
Vice Chief of Naval Staff:
Rear Admiral Luigi Binelli Mantelli
Chief of Joint Military Intelligence:
Rear Admiral Bruno Branciforte
Chief of Procurement:
Engineer Vice Admiral Dino Nascetti
Chief of Technical Support:
Engineer Vice Admiral Alberto Gauzolino
Chief of Naval Personnel:
Vice Admiral Claudio de Polo

Flag Officers

Commander, Allied Naval Forces, Southern Europe (Naples):
Vice Admiral Maurizio Gemignani
Commander-in-Chief of Fleet (Rome):
Vice Admiral Giuseppe Lertora
Commander, Tyrrhenian Sea (La Spezia):
Vice Admiral Franco Paoli
Commander, Ionian Sea (Taranto):
Vice Admiral Gianmaria Faggioni
Commander, Adriatic Sea (Ancona):
Rear Admiral Mario Fumagalli
Commander, Sicily (Augusta):
Rear Admiral Andrea Toscano
Commander, Sardinia (Cagliari):
Commodore Ermengildo Ugazzi
Commander, High Seas Fleet (COMFORAL):
Rear Admiral Rinaldo Veri
Commander, Naval Group (COMGRUPNAVIT) (Taranto):
Commodore Ruggiero di Biase
Commander (1st Frigate Squadron) (Taranto):
Sandro Fabiani Latini
Commander, Naval Group (2nd Frigate Squadron) (La Spezia):
Captain Carlo Dardengo
Commander, MCM Forces (COMFORDRAG) (La Spezia):
Captain Guido Rando
Commander, Amphibious Force (COMFORSBARC) (Brindisi):
Commodore Claudio Confessore
Commander, Training Command (MARICENTADD) (Taranto):
Commodore Michele Saponaro
Commander, Coastal and Patrol Forces (COMFORPAT) (Augusta):
Commodore Roberto Camerini
Commander, Naval Air Arm (COMFORAER) (Rome):
Commodore Paolo Treu
Commander Submarine Force (COMFORSUB) (Taranto):
Captain Giovanni Ferini

Flag Officers—continued

Commander, Naval Special Forces (COMSUBIN) (La Spezia):
Commodore Giuseppe Cayo Dragone
Commander Coast Guard:
Vice Admiral Luciano Dassatti

Diplomatic Representation

Naval Attaché in Bonn:
Captain Fabio Ricciardelli
Naval Attaché in Peking:
Captain Roberto Gargiulo
Naval Attaché in London:
Commodore Francesco di Biase
Naval Attaché in Moscow:
Captain Gianpiero Bernadisi
Naval Attaché in Paris:
Captain Roberto Ivo
Naval Attaché in Washington:
Captain Maurizio Ertreo
Defence Attaché in Tokyo:
Commodore Giuseppe Piro

Bases

Regional Commands: La Spezia (Tyrrhenian Sea), Taranto (Ionian Sea), Ancona (Adriatic Sea), Augusta (Sicily), Cagliari (Sardinia).
Main bases (Major Arsenals/Naval Shipyards): Taranto, La Spezia
Secondary base (Minor Arsenal/Naval Shipyard): Augusta.
Minor bases: Brindisi.

Organisation

CINCNAV is responsible for all operational activities. There are six subordinate commands:
High-Sea Forces Command (COMFORAL) including all Major and Amphibious Ships. Based in Taranto with subordinated command COMGRUPNAVIT
Patrol Forces Command (COMFORPAT) Corvettes and OPVs. Based in Augusta.
Naval Air Command. Based at Santa Rosa, Rome.
Submarine Force Command. Based at Taranto
Mine Countermeasures Command. Based at La Spezia.
COMFORSBARC with San Marco Regiment, Carlotta (logistic) regiment and one assault boat group. Based at Brindisi.
Special Forces Command (COMSUBIN) Commandos and support craft. Based near La Spezia. Controlled directly by Chief of Naval Staff

Prefix to Ships' Names

ITS (Italian Ship)

Strength of the Fleet

Type	Active	Building (Planned)
Submarines	6	2 (1)
Aircraft Carriers	2	—
Destroyers	3	1
Frigates	12	6 (4)
Corvettes	8	6
Offshore Patrol Vessels	10	—
Coastal Patrol Craft	4	—
LPD/LHD	3	2
Minihunters/sweepers	12	4
Survey/Research Ships	7	—
Replenishment Tankers	3	2
Coastal Tankers	11	—
Coastal Transports	6	—
Sea Training Ships	8	—
Training Ships	3	—
Lighthouse Tenders	5	—
Salvage Ships	1	1

Personnel

2009: 34,000 (4,150 officers) including 1,550 naval air and 2,100 naval infantry (amphib) National service has been terminated

Naval Air Arm

Catania (Fontanarossa): AB-212 (2nd), SH-3D (3rd)
Catania (Sigonella): Atlantic (41st)
La Spezia (Luni): AB-212 (1st), SH-3D (5th), EH-101 (5th), EH-101 (OEU)
Taranto (Grottaglie): AV-8B/TAV-8B (7th), AB-212 (4th), AB-212 (Amphib), SH-3 (Amphib)

Naval Infantry and Army Amphibious Units

A Landing Force Command was established in 1998 including a collaborative Spanish/Italian amphibious brigade (SIAF). Landing Force Command is based at Brindisi and comprises the San Marco assault regiment (two assault battalions), the Carlotta support regiment (one logistic and one training battalion) and a Landing Craft Group. The Amphibious assault air squadron has eight modified SH-3D and seven modified AB-212 helicopters.

The Italian Army operates an amphibious regiment named 'Serenissima' which is based at Venice. It is equipped with four LCM, six LCVP and 47 rigid raider and assault craft.

The 'National Projection Force' was established in June 2006. It consists of Navy assets, the Army 'Serenissima' amphibious regiment and selected (armarked) Army combat support units (two armoured cavalry squadrons, two combat engineering companies, two AA artillery batteries and a squadron of six A 129 attack helicopters). The first commitment of the force was in the Lebanon in 2006.

DELETIONS

Submarines

2007 Leonardo da Vinci

PENNANT LIST

Submarines

S 522 Salvatore Pelosi
S 523 Giuliano Prini
S 524 Primo Longobardo
S 525 Gianfranco Gezzana
S 526 Salvatore Todaro
S 527 Scire

Light Aircraft Carriers

C 550 Cavour
C 551 Giuseppe Garibaldi

Destroyers

D 553 Andrea Doria
D 554 Caio Duilio
D 560 Luigi Durand de la Penne
D 561 Francesco Mimbelli

Frigates

F 570 Maestrale
F 571 Grecale
F 572 Libeccio
F 573 Scirocco
F 574 Aliseo
F 575 Euro
F 576 Espero
F 577 Zeffiro
F 582 Artigliera
F 583 Aviere
F 584 Bersagliere
F 585 Granatiere

Corvettes

F 551 Minerva
F 552 Urania
F 553 Danaide
F 554 Sfinge
F 555 Driade
F 556 Chimera
F 557 Fenice
F 558 Sibilla

Patrol Forces

P 401 Cassiopea
P 402 Libra
P 403 Spica
P 404 Vega
P 405 Esploratore
P 406 Sentinella
P 407 Vedetta
P 408 Steffetta
P 409 Sino
P 410 Orione
P 490 Comandante Cigala Fulgosi
P 491 Comandante Borsini
P 492 Comandante Bettica
P 493 Comandante Foscarini

Minihunters

M 5550 Lerici
M 5551 Sapri
M 5552 Milazzo
M 5553 Vieste
M 5554 Gaeta
M 5555 Termoli
M 5556 Alghero

M 5557 Numana
M 5558 Crotona
M 5559 Viareggio
M 5560 Chioggia
M 5561 Rimini

Amphibious Forces

L 9892 San Giorgio
L 9893 San Marco
L 9894 San Giusto

Survey and Research Ships

A 5303 Ammiraglio Magnaghi
A 5304 Aratus
A 5308 Galatea
A 5315 Raffaele Rossetti
A 5320 Vincenzo Martellotta
A 5340 Elettra

Auxiliaries

A 5302 Caroly
A 5309 Anteo
A 5311 Palinuro
A 5312 Amerigo Vespucci
A 5313 Stella Polare
A 5318 Corsaro II
A 5318 Prometeo
A 5319 Ciclope
A 5322 Capricia
A 5323 Orsa Maggiore
A 5324 Titano
A 5325 Polifemo
A 5326 Etna

A 5327 Stromboli
A 5328 Gigante
A 5329 Vesuvio
A 5330 Saturno
A 5347 Gorgona
A 5348 Tremiti
A 5349 Caprera
A 5351 Pantelleria
A 5352 Lipari
A 5353 Capri
A 5359 Bormida
A 5364 Ponza
A 5365 Tonaco
A 5366 Levanzo
A 5367 Tavolara
A 5368 Palmaria
A 5370 Panarea
A 5371 Linosa
A 5372 Favignana
A 5373 Salina
A 5376 Ticino
A 5377 Tirso
A 5379 Astice
A 5380 Miulo
A 5382 Porpora
A 5383 Procida
Y 413 Porto Fassone
Y 416 Porto Torres
Y 417 Porto Corsini
Y 421 Porto Empedocle
Y 422 Porto Pisano
Y 423 Porto Conte
Y 425 Porto Ferraro
Y 426 Porto Venere
Y 428 Porto Salvo
Y 498 Mario Marina
Y 499 Alade Podretti

SUBMARINES

2 + 2 (1) TODARO (TYPE 212A) CLASS (SSK)

Name	No	Builders	Laid down	Launched	Commissioned
SALVATORE TODARO	S 526	Fincantieri, Muggiano	Jan 2001	6 Nov 2003	29 Mar 2006
SCIRÈ	S 527	Fincantieri, Muggiano	Apr 2002	18 Dec 2004	19 Feb 2007
-	-	Fincantieri, Muggiano	2010	2013	2015
-	-	Fincantieri, Muggiano	2011	2014	2016

Displacement, tons: 1,490 surfaced, 1,700 dived
Dimensions, feet (metres): 187.0 × 23 × 19.7
 (57.0 × 7 × 6)

Main machinery: Diesel-electric; 1 MTU 16V 396 diesel; 4,243 hp(m) (3.12 MW); 1 alternator; 1 Siemens PEM motor, 3,875 hp(m) (2.85 MW); 1 shaft, Siemens/HDW PEM 9 fuel cell (AIP) modules, 306 kW

Speed, knots: 20 dived; 12 surfaced
Range, n miles: 8,000 at 8 kt surfaced
Complement: 27 (8 officers)

Torpedoes: 6—21 in (533 mm) bow tubes; water ram discharge; WASS Black Shark; wire (fibre-optic cable) guided, active/passive homing to 50 km (27 n miles) at 50 kt; warhead 250 kg. A 184 Mod 3 also carried. Total 12 weapons.

Mines: in lieu of torpedoes.

Countermeasures: Decoys: Fitted for CIRCE Torpedo countermeasures

ESM: EADS FL 1800U; Intercept.

Weapons control: Kongsberg MSI-90U TFCS.

Radars: Navigation: KH 1007; I-band.

Sonars: STN Atlas Elektronik DBQS-40; passive ranging and intercept; FAS-3 Flank and passive towed array STN Atlas Moe 3070, mine detection, active, high frequency.

Programmes: German design phase first completed in 1992 by ARGE 212 (HDW/TNSW) in conjunction with IKL. MoU signed with Germany 22 April 1996 for a common design. First pair ordered from Fincantieri in August 1997. First steel cut for first of class 19 July 1999, and for second in July 2000. Government approval to procure second pair was given on 21 April 2008 and a contract is expected

in 2009. Delivery of both boats is to be made by 2016. A fifth boat, to enter service in 2025, is projected.

Structure: Equipped with a hybrid fuel cell/battery propulsion based on the Siemens PEM fuel cell technology. The submarine is designed with a partial double hull which has a larger diameter forward. This is joined to the after end by a short conical section which houses the fuel cell plant. Two LOX tanks and hydrogen stored in metal cylinders are carried around the circumference of the smaller hull section. Italian requirements included a greater diving depth, improved external communications, and better submerged escape facilities. The final design is identical to the German submarines. Fitted with Zeiss search and attack periscopes.

Operational: Dived speeds up to 8 kt are projected, without use of main battery.



SALVATORE TODARO

4/2006, Giorgio Ghiglione / 1159972



SALVATORE TODARO

9/2006, Italian Navy / 1164688



SALVATORE TODARO

6/2007, Ships of the World / 1166594

4 IMPROVED SAURO CLASS (SSK)

Name	No	Builders	Laid down	Launched	Commissioned
SALVATORE PELOSI	S 522	Fincantieri, Monfalcone	24 May 1984	29 Dec 1986	14 July 1988
GIULIANO PRINI	S 523	Fincantieri, Monfalcone	30 May 1985	12 Dec 1987	11 Nov 1989
PRIMO LONGOBARDO	S 524	Fincantieri, Monfalcone	18 Dec 1991	20 June 1992	20 May 1994
GIANFRANCO GAZZANA PRIAROGGIA	S 525	Fincantieri, Monfalcone	12 Nov 1992	26 June 1993	12 Apr 1995

Displacement, tons: 1,476 (1,653, S 524-5) surfaced; 1,662 (1,862, S 524-5) dived

Dimensions, feet (metres): 211.2 (217.8 S 524-5) × 22.3 × 18.4 (64.4 (66.4) × 6.8 × 5.6)

Main machinery: Diesel-electric; 3 Fincantieri GMT 210.16 SM diesels; 3,672 hp(m) (2.7 MW) sustained; 3 generators; 2.16 MW; 1 motor; 3,128 hp(m) (2.3 MW); 1 shaft

Speed, knots: 11 surfaced; 19 dived; 12 snorting

Range, n miles: 11,000 at 11 kt surfaced; 250 at 4 kt dived

Complement: 51 (7 officers)

Torpedoes: 6–21 in (533 mm) bow tubes. 12 Whitehead A184 Mod 3; dual purpose; wire-guided; active/passive homing to 25 km (13.7 n miles) at 24 kt, 17 km

(9.2 n miles) at 38 kt; warhead 250 kg. Swim-out discharge.

Countermeasures: ESM: Elettronica BLD-727; radar warning; 2 aerials-1 on a mast, second in search periscope.

Weapons control: STN Atlas ISUS 90-20.

Radars: Search/navigation: SMA BPS 704; I-band; also periscope radar for attack ranging.

Sonars: Selenia Elisag IPD 70/S; linear passive array; 200 Hz-75 kHz; active and UWT transducers in bow (15 kHz).

Programmes: The first two were ordered in March 1983 and the second pair in July 1988

Modernisation: An upgrade programme included replacement of acoustic sensors, weapons control

system (STN Atlas ISUS 90-20) and communications. Work on all four boats was completed in late 2004.

Structure: Pressure hull of HY 80 steel with a central bulkhead for escape purposes. Diving depth, 300 m (985 ft) (test) and 600 m (1,970 ft) (crushing). The second pair has a slightly longer hull to give space for SSMs.

Periscopes: Kollmorgen; S 76 Mod 322 with laser range finder attack, S 76 Mod 323 with ESM-search. Wave contour snort head has a very low radar profile. All boats have anechoic tiles

Operational: Two Lital Mk 39 inertial navigation; Sepa autopilot. Endurance, 45 days. Service lives: 2016 (S 522 and S 523); 2020 (S 524 and S 525)



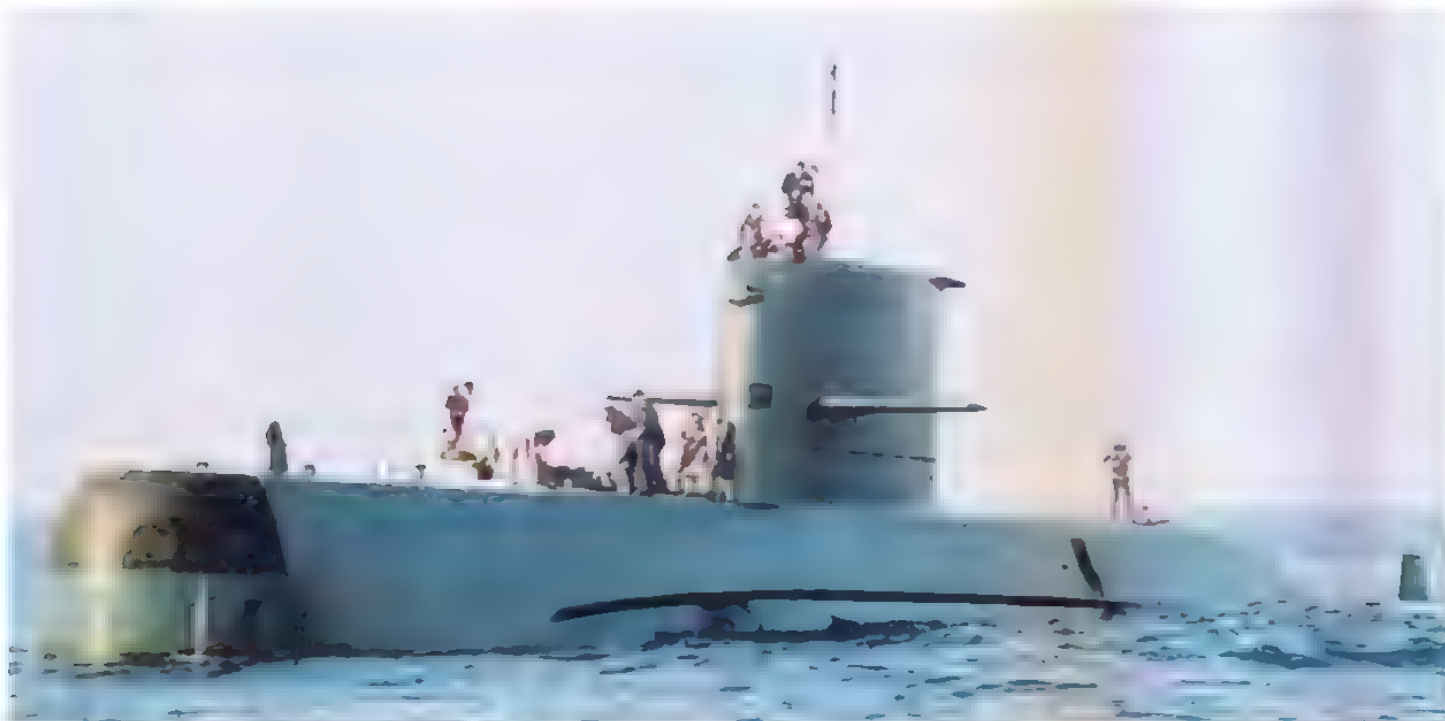
GIULIANO PRINI

6/2005, John Brodie / 115374/



GIULIANO PRINI

6/2005, John Mortimer / 115373/



PRIMO LONGOBARDO

6/2004, Diego Quevedo / 104136/

AIRCRAFT CARRIERS

0 + 1 CAVOUR CLASS (CV)

Name	No	Builders	Laid down	Launched	Commissioned
CAVOUR (ex-Andrea Doria)	C 550	Fincantieri Muggiano/Riva Trigoso	17 July 2001	20 July 2004	Apr 2009

Displacement, tons: 27,100 full load
Dimensions, feet (metres): 772.9 oa; 707.3 wl x 128 oa, 96.8 wl x 24.6 (235.6; 215.6 x 39, 29.5 x 7.5)

Flight deck, feet (metres): 721.8 x 111.5 (220 x 34)

Main machinery: COGAG: 4 GE/Fiat LM 2500 gas turbines; 118,000 hp(m) (88 MW) sustained; 2 shafts; cp props, bow and stern thrusters; 6 Wärtsilä 2.2 MW diesel generators and 2 Ansaldo Sistemi Industriali shaft generators

Speed, knots: 28. **Range, n miles:** 7,000 at 16 kt

Complement: 528 ship plus 168 air group plus 145 staff (CJTF or CATF/CLF) plus 325 marines (90 additional marines for short period) Total accommodation for 1,205

Military lift: (garage only): 100 wheeled vehicles or 60 armoured vehicles or 24 MBTs (Aniète) or mixture

Missiles: SAM: 32 (4-8 cell Sylver VLS) Aster 15; Inertial mid-course guidance; active radar homing to 30 km (16 n miles); at 3 Mach; warhead 15 kg.

Guns: 2 OTO Melara 3 in (76 mm)/62 Super Rapid, 120 rds/min to 16 km (8.7 n miles); weight of shell 6 kg. 3 OTO Melara KBA 25/80 mm.

Countermeasures: Decoys: 2 Breda SCLAR-H 20-barrel trainable chaff/decoy launchers.

TCM: 2 SLAT TCM launchers.

ESM: Thales Radar and Comms intercept

ECM: Thales Nettuno.

Combat data systems: 'Horizon' derivative flag and command support system. Links 11 and 16; provision for Link 22 Satcom

Weapons control: Galileo Avionica SASS optronic director 2 Alenia NA25XP

Radars: Long-range air search: SPS 798 (RAN-40L); D-band

Air search and missile guidance: Alenia Marconi EMPAR, G-band

CCA: SPN-41, J-band

Surface search: SPS-791 (RAN 30X/I); I-band

Fire control: 2 Alenia Marconi NA 25XP; I-band.

Navigation: SPN-753G(V); I-band

CCA: Finmeccanica SPN 720(V)5, I-band.

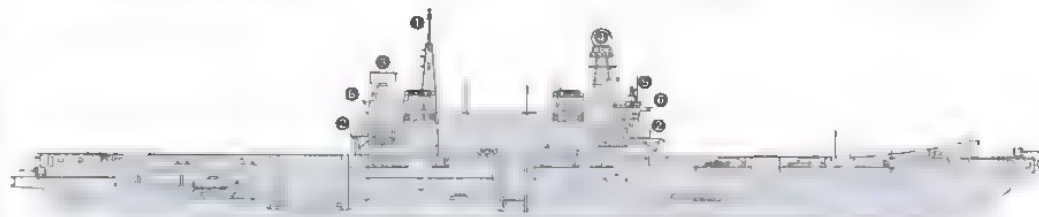
Tacan: SRN-15A.

Sonars: WASS SNA-2000 mine avoidance sonar (bow dome)

Fixed-wing aircraft: 8 AV-8B Harrier II or JSF

Helicopters: 12 EH-101 (fitted also for AB 212, NH90 and SH-3D).

Programmes: Following a study phase which included significant changes to the initial configuration of the Nuova Unità Maggiore (NUM) design, the Italian government placed a contract with Fincantieri in 2007 for the construction of a ship to replace *Vittorio Veneto* in 2007. Capabilities include afloat command, air and amphibious operations. The bow section of the ship was constructed at Muggiano and the centre and stern sections at Riva



CAVOUR

(Scale 1 : 1,800), Ian Sturton / 1167475



CAVOUR

12/2006, Giorgio Ghiglione / 1167417

Trigoso. The ship is to be joined, outfitted and tested at Muggiano. A second contract, for the development and supply of the combat system was signed with an AMS-led industrial group in October 2002.

Structure: The flight deck features six helicopter take-off spots, one spot for SAR, eight parking spots and a 12° ski jump. A notional air group includes 12 EH-101 helicopters and 8 AV-8B Harrier IIs. There is provision in the design to operate JSF and UAVs. The hanger/garage can accommodate various combinations of aircraft and vehicles (including MBT and trucks) There are two

30 ton lifts, one forward of the island and the other starboard side aft. Two Ro-Ro ramps are positioned aft and starboard side. Two 15 ton and one 7 ton lifts are fitted for ordnance and logistic needs respectively. The VLS silos for Aster are located on the port quarter and starboard bow. There is a 430 m² hospital facility

Operational: Sea trials started in 2006. The first year of operation, known as the Warranty Period, began in March 2008. This is to be followed by a four-month maintenance period and by combat system integration and certification during 2009.



CAVOUR

4/2008, Ships of the World / 1335465

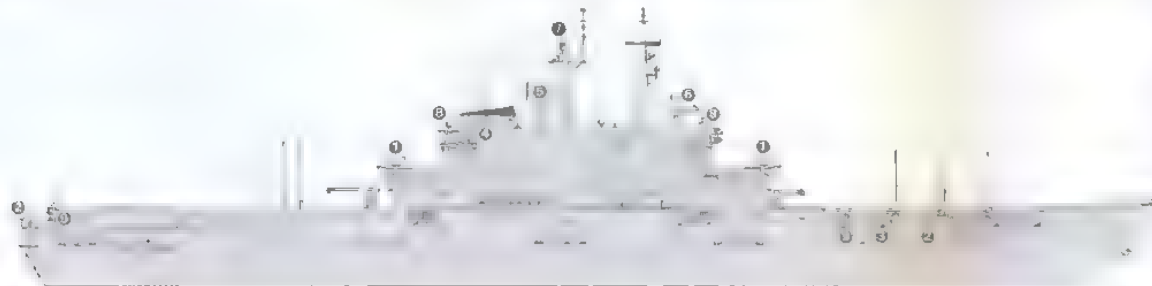


CAVOUR

12/2007, Italian Navy / 1170078

1 GARIBALDI CLASS (CVGM)

Name	No	Builders	Laid down	Launched	Commissioned
GIUSEPPE GARIBALDI	C 551	Italcantieri, Monfalcone	26 Mar 1981	4 June 1983	30 Sep 1985
<p>Displacement, tons: 10,100 standard; 13,850 full load Dimensions, feet (metres): 591 x 110.2 x 22 (180 x 33.4 x 6.7) Flight deck, feet (metres): 570.2 x 99.7 (173.8 x 30.4) Main machinery: COGAG; 4 Fiat/GE LM 2500 gas turbines; 81,000 hp (60 MW) sustained; 2 shafts Speed, knots: 30 Range, n miles: 7,000 at 20 kt Complement: 582 ship plus 230 air group (accommodation for 825 including flag and staff)</p> <p>Missiles: SAM: 2 Selenia Etsag Albatros octuple launchers ●; 48 Aspide; semi-active radar homing to 13 km (7 n miles) at 2.5 Mach; height envelope 15-5,000 m (49.2-16,405 ft); warhead 30 kg Guns: 6 Breda 40 mm/70 (3 twin) MB ●, 300 rds/min to 12.5 km (6.8 n miles) anti-surface; 4 km (2.2 n miles) anti-aircraft; weight of shell 0.96 kg. Torpedoes: 6-324 mm B-515 (2 triple) tubes ●, Honeywell Mk 46; anti-submarine; active/passive homing to 11 km (5.9 n miles) at 40 kt; warhead 44 kg. Being replaced by new MU 90. Countermeasures: Decoys: SLQ-25 Nixie; noisemaker. 2 Breda SCLAR 105 mm 20-barrelled launchers, trains and elevates; chaff to 5 km (2.7 n miles); illuminants to 12 km (6.6 n miles). SLAT in 2002. ESM/ECM: Elettronica Nettuno SLQ-732, integrated intercept and jamming system. Combat data systems: IPN 20 (SADOC 2) action data automation including Links 11 and 14, SATCOM ●. Weapons control: 3 Alenia NA 30E electro-optical back-up for SAM. 3 Dardo NA21 for guns.</p> <p>Radars: Long-range air search Hughes SPS-52C ●; 3D; E/F-band; range 440 km (240 n miles). Air search: Selenia SPS-768 (RAN 3L) ●; D-band; range 220 km (120 n miles). Air/surface search: Selenia SPS-774 (RAN 10S) ●; E/F-band Surface search/target indication: SMA SPS-702 UPX, 718 beacon; I-band Navigation: ARPA SPN-753 G(V); I-band Fire control: 3 Selenia SPG-75 (RTN 30X) ●; I/J-band, range 15 km (8 n miles) (for Albatros) 3 Selenia SPG-74 (RTN 20X) ●; I/J-band; range 13 km (7 n miles) (for Dardo). CCA. Selenia SPN-728(V)1; I-band IFF: Mk XII Tacan. SRN-15A Sonars: Raytheon DE 1160 LF; bow-mounted; active search; medium frequency. Fixed-wing aircraft: 15 AV-8B Harrier II. Helicopters: 18 SH-3D Sea King or EH 101 Merlin helicopters (12 in hangar, 6 on deck). The total capacity is either 15 Harriers or 18 helicopters, but this leaves no space for movement. In practice a combination is embarked (see <i>Operational</i>). Programmes: Contract awarded 21 November 1977. The design work completed February 1980. Started sea trials 3 December 1984. Modernisation: A major C1 upgrade programme, completed in September 2003, has given the ship a Maritime Component Commander (MCC) capability. Improvements to the combat data system include a MCC data system and Link 16. SATCOM domes have replaced the TESEO launchers which have been removed. SHF SATCOM has been installed in the old positions of the chaff launchers while SCLAR-D chaff launchers have been installed on new sponsons aft and below the flight deck. Other work includes modernisation of the ESM/ECM equipment, replacement of the DE 1150F sonar with DMSS 2000 and the fitting of an electro-optic tracking device on the bridge roof in lieu of SPN-728 radar which has been removed. A major refit is planned 2013-15 although the scope of this is to be decided. <i>Garibaldi</i> has also been equipped to control RC-18 Predator UAV and to exploit its imagery. Structure: Six decks with 13 vertical watertight bulkheads. Fitted with 6.5° ski-jump and VSTOL operating equipment. Two 15 ton lifts 18 x 10 m (59 x 32.8 ft). Hangar size 110 x 15 x 6 m (361 x 49.2 x 19.7 ft). Hangar capacity is for 10 Harriers or 12 Sea Kings. Has a slightly narrower flight deck than UK <i>Invincible</i> class. Two MEN class fast personnel launches (capacity 250) can be embarked for amphibious operations or disaster relief. Operational: Fleet Flagship. Equipped for Joint Task Force command and control. The long-standing dispute between the Navy and the Air Force concerning the former's operation of fixed-wing aircraft (dating back to pre-Second World War legislation) was finally resolved by legislation passed on 29 January 1989. Embarked aircraft are operated by the Navy with the Air Force providing evaluation and maintenance. The carrier has operated in the assault role with seven SH-3D, four AB 212 and Army helicopters including six AB 205, three A 129 and two CH-47. First operational Harriers embarked for permanent duty in December 1994.</p>					



GIUSEPPE GARIBALDI

(Scale 1 : 1,200), Ian Sturton / 1043173



GIUSEPPE GARIBALDI

(Scale 1 : 1,200), Ian Sturton / 1043173



GIUSEPPE GARIBALDI

8/2004, Guy Tomerans / 1044368



GIUSEPPE GARIBALDI

7/2004, United States Navy / 1043185



GIUSEPPE GARIBALDI

6/2005, Marco Ghiglino / 1163730

DESTROYERS

1 + 1 ANDREA DORIA (HORIZON) CLASS (DDGHM)

Name	No	Builders	Laid down	Launched	Commissioned
ANDREA DORIA (ex-Carlo Bergamini)	D 553	Fincantieri, Riva Trigoso/Muggiano	19 July 2002	14 Oct 2005	2009
CAIO DUILIO	D 554	Fincantieri, Riva Trigoso/Muggiano	19 Sep 2003	23 Oct 2007	2010

Displacement, tons: 6,635 full load
Dimensions, feet (metres): 501.6 oa; 464.9 wl × 66.6 × 26.2 (152.9; 141.7 × 20.3 × 8.0)
Main machinery: CODOG: 2 GE LM 2500 gas turbines; 55,750 hp(m) (41 MW); 2 SEMT Pielstick 12 PA6B STC diesels, 11,700 hp(m) (8.6 MW); 2 shafts; cp props
Speed, knots: 29
Range, n miles: 7,000 at 18 kt
Complement: 200 (35 officers)

Missiles: SSM: 8 (2 quad) OTO Melara Teseo Mk 2A ●, mid-course guidance; active radar homing to 160 km (86 n miles) at 0.9 Mach; warhead 210 kg.
SAM: DCN Sylver VLS ● PAAMS (principal anti-air missile system); 48 cells for Aster 15 and Aster 30 weapons; range (Aster 30) 120 km (66 n miles).
Guns: 3 Otobreda 76 mm/82 Super Rapid ●.
 2 Breda Oerlikon 25 mm/80 ●
Torpedoes: 2 fixed launchers ●. Eurotorp Mu 90 impact torpedoes.
Countermeasures: Decoys: 2 Otobreda SCLAR-H chaff/IR flare launchers ●. SLAT torpedo defence system.
ESM/ECM: Elettronica JANEWS ●
Combat data systems: DCN/Alenia CMS; Link 16. Link 14 SATCOM ●
Weapons control: Sagem Vamplr optronic director ●.
Radars: Air/surface search: S 1850M ●; D-band
 Surveillance/fire control: Alenia EMPAR ●; G-band, multifunction.
 Surface search: Alenia RASS ●; E/F-band
 Fire control: 2 Alenia Marconi NA 25XP ●.
 Navigation: Alenia SPN 753(V)4 ●; I-band.
Sonars: Thomson Marconi 4110CL; hull-mounted; active search and attack; medium frequency

Helicopters: 1 Augusta/Westland EH 101 Merlin ● or NH-90.

Programmes: Three-nation project for a new air defence ship with Italy, France and UK. Joint project office established in 1993. Memorandum of Understanding for joint development signed 11 July 1994. After UK withdrew in April 1999, an agreement was signed on 7 September 1999 between France and Italy to continue. Following a preliminary agreement on 2 August 2000, a Memorandum of Understanding was signed by the French and Italian Defence Ministries on 22 September 2000 for the joint development of the 'Horizon' destroyer. A Horizon Joint Venture Company was created by DCN/Thomson-CSF and Fincantieri/Finmeccanica on 16 October 2000. The first batch of two vessels for each country was ordered on 27 October 2000. Plans for a second batch of two ships have been cancelled.
Operational: *Andrea Doria* started sea trials in October 2008 and is to become fully operational in 2009. *Cairo Duilio* is expected to be commissioned in 2010.



ANDREA DORIA

(Scale 1 : 1,200), Ian Sturton 1157473



ANDREA DORIA

9/2006, Giorgio Ghiglione 1159975

ANDREA DORIA
3/2008, Giorgio Ghiglione
1135476

CAIO DUILIO

4/2008, Giorgio Ghiglione / 1335477

2 DE LA PENNE (EX-ANIMOSO) CLASS (DDGHM)

Name	No	Builders	Laid down	Launched	Commissioned
LUIGI DURAND DE LA PENNE (ex-Animoso)	D 560	Fincantieri, Riva Trigoso/Muggiano	20 Jan 1988	29 Oct 1989	18 Mar 1993
FRANCESCO MIMBELLI (ex-Ardimentoso)	D 561	Fincantieri, Riva Trigoso/Muggiano	15 Nov 1989	13 Apr 1991	19 Oct 1993

Displacement, tons: 4,330 standard; 5,400 full load
Dimensions, feet (metres): 487.4 x 52.8 x 28.2 (sonar) (147.7 x 16.1 x 8.6)
Flight deck, feet (metres): 78.7 x 42.7 (24 x 13)
Main machinery: CODOG, 2 Fiat/GE LM 2500 gas turbines; 54,000 hp (40.3 MW) sustained; 2 GMT BL 230.20 DVM diesels; 12,600 hp(m) (9.3 MW) sustained, 2 shafts, cp props
Speed, knots: 31 (21 on diesels)
Range, n miles: 7,000 at 18 kt
Complement: 331 (25 officers)

Missiles: SSM: 4 or 8 OTO Melara/Matra Tesco Mk 2 (TG 2) (2 or 4 twin) (●); mid-course guidance; active radar homing to 160 km (86.4 n miles) at 0.9 Mach, warhead 210 kg, sea-skimmer. Mk 3 with radar/IR homing to 300 km (162 n miles); warhead 160 kg in due course.

A/S: OTO Melara/Matra Milas launcher; inertial guidance with command update to 55 km (29.8 n miles) at 0.9 Mach, payload Mk 46 Mod 5 or Mu 90 torpedo; 4 weapons (see Modernisation)

SAM 40 Raytheon Standard SM 1MR Block VI, Mk 13 Mod 4 launcher (●); command guidance; semi-active radar homing to 38 km (20.5 n miles) at 2 Mach. Selenia Albatros Mk 2 octuple launcher for Aspide (●), semi-active radar homing to 13 km (7 n miles) at 2.5 Mach; 16 missiles. Automatic reloading

Guns: 1 OTO Melara 5 in (127 mm)/54 (●); 45 rds/min to 23 km (12.42 n miles); weight of shell 32 kg. 3 OTO Melara 3 in (76 mm)/62 Super Rapid (●); 120 rds/min to 16 km (8.7 n miles); weight of shell 8 kg. 2—20 mm.

Torpedoes: 6—324 mm B-515 (2 triple) tubes (●). Honeywell Mk 46; anti-submarine, active/passive homing to 11 km (5.9 n miles) at 40 kt; warhead 44 kg. May be replaced by Whitehead Mu 90 in due course

Countermeasures: Decoys. 2 CSEE Sagaie chaff launchers (●). 1 SLO-25 Nixie anti-torpedo system.

ESM/ECM: Elettronica SLQ-732 Nettuno (●); integrated intercept and jamming system. SLC 705.

Combat data systems: Selenia Elsag IPN 20 (SADOC 2); Links 11 and 14. SATCOM.

Weapons control: 4 Dardo-E systems (3 channels for Aspide), Milas TFCS.

Radars: Long-range air search: Hughes SPS-52C; 3D (●); E/F-band.

Air search: Selenia SPS-768 (RAN 3L) (●); D-band. Air/surface search: Selenia SPS-774 (RAN 10S) (●); E/F-band.

Surface search: SMA SPS-702 (●); I-band.

Fire control: 4 Selenia SPG-76 (RTN 30X) (●); I/J-band (for Dardo).

Navigation: SMA SPN-748; I-band.

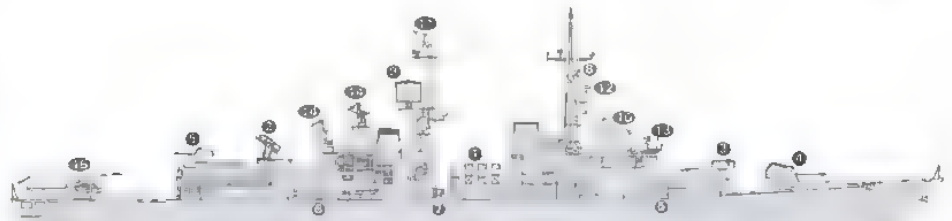
IFF: Mk X/XII Tecan SRN-15A.

Sonars: Raytheon DE 1164 LF-VDS; integrated bow and VDS; active search and attack; medium frequency (3.75 kHz (hull)); 7.5 kHz (VDS)

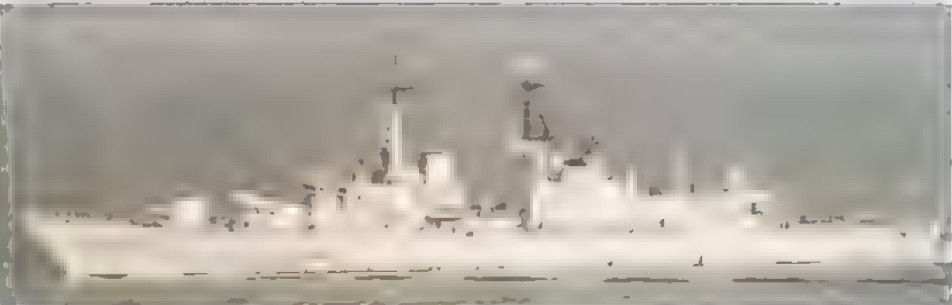
Helicopters: 2 AB 212ASW (●); SH-3D Sea King and EH 101 Merlin capable

Programmes: Order placed 9 March 1986 with Riva Trigoso. All ships built at Riva Trigoso are completed at Muggiano after launching. Names changed on 10 June 1992 to honour former naval heroes. Acceptance dates were delayed by reduction gear radiated noise problems which have been resolved

Modernisation: Milas ASW launchers fitted by late 2004. New sonar dome fitted in D 560 in 2000 increased draft by 1.5 m. A major 2-year upgrade is being undertaken in D 561 to be completed late 2009 and D 560 (starting in 2009). SPS-52C is to be removed. SPS-768 is to be replaced by AMS RAN-40L (SPS 798) (also fitted in Cavour); SPS-774 to be replaced by AMS RAN-21S (SPS-794).



FRANCESCO MIMBELLI (Scale 1 : 1,200), Ian Sturton / 06-69913



LUIGI DURAND DE LA PENNE 6/2004, John Brodie / 1044362



LUIGI DURAND DE LA PENNE 5/2004, B Sullivan / 1044363

SPS-702 to be replaced by SPN-753 ARPA, Dardo-E to be replaced by four new fire-control systems (Dardo-F with RTN-30X); Sagem IRST and new combat data system to be installed. Link 16 is also to be added while Tesco Mk 2 is to be upgraded to Mk 2/A configuration. **Structure:** Kevlar armour fitted. Steel alloys used in superstructure. Prairie Masker noise suppression system.

The 127 mm guns are ex-Audace class B turrets. Fully stabilised. Hangar is 18.5 m in length. **Operational:** It is likely that both ships will be reclassified as frigates once the SM-1 missile system is phased out in about 2015. The ships are expected to remain in service until about 2025.



FRANCESCO MIMBELLI 5/2003, A Sharma / 0570684

FRIGATES

8 MAESTRALE CLASS (FFGHM)

Name	No	Builders	Laid down	Launched	Commissioned
MAESTRALE	F 570	Fincantieri, Riva Trigoso	8 Mar 1978	2 Feb 1981	6 Mar 1982
GRECALE	F 571	Fincantieri, Muggiano	21 Mar 1979	12 Sep 1981	6 Feb 1983
LIBECCO	F 572	Fincantieri, Riva Trigoso	1 Aug 1979	7 Sep 1981	5 Feb 1983
SCIROCOCO	F 573	Fincantieri, Riva Trigoso	26 Feb 1980	17 Apr 1982	20 Sep 1983
ALISEO	F 574	Fincantieri, Riva Trigoso	10 Aug 1980	29 Oct 1982	7 Sep 1983
EURO	F 575	Fincantieri, Riva Trigoso	15 Apr 1981	25 Apr 1983	24 Jan 1984
ESPERO	F 576	Fincantieri, Riva Trigoso	29 July 1982	19 Nov 1983	4 May 1984
ZEFFIRO	F 577	Fincantieri, Riva Trigoso	15 Mar 1983	19 May 1984	4 May 1985

Displacement, tons: 2,500 standard; 3,200 full load

Dimensions, feet (metres): 405 x 42.5 x 15.1
(122.7 x 12.9 x 4.6)

Flight deck, feet (metres): 89 x 39 (27 x 12)

Main machinery: CODOG; 2 Fiat/GE LM 2500 gas turbines; 50,000 hp (37.3 MW) sustained; 2 GMT B 230.20 DVM diesels; 11,000 hp(m) (8.1 MW) sustained; 2 shafts; LIPS cp props

Speed, knots: 32 gas; 21 diesels

Range, n miles: 6,000 at 16 kt

Complement: 205 (16 officers)



(Scale 1 : 1,200), Ian Sturton / J589915

Missiles: SSM: 4 OTO Molar Tesco Mk 2 (TG 2) (TG 2) (TG 2) (TG 2); mid-course guidance; active radar homing to 160 km (86.4 n miles); warhead 210 kg; sea-skimmer. Mk 3 with radar/IR homing to 300 km (162 n miles); warhead 160 kg in due course.

SAM: Selenia Albatros octuple launcher; 16 Aspide (Aspide); semi-active homing to 13 km (7 n miles) at 2.5 Mach, height envelope 15-5,000 m (49.2-16,405 ft); warhead 30 kg.

Guns: 1 OTO Molar 5 in (127 mm)/54 automatic (Molar 5); 45 rds/min to 23 km (12.42 n miles) anti-surface; 7 km (3.8 n miles) anti-aircraft, weight of shell 32 kg; fires chaff and illuminants.

4 Breda 40 mm/70 (2 twin) compact (Breda 40); 300 rds/min to 12.5 km (6.8 n miles) anti-surface; 4 km (2.2 n miles) anti-aircraft; weight of shell 0.96 kg.

2 Oerlikon 20 mm fitted for Gulf deployments in 1990-91. 2 Breda Oerlikon 25 mm/90 (twin) tested in Espero.

Torpedoes: 6-324 mm US Mk 32 (2 triple) tubes (Mk 32); Honeywell Mk 46; anti-submarine; active/passive homing to 11 km (5.9 n miles) at 40 kt; warhead 44 kg.

Countermeasures: Decoys: 2 Breda 105 mm SCLAR 20-tubed trainable chaff rocket launchers (SCLAR); chaff to 5 km (2.7 n miles); illuminants to 12 km (6.6 n miles). 2 Dagaie chaff launchers.

SLQ-25; towed torpedo decoy. Prairie Masker; noise suppression system

MAESTRALE

ESM: Elettronica SLR-4, intercept. ECM: 2 SLQ-D, jammers.

Combat data systems: IPN 20 (SADOC 2) action data automation; Link 11. SATCOM (SATCOM)

Weapons control: NA 30 for Albatros and 5 in guns. 2 Dardo (Dardo-F in F 572, F 573, F 577) for 40 mm guns. Galileo Avionica SASS IRST (F 572, F 573, F 577).

Radars: Air/surface search: Selenia SPS-774 SPS-794 (F 572, F 573, F 577) (RAN 10S (RAN 21S)) (RAN 21S); E/F-band. Surface search: SMA SPS-702 (SMA SPS-702); I-band.

Navigation: SMA SPN-703 (SPN-753 (F 572, F 573, F 577)); I-band.

Fire control: Selenia SPG-75 (RTN 30X) (SPG-75); I/J-band (for Albatros and 12.7 mm gun).

2 Selenia SPG-74 (RTN 20X) (SPG-74); I/J-band; range 15 km (8 n miles) (for Dardo).

IFF Mk XII

Sonars: Raytheon DE 1164; hull-mounted, VDS, active/passive attack; medium frequency. VDS can be towed at up to 28 kt. Maximum depth 300 m. Modified to include mine detection active high frequency.

Helicopters: 2 AB 212ASW (AB 212ASW)

Programmes: First six ordered December 1976 and last pair in October 1980. All Riva Trigoso ships completed at Muggiano after launch.

Modernisation: Hull and VDS sonars modified from 1994 to give better shallow water performance and a mine detection capability. A major upgrade is in progress. F 573 was completed in late 2006 and F 577 was completed in 2007 and F 572 in November 2008. F 571 is to follow. SPS-774 to be replaced by AMS RAN-21S (SPS-794). SPN-703 to be replaced by SPN-753 ARPA. Dardo to be replaced by two new fire-control systems (Dardo-F with RTN-30X), Galileo Avionica SASS IRST and new combat data system to be installed.

Structure: There has been a notable increase of 34 ft in length and 5 ft in beam over the Lupo class to provide for the fixed hangar and VDS, the result providing more comfortable accommodation but a small loss of top speed. Fitted with stabilisers.

Operational: A towed passive LF array may be attached to the VDS body. Aft A 184 torpedo tubes have been removed. F 571, F 572, F 573 and F 577 to remain in service until 2015-2018. F 570, F 574, F 575 and F 576 are to be decommissioned 2012-2015.



ALISEO

4/2006, M Declerck / 1164685



MAESTRALE

1/2008, Giorgio Ghiglione / 1335478

4 ARTIGLIERE (LUPO) CLASS (FFGHM)

Name	No	Builders	Laid down	Launched	Commissioned
ARTIGLIERE (ex-Hittin)	F 582 (ex-F 14)	Fincantieri, Ancona	31 Mar 1982	27 July 1983	28 Oct 1994
AVIERE (ex-Thi Qar)	F 583 (ex-F 15)	Fincantieri, Ancona	3 Sep 1982	19 Dec 1984	4 Jan 1995
BERSAGLIERE (ex-Al Yarmouk)	F 584 (ex-F 17)	Fincantieri, Riva Trigoso	12 Mar 1984	18 Apr 1985	8 Nov 1995
GRANATIERE (ex-Al Qadisiya)	F 585 (ex-F 16)	Fincantieri, Ancona	1 Dec 1983	1 June 1985	20 Mar 1996

Displacement, tons: 2,208 standard; 2,525 full load
Dimensions, feet (metres): 371.3 x 37.1 x 12.1 (113.2 x 11.3 x 3.7)
Main machinery: CODLOG; 2 Fiat/GE LM 2500 gas turbines; 50,000 hp (37.3 MW) sustained; 2 GMT BL 230 20 M diesels; 7,900 hp(m) (5.7 MW) sustained; 2 shafts; LIPS cp props
Speed, knots: 35 turbines; 21 diesels
Range, n miles: 5,000 at 15 kt on diesels
Complement: 177 (13 officers)

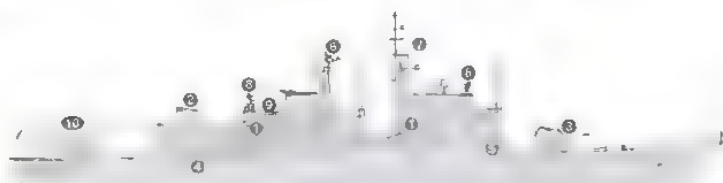
Missiles: SSM: 8 OTO Melara Tesoo Mk 2 (TG 2) ●, mid-course guidance; active radar homing to 160 km (86.4 n miles) at 0.9 Mach; warhead 210 kg; sea-skimmer.
SAM: Selenia Etsag Aspide octuple launcher ●, semi-active radar homing to 14.6 km (8 n miles) at 2.5 Mach, warhead 39 kg, 8 reloads.
Guns: 1 OTO Melara 5 in (127 mm)/54 ●, 45 rds/min to 23 km (12.42 n miles) anti-surface; 7 km (3.8 n miles) anti-aircraft; weight of shell 32 kg.
 4 Breda 40 mm/70 (2 twin) compact ●, 300 rds/min to 12.5 km (6.8 n miles) anti-surface; 4 km (2.2 n miles) anti-aircraft; weight of shell 0.96 kg.
 2 Derlikon 20 mm can be fitted.
Countermeasures: Decoys; 2 Breda 105 mm SCLAR 20-tubed trainable ●, chaff to 5 km (2.7 n miles); illuminants to 12 km (6.6 n miles).
ESM/ECM: Selenia SLQ-747 (INS-3M); intercept and jammer.
Combat data systems: IFN 10 mini SADO action data automation; Link 11. SATCOM
Weapons control: 2 Etsag Mk 10 Argo with NA 21 directors for missiles and 5 in gun. 2 Dardo for 40 mm guns.
Radars: Air search: Selenia SPS 774 (RAN 10S) ●, E/F-band. Surface search: Selenia SPQ-712 (RAN 12 L/X) ●, I band. Navigation: SMA SPN-703; I-band.
Fire control: 2 Selenia SPG-70 (RTN 10X) ●, I/J-band; range 40 km (22 n miles) (for Argo).
 2 Selenia SPG-74 (RTN 20X) ●, I/J-band; range 15 km (8 n miles) (for Dardo)
 IFF, Mk XII.

Helicopters: 1 AB 212 ●.

Programmes: On 20 January 1992 it was decided to transfer the four ships built for Iraq to the Italian Navy. The original sale to Iraq was first delayed by payment problems and then cancelled in 1990 when UN embargoes were placed on military sales to Iraq. After several attempts by the Italian Defence Committee to cancel the project, finance was finally authorised in July 1993.

Modernisation: The details given are for the ships as modernised for Italian service. All ASW equipment removed, new combat and communications systems to Italian standards and a major upgrading of damage control and accommodation facilities. F 584 is unlikely to become the test platform for the 127/64 LW gun and Vulcano long-range guided munitions.

Operational: The first two commissioned with only machinery, damage control and accommodation upgraded. The weapon systems' changes were made during 1995. The last pair entered service fully modified. Official designation is Fleet Patrol Ships. *Granatiere* expected to be used as an interim Mine Command and Support Ship. F 582 and F 583 (expected to be decommissioned 2012-14) based at Taranto; F 584 and F 585 based at La Spezia.



ARTIGLIERE

(Scale 1 : 1,200), Ian Sturton / 0506300



ARTIGLIERE

2/2002, Giorgio Ghiglione / 0528350



BERSAGLIERE

1/2005, Camil Busquets i Vilanova / 1153225

0 + 6 (4) BERGAMINI CLASS (MULTIMISSION FRIGATES) (FFGH)

Name	No	Builders	Laid down	Launched	Commissioned
CARLO BERGAMINI	-	Fincantieri, Riva Trigoso	4 Feb 2008	2010	2012
CARLO MARGOTTINI	-	Fincantieri, Riva, Trigoso	2009	2011	2013

Displacement, tons: 4,500 standard; 5,950 full load
Dimensions, feet (metres): 466.5 oa; 449.8 wl x 64.6 x 12.7 (142.2; 137.1 x 19.7 x 5.4)
Main machinery: CODLOG/CODLAG; 1 General Electric LM 2500 gas turbine; 40,230 hp (30 MW); 4 diesels; 11,270 hp (8.4 MW); 2 motors; 5,900 hp (4.4 MW); 2 shafts, cp props
Speed, knots: 27
Range, n miles: 6,000 at 15 kt
Complement: 145 (accommodation for 165)

Missiles: SLCM: to be decided
SAM: 16 Sylver A50 cell VLS for Aster 15/30 ●.
SSM: 4 (8 in GP variant); Tesoo Mk 2/A ●.
Guns: 1 OTO 127 mm/64ER ● (GP). 2 (ASW) (1 GP) OTO 76 mm SR ● 2 25 mm
Torpedoes: 4 (2 twin) tubes, ML-90 ●
A/S mortars: 4 MILAS (ASW variant).
Countermeasures: Decoys; 2 Breda SCLAR-H 20-barrel trainable chaff/decoy launchers.
TCM: SLAT launchers.
ESM: Radar and Comms intercept.
ECM: jammer.
Combat data systems: Cavour derivative system.
Weapons control: Galileo Avionica SASS IRST optronic director ●.
Radars: Air search: Alenia EMPAR; G-band ●
 Surface search: SPS 791 (RAN-30X/I) ●, I-band.
 Navigation: 1 SPN-753 ●, I-band.
 SPN-741 ●, I band
Fire control: Alenia Marconi NA-25XP ●, J-band.
Sonars: Thales TUS 4110CL; hull-mounted (bow dome).
 Thales TUS 4249 active/passive towed array.
 Mine avoidance sonar



BERGAMINI (GP variant)

(Scale 1 : 1,200), Ian Sturton / 1153004

Helicopters: 2 NH 90 or 1 NH 90 ● plus 1 EH 101.

Programmes: Agreement reached on 7 November 2002 for a 27 ship collaborative programme with France. The original Italian requirement was for 10 frigates with common hull and machinery in two variants. Four ASW and six GP (general purpose/land-attack) ships were to replace the Lupo and Maestrale classes. Contract for the first phase awarded on 16 November 2005 to Orizzonte Sistemi Navali (Fincantieri/Finmeccanica joint venture) for the construction of a first batch of two (1 GP, 1 ASW) ships. Plans to procure a second batch of four ships (1 GP, 3 ASW) were confirmed by the Italian government in 2008 but, following curtailment of the French programme, it is possible that plans for a third batch of four GP variants will be abandoned. Provisional

names for Batch 2 are: *Virginia Fasan; Luigi Rizzo; Alpino; Carabinieri*. There are no plans to acquire an AAW variant as Aster 15 and 30 can be fired from the A50 launcher.
Structure: The class has a conventional hull design. The main engine room contains the gas turbine and two diesel generators while the aft machinery space contains the motors. The Italian variants have a higher foredeck (an extra deck) than their French counterparts. Particular attention has been paid to signature reduction. The radar signature is expected to be comparable to that of the French La Fayette class while exhaust cooling measures are expected to achieve a comparatively low IR signature. Acoustic quietening is to be achieved by the rafting of engines and motors and the use of electric propulsion. The Italian variants are to be fitted with controllable pitch propellers.

CORVETTES

Notes: The future corvette programme is for six new ships to enter service 2018–2022. Outline requirements are for vessels of 2,000–2,500 tons displacement, 105–115 m length, 14–16 m beam, a speed of 30 kt and complement of 80 (accommodation for 120). A flight deck and hangar

to operate NH-90 or EH-101 helicopters is to be included. Main armament is to be a 76 mm Super-Rapid gun while the ships are also to have the capability to operate one 11 m and one 7 m RHIB. Propulsion is likely to be all-diesel in a CODAD arrangement. Other design features

are to include a reconfigurable deck, below the flight deck, for manned and unmanned craft, MCM vehicles, containerised mine laying and so on. Radar cross-section reduction measures are to be incorporated in a steel hull and composite superstructure.

8 MINERVA CLASS (FSM)

Name	No	Builders	Laid down	Launched	Commissioned
MINERVA	F 551	Fincantieri, Riva Trigoso	11 Mar 1985	3 Apr 1986	10 June 1987
URANIA	F 552	Fincantieri, Riva Trigoso	4 Apr 1985	21 June 1986	1 June 1987
DANAIDE	F 553	Fincantieri, Muggiano	26 June 1985	18 Oct 1986	9 Sep 1987
SPINGE	F 554	Fincantieri, Muggiano	2 Sep 1986	16 May 1987	13 Feb 1988
DRIADE	F 555	Fincantieri, Riva Trigoso	18 Mar 1988	11 Mar 1989	19 Apr 1990
CHIMERA	F 556	Fincantieri, Riva Trigoso	21 Dec 1988	7 Apr 1990	15 Jan 1991
FENICE	F 557	Fincantieri, Riva Trigoso	6 Sep 1988	9 Sep 1989	11 Sep 1990
SIBILLA	F 558	Fincantieri, Muggiano	16 Oct 1989	15 Sep 1990	16 May 1991

Displacement, tons: 1,029 light; 1,285 full load

Dimensions, feet (metres): 284.1 × 34.5 × 10.5 (86.6 × 10.5 × 3.2)

Main machinery: 2 Fincantieri GMT BM 230 20 DVM diesels; 11,000 hp(m) (8.1 MW) sustained; 2 shafts, cp props

Speed, knots: 24. **Range, n miles:** 3,500 at 18 kt

Complement: 106 (8 officers)

Missiles: SAM: Selenia Elsig Albatros octuple launcher (F 555–558) ●; 8 Aspide; semi-active radar homing to 13 km (7 n miles) at 2.5 Mach; height envelope 15–5,000 m (49.2–16,405 ft); warhead 30 kg. Capacity for larger magazine.

Guns: 1 OTO Melara 3 in (76 mm)/62 Compact ●; 85 rds/min to 16 km (8.7 n miles) anti-surface; 12 km (6.6 n miles) anti-aircraft; weight of shot 6 kg.

Torpedoes: 6—324 mm Whitehead B 515 (2 triple) tubes (F 555–558) ● Honeywell Mk 46, active/passive homing to 11 km (5.9 n miles) at 40 kt; warhead 44 kg. Being replaced by Whitehead Mu 90.

Countermeasures: Decoys: 2 Wallop Barricade double layer launchers for chaff and IR flares. SLQ-25 Nixie, towed torpedo decoy.

ESM/ECM: Selenia SLQ-747 intercept and jammer.

Combat data systems: Selenia IPN 10 Mini SADOX action data automation, Link 11, SATCOM.

DRIADE

Weapons control: 1 Elsig Dardo E system. Selenia/ Elsig NA 18L Pegaso optronic director ●. Elmer TLC system

Radars: Air/surface search: Selenia SPS-774 (RAN 10S) ●; E/F-band

Navigation: SMA SPN-728(V)2 ●; I-band.

Fire control: Selenia SPG-76 (RTN 30X) ●; I/J-band (for Albatros and gun).

Sonars: Raytheon/Elsig DE 1167; hull-mounted; active search and attack; 7.5–12 kHz.

Programmes: First four ordered in November 1982, second four in January 1987. A third four were planned, but this

plan was overtaken by the acquisition of the Artigliere class

Structure: The funnels remodelled to reduce turbulence and IR signature. Two fin stabilisers. The ships are not fitted for or with SSM

Operational: Omega transit fitted. Intended for a number of roles including EEZ patrol, fishery protection and Commanding Officers' training. SAM launchers and torpedo tubes removed from first four units which are likely to be dedicated to a training role. All based at Augusta, Sicily. The first four units are to be decommissioned in 2014–15 and the remainder by 2020.



(Scale 1 : 900), Ian Sturton / 0506019



DRIADE

4/2002, Schaeffer/Marsan / 0528348



SPINGE

9/2003, Giorgio Ghiglione / 0570674

SHIPBORNE AIRCRAFT

Notes: It is planned to procure up to 26 STOVL variants (F-35B) of the Joint Strike Fighter to enter service from about 2015.

Numbers/Type: 15/2 McDonnell Douglas AV-8B/TAV-8B Harrier II Plus.
Operational speed: 562 kt (1,041 km/h).
Service ceiling: 50,000 ft (15,240 m).
Range: 800 n miles (1,480 km).

Role/Weapon systems: Two trainers delivered in July 1991 plus 15 front line aircraft from 1994 to December 1997. Sensors: Radar derived from Hughes APG-65, FLIR, ALQ-164 ESM. Weapons: Maverick ASM, AMRAAM AIM-120B AAM; JDAM bombs and 25 mm cannon.



HARRIER PLUS

6/2005, Paul Jackson / 1153777

Numbers/Type: 22 Agusta/Westland EH 101 Merlin.
Operational speed: 180 kt (296 km/h).
Service ceiling: 15,000 ft (4,572 m).
Range: 550 n miles (1,019 km).

Role/Weapon systems: Primary anti-submarine role with secondary anti-surface and troop carrying capabilities. 16 ordered in October 1995 and approved in July 1997. Six delivered by mid-2002 and further 10 by June 2004. Total of eight for ASW/ASV, four for AEW and four amphibious support (ASH). Four further special operations aircraft ordered in 2002 for delivery 2005-06. Two additional ASV variants ordered in 2005. Sensors: APS-784 (ASW/ASV version), APS-717 (ASH version); Elradar HEW-784 (AEW version) radar, L3 HELRAS dipping sonar, Star Safire FLIR, ALR 735 ESM, ELT 156X ESM, Marconi RALM 1 decoys, Link 11, sonobuoy acoustic processor. Weapons: ASW: four Mk 46 or Mu 90 torpedoes. ASV: four Marte Mk 2/S ASM capability for guidance of ship-launched SSM.



EH 101

3/2008, Michael Nitz / 1335389

Numbers/Type: 1 NH Industries NH 90 NFH.
Operational speed: 157 kt (291 km/h).
Service ceiling: 13,940 ft (4,250 m).
Range: 621 n miles (1,150 km).

Role/Weapon systems: Two variants to replace the AB-212: 35 combat helicopters for ASW/ASV; 10 TTH utility/assault helicopters. First aircraft to be delivered in 2009. Sensors (ASW variant): Galileo Avionica ENR radar, Sagem DLOSP FLIR, L3 HELRAS dipping sonar, QTS-90 acoustic system processor. Weapons: Mu-90 torpedoes, Marte Mk 2/S ASM. TTH variant has no radar but is fitted with FLIR-111 navigation aid.



NH 90

3/2004, NHI / 0062373

Numbers/Type: 36 Agusta-Bell 212.
Operational speed: 106 kt (196 km/h).
Service ceiling: 17,000 ft (5,180 m).
Range: 360 n miles (667 km).

Role/Weapon systems: ASW/ECM/Assault helicopter; mainly deployed to escorts, but also shore-based for ASW support duties and nine used for assault. Five are for EW. To be replaced by NFH-90. Sensors: Selenia APS 705 (APS 707 in five Artigliere class aircraft) search/attack radar, Safire II EO turret (in some), AQS-13B dipping sonar or GUFO (not in Artigliere aircraft) ESM/ECM. Weapons: ASW; two Mk 46 torpedoes. Assault aircraft have an armoured cabin, no sensors and are armed with two 7.62 mm MGs and two 70 mm MRLs.



AB-212

6/2001, Adolfo Ortigueira Gil / 0578387

Numbers/Type: 24 Agusta-Sikorsky SH-3D/H Sea King.
Operational speed: 120 kt (222 km/h).
Service ceiling: 12,200 ft (3,720 m).
Range: 630 n miles (1,165 km).

Role/Weapon systems: ASW helicopter; embarked in larger ASW ships, including CVL; also shore-based for medium ASV/ASW in Mediterranean Sea; eight are fitted for ASV, 10 with ASW and EW equipment, six transport/assault. To be replaced by EH-101. Sensors: Selenia APS 705 search radar, AQS-13B dipping sonar, sonobuoys ESM/ECM. Weapons: ASW; four Mk 46 torpedoes. ASV; two Marte 2 missiles. Assault aircraft have armoured cabins, no sensors, and are armed with two 7.62 mm MGs.



SEA KING

6/2003, Adolfo Ortigueira Gil / 0570675

LAND-BASED MARITIME AIRCRAFT

Notes: (1) It is planned to procure up to eight Boeing P-8A Poseidon maritime patrol aircraft for entry into service in about 2015.

(2) It is planned to procure three Boeing 737 AEW Wedgetail aircraft (with option for one further) to be operated by a joint Navy/Air Force Squadron.

(3) One Agusta A 109 transport helicopter procured in 2002 for liaison duties.

(4) Five RQ-1B Predator are owned and maintained by the Italian Air Force. These can be controlled from the carrier *Giuseppe Garibaldi*.

Numbers/Type: 18 Bréguet Atlantic 1.
Operational speed: 355 kt (658 km/h).
Service ceiling: 22,800 ft (7,000 m).
Range: 4,855 n miles (8,995 km).

Role/Weapon systems: Air Force shore-based for long-range MR and shipping surveillance, wartime role includes ASW support to helicopters. Sensors: Thomson-CSF Iguane radar, ECM/ESM, MAD, sonobuoys; Marconi ASQ-902 acoustic system. Weapons: ASW; nine torpedoes (including Mk 46 torpedoes) or depth bombs or mines.



ATLANTIC

6/2005, Paul Jackson / 1153221

Numbers/Type: 15 Panavia Tornado IDS.
Operational speed: 2.2 Mach.
Service ceiling: 80,000 ft (24,385 m).
Range: 1,600 n miles (2,780 km).

Role/Weapon systems: Air Force swing wing strike and recce; part of a force of a total of 100 aircraft of which 15 are used for maritime operations based at Gioia de Colle. Sensors: Texas Instruments nav/attack systems. Weapons: ASV; four Kormoran missiles, two 27 mm cannon AD; four AIM 9L Sidewinder.



TORNADO IDS

8/2001, C Hoyle/Jane's / 0034970

400 Italy/Land-based maritime aircraft – Patrol forces

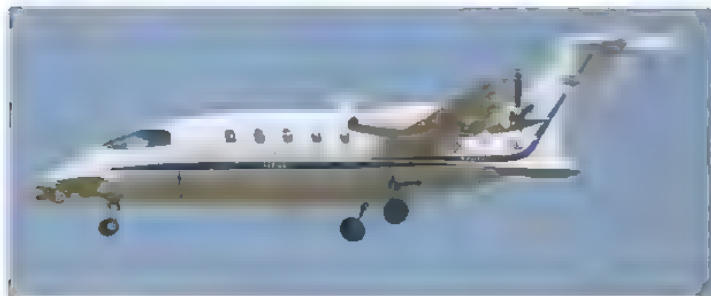
Numbers/Type: 3 Piaggio P-180 Avanti Maritime.

Operational speed: 260 kt (482 km/h)

Service ceiling: 39,000 ft (11,885 m)

Range: 1,195 n miles (2,213 km).

Role/Weapon systems: Maritime version of business aircraft. Two aircraft procured in 2002 for liaison duties since retrofitted with FLIR to conduct surveillance. Third aircraft ordered in 2005. Sensors: FLIR



P-180 MARITIME

7/2005, Massimo Anneti / 112/625

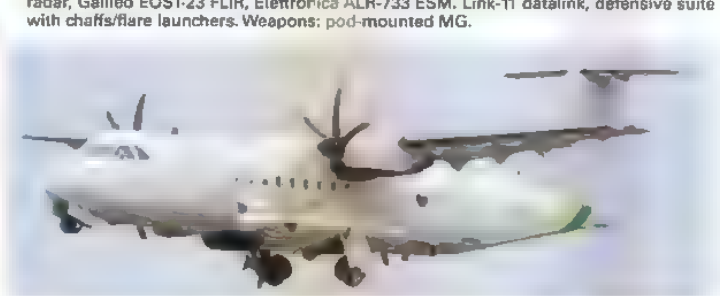
Numbers/Type: 4 EADS ATR-42.

Operational speed: 300 kt (556 km/h).

Service ceiling: 18,000 ft (5,485 m).

Range: 1,600 n miles (2,963 km)

Role/Weapon systems: Four aircraft ordered in 2005 for operation by the Navy in surveillance and SAR roles. Sensors: Airborne Tactical Observation and Surveillance System (ATOS), with two tactical consoles and one communication console; SV-2022 radar, Galileo EO/ST-23 FLIR, Elettronica ALR-733 ESM. Link-11 datalink, defensive suite with chaffs/flare launchers. Weapons: pod-mounted MG.



ATR-42

6/2005, Paul Jackson / 112/625

PATROL FORCES

6 COMANDANTE CLASS PATROL VESSELS (PSOH)

Name	No	Builders	Launched	Commissioned
COMANDANTE CIGALA FULGOSI	P 490	Fincantieri, Riva Trigoso	7 Oct 2000	31 July 2001
COMANDANTE BORSINI	P 491	Fincantieri, Riva Trigoso	17 Feb 2001	4 Dec 2001
COMANDANTE BETTICA	P 492	Fincantieri, Riva Trigoso	23 June 2001	4 Apr 2002
COMANDANTE FOSCARI	P 493	Fincantieri, Riva Trigoso	24 Nov 2001	1 Aug 2002
SIRIO	P 409	Fincantieri, Riva Trigoso	11 May 2002	31 May 2003
ORIONE	P 410	Fincantieri, Riva Trigoso	24 July 2002	1 Aug 2003

Displacement, tons: 1,520 full load

Dimensions, feet (metres): 290.0 x 40 x 15.1 (screws)
(88.4 x 12.2 x 4.6)

Main machinery: 2 GM Trieste-Wartsila W18-V 26 XIV diesels; 17,600 hp(m) (13.2 MW); 2 shafts, cp props, bow thruster

2 Wärtsilä 12V26X diesels (P 409-410), 11,585 hp (8.64 MW); 2 shafts; cp props; bow thruster

Speed, knots: 26 (22 kt for P 409-410)

Range, n miles: 3,500 at 14 kt

Complement: 60 (5 officers)

Guns: 1 Otobreda 3 in (76 mm)/62 compact (P 490-492 and P 409-410 (planned)) ●

1 Otobreda 3 in (76 mm)/62 Super Rapid (P 493).

2 Otobreda 25 mm/90 ●

Countermeasures: Decoys. Chaff launcher

ESM/ECM: Selenia SLO-747; intercept and jammer.

Combat data systems: AMS IPNS.

Weapons control: 1 optronic director ●

Radars: Surface search, SPS 791 (RAN-30X/1) ●; I-band

Fire control: SPG 76 (RTN 25X) ●; I/J-band.

Navigation: SPS 753 ●; I-band

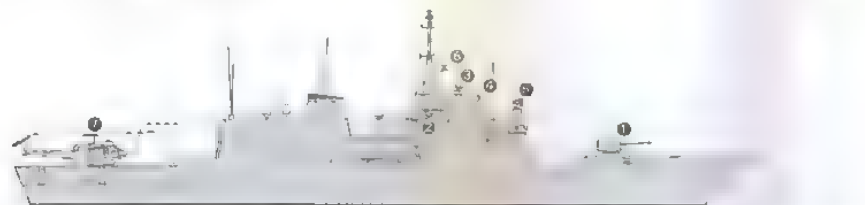
Helicopters: 1 AB 212 ●; or NH90 in due course.

Programmes: Four (P 490-493) for the Navy, and two funded by the Ministry of Transport, manned by the Navy, but equipped with more simple command data systems for anti-pollution and SAR tasks.

Modernisation: A mid-life upgrade for P 490-493 is planned 2014-18. This is likely to include Davide 76 mm guided munitions

Structure: Stealth features in naval vessels include IR suppression and reduced radar cross-section. P 493 has a superstructure of composite material. P 409-410 appear to be less stealthy, have less powerful engines, no hangar and no countermeasures

Operational: All based at Augusta, Sicily



COMANDANTE FOSCARI

(Scale 1 : 900), Ian Sturton / 0589003



COMANDANTE BORSINI

3/2008, Guy Toremans / 1336391



SIRIO

6/2007, Ships of the World / 1186593

4 CASSIOPEA CLASS (OFFSHORE PATROL VESSELS) (PSOH)

Name	No	Builders	Laid down	Launched	Commissioned
CASSIOPEA	P 401	Fincantieri, Muggiano	16 Dec 1987	20 July 1988	6 July 1989
LIBRA	P 402	Fincantieri, Muggiano	17 Dec 1987	27 July 1988	28 Nov 1989
SPICA	P 403	Fincantieri, Muggiano	5 Sep 1988	27 May 1989	3 May 1990
VEGA	P 404	Fincantieri, Muggiano	20 June 1989	24 Feb 1990	25 Oct 1990

Displacement, tons: 1,002 standard; 1,475 full load
Dimensions, feet (metres): 261.6 × 38.7 × 11.5
(79.8 × 11.8 × 3.5)

Flight deck, feet (metres): 72.2 × 26.2 (22 × 8)

Main machinery: 2 Fincantieri/GMT BL 230.16 M diesels,

7,940 hp(m) (5.84 MW) sustained; 2 shafts; LIPS cp props

Speed, knots: 20. Range, n miles: 3,300 at 17 kt

Complement: 85 (5 officers)

Guns: 1 OTO Melara 3 in (76 mm)/52; 60 rds/min to 16 km
(8.7 n miles); weight of shell 6 kg. Broda Oerlikon 25 mm/90.
2—12.7 mm MGs.

Weapons control: Argo NA 10.

Radars: Surface search: SMA SPS-702(V)2; I-band.

Nav gation: SMA SPN-748(V)2; I-band.

Fire control: Selenia SPG-70 (RTN 10X); I/J-band

Helicopters: 1 AB 212ASW

Programmes: Ordered in December 1986 for operations
in EEZ. Officially 'pattugliatori marittimi'. Funded by the
Ministry of Transport but all operated by the Navy.

Structure: Fitted for firefighting, rescue and supply tasks.
Telescopic hanger. The 20 mm guns were old stock taken
from deleted Bergamini class and have been replaced
by 25 mm guns. There is a 500 m³ tank for storing oil
polluted water.

Operations: All based at Augusta. To remain in service
until 2020.



VEGA

3/2001, Giorgio Ghiglione / 0130323

4 ESPLORATORE CLASS (PB)

Name	No	Builders	Launched	Commissioned
ESPLORATORE	P 405	Coinaval, La Spezia	4 Nov 1996	26 June 1997
SENTINELLA	P 406	Coinaval, La Spezia	13 Nov 1997	10 July 1998
VEDETTA	P 407	Coinaval, La Spezia	11 Jan 1997	29 July 1999
STAFFETTA	P 408	Coinaval, La Spezia/Oromare	Nov 2002	6 July 2005

Displacement, tons: 165 full load

Dimensions, feet (metres): 122 × 23.3 × 6.2
(37.2 × 7.1 × 1.9)

Main machinery: 2 Isotta Fraschini M1712T2 diesels,

3,810 hp(m) (2.8 MW); 2 shafts

Speed, knots: 20. Range, n miles: 1,200 at 20 kt

Complement: 14 (2 officers)

Guns: 1 Oerlikon 20 mm/70. 2—7.62 mm MGs.

Weapons control: AESN Medusa optronic director to be fitted.

Radars: Surface search: 2 SPS-753B/C; F/I-band.

Comment: Ordered from Ortona Shipyard in December 1993
but the contract was then transferred to Coinaval Yards,
La Spezia in 1994 which caused inevitable delays and
construction did not start until 1995. An option on a fourth
of class, was taken up in February 1998 but shipbuilding
programme delayed launch until January 2001 when
it was transferred to Oromare shipyard for completion
which was further delayed by financial problems. Based
in Red Sea for Multinational Force Observer (MFO)
operations. To return to Adriatic on completion.



ESPLORATORE

3/2008, Giorgio Ghiglione / 1335467

AMPHIBIOUS FORCES

Notes: (1) Following the establishment of the National
Projection Force in 2006, two Amphibious Battle
Groups are to become operational in late 2008. Further
improvement to power projection capabilities forces, an
enhancement to amphibious lift, is under consideration.
The first step is the procurement of two 170 m LHDs of

16-18,000 tons to replace/supplement the present force.
To enter service in 2017 and 2022, broad capabilities are
to include accommodation for 450 troops, 1,000-1,200
lane-metres for vehicles, five landing spots on the flight
deck, a stern well-dock for four LCM and davits for three
LCVPs.

(2) A Ro-Ro ship MV *Major* built in 1984 is on long term
charter to the Army Mobility and Transport Command
6,830 tons displacement with 1,240 m of vehicle lanes. Can
carry 3,955 tons of cargo.

(3) There are also 54 Rigid Raider Craft in service with
Amphibious Forces.

2 PEDRETTI CLASS

(SPECIAL OPERATIONS SUPPORT CRAFT) (YDT)

Name	No	Builders	Commissioned
ALCIDE PEDRETTI	Y 499 (ex-MEN 213)	Crestitalia-Ameglia	23 Oct 1984
MARIO MARINO	Y 498 (ex-MEN 214)	Crestitalia-Ameglia	21 Dec 1984

Displacement, tons: 75.4 (*Alcide Pedretti*), 69.5 (*Mano Marino*) full load

Dimensions, feet (metres): 86.6 × 22.6 × 3.3 (26.4 × 6.9 × 1)

Main machinery: 2 Isotta Fraschini ID 36 SS 12V diesels; 2,840 hp(m) (1.94 MW) sustained;

2 shafts

Speed, knots: 25. Range, n miles: 450 (*Alcide Pedretti*), 250 (*Mano Marino*) at 23 kt

Complement: 8 (1 officer)

Radars: Navigation: I-band.

Comment: Both laid down 8 September 1983. For use by assault swimmers of COMSUBIN.
Both have decompression chambers. *Alcide Pedretti* has a floodable dock aft and is
used for combat swimmers and special operations, while *Mano Marino* is fitted for
underwater work and rescue missions. Based at Varignano, La Spezia. A similar but
more heavily equipped vessel serves with the UAE Navy.



ALCIDE PEDRETTI

10/1999, Giorgio Ghiglione / 0080088

9 MTM 217 CLASS (LCM)

MEN 217-222 MEN 227-228 MEN 551

Displacement, tons: 64.6 full load

Dimensions, feet (metres): 60.7 × 16.7 × 3 (18.5 × 5.1 × 0.9)

Main machinery: 2 Fiat diesels; 560 hp(m) (412 kW); 2 shafts

Speed, knots: 9

Range, n miles: 300 at 9 kt

Complement: 3

Military lift: 30 tons

Comment: First six built at Muggiano, La Spezia by Fincantieri. Three completed 9 October
1987 for *San Giorgio*, three completed 8 March 1988 for *San Marco*. Three more ordered
in March 1991 from Balzamo Shipyard and completed in 1993 for *San Giusto*. Others of
this class are also in service with the Army.



MEN 219 and 220

2000, M Anneti / 0104881

3 SAN GIORGIO CLASS (LPD)

Name	No	Builders	Laid down	Launched	Commissioned
SAN GIORGIO	L 9892	Fincantieri, Riva Trigoso	27 June 1985	25 Feb 1987	9 Oct 1987
SAN MARCO	L 9893	Fincantieri, Riva Trigoso	28 June 1986	21 Oct 1987	18 Mar 1988
SAN GIUSTO	L 9894	Fincantieri, Riva Trigoso	30 Nov 1992	2 Dec 1993	9 Apr 1994

Displacement, tons: 6,687 standard; 7,960 (8,000 *San Giusto*) full load

Dimensions, feet (metres): 449.5 (*San Giusto*); 437.2 × 67.3 × 17.4 (137; 133.3 × 20.5 × 5.3)

Flight deck, feet (metres): 328.1 × 67.3 (100 × 20.5)

Main machinery: 2 Fincantieri GMT A 420.12 diesels; 16,800 hp(m) (12.35 MW) sustained; 2 shafts; LIPS cp props, bow thruster

Speed, knots: 21. **Range, n miles:** 7,500 at 16 kt; 4,500 at 20 kt

Complement: 168 (12 officers), 167 (15 officers) (*San Giusto*)

Military lift: Battalion of 400 plus 30-36 APCs or 30 medium tanks, 2 LCMs in stern docking well, 3 (*San Giusto*) or 2 (*San Giorgio* and *San Marco*) LCVPs on sponsons, 1 LCPL

Guns: 1 OTO Melara 3 in (76 mm)/62 (Compact in *San Giusto*), 60 rds/min to 16 km (8.7 n miles); weight of shell 6 kg.

2 Breda Oerlikon 25 mm/90, 2—12.7 mm MGs.

Countermeasures: ESM: SLR 730; intercept.

ESM/ECM: SLQ-747 (*San Giusto*)

Combat data systems: Selenia IPN 20 (*San Giusto*) Marisat, SATCOM

Weapons control: Elsig NA 10.

Radars: Surface search: SMA SPS-702, I-band

Navigation: SMA SPN-748; I-band

Fire control: Selenia SPG-70 (RTN 10X), I/J-band

Helicopters: 3 SH-3D Sea King or EH 101 Merlin or 5 AB 212

Programmes: *San Giorgio* ordered 26 November 1983, *San Marco* on 5 March 1984 and *San Giusto* 1 March 1991. Launching dates of the first two are slightly later than the official launching ceremony because of poor weather and for the third because of industrial problems.

Modernisation: 25 mm guns replaced 20 mm from 1999. Modifications to *San Giorgio* include removal of the 76 mm gun, movement of LCVPs from davits to a new sponson, and lengthening and enlargement of the flight deck to allow two Merlin and two AB 212 to operate simultaneously on deck. Work completed in early 2003. Similar work on *San Marco* completed in March 2004. *San Giusto* has been fitted with an MCC data system to enable her to act as CJTF. *San Giusto* is to undergo a mid-life modernisation programme 2012-13.

Structure: Aircraft carrier type flight deck with island to starboard. Following modernisation, *San Giorgio* and *San Marco* have four landing spots, a stern docking well (20.5 × 7 m), 2 LCVPs on a port side sponson, a 30 ton lift and two 40 ton travelling cranes for LCMs. *San Giusto* is



SAN GIORGIO

8/2003, C D Yeylali / 0570661



SAN MARCO

6/2007, Ships of the World / 1166592

of similar design, but was 300 tons heavier on build to include extra accommodation, 3 LCVP sponsons and a slightly longer island. Bow doors and beaching capability removed from *San Marco* and *San Giorgio* in refit.

Operational: *San Marco* was paid for by the Ministry of Civil Protection, is specially fitted for disaster relief but

is run by the Navy. All are based at Brindisi and assigned to COMFORAL. One of the three ships carries out the annual Summer cruise for officer and petty officer cadets. *San Giorgio* and *San Marco* are expected to decommission in 2017 and 2022 respectively when replaced by new LHDs.



SAN GIUSTO

9/2004, John Brodie / 1044369

0 + 4 MODIFIED MTM 217 CLASS (LCM)

Displacement, tons: 34 standard; 65 full load

Dimensions, feet (metres): 64.0 × 16.7 × 3.0 (19.5 × 5.1 × 0.9)

Main machinery: 2 diesels, 2 shafts

Speed, knots: 9. **Range, n miles:** 300 at 9 kt

Complement: 3

Comment: Four new LCM under construction at Vittoria Shipyard, Adria. Slightly larger versions than MTM 217 class to accommodate latest army armoured vehicles. Ballistic protection fitted. Delivery expected from mid-2009.

17 MTP 96 CLASS (LCVP)

MDN 94-104

MDN 108-109

MDN 114-117

Displacement, tons: 14.3 full load

Dimensions, feet (metres): 44.9 × 12.5 × 2.3 (13.7 × 3.8 × 0.7)

Main machinery: 2 diesels; 700 hp(m) (515 kW); 2 shafts or 2 water-jets

Speed, knots: 29 or 22. **Range, n miles:** 100 at 12 kt

Complement: 3

Comment: Built by Technomatic Ancona in 1985 (two), Technomatic Bari in 1987-88 (six) and Technoplast Venezia 1991-94 (nine). Can carry 45 men or 4.5 tons of cargo. These craft have Kevlar armour. The most recent versions have water-jet propulsion which gives a top speed of 29 kt (22 kt fully laden). This is being backfitted to all GRP LCVPs.



MDN 101

10/2001, Chris Sattler / 01.80326

MINE WARFARE FORCES

Notes. Following a feasibility study completed by Intermarine in 2003, four new larger MCM vessels are planned to enter service in about 2020. The new vessels are to be faster than traditional MCM units, have a better signature reduction (acoustic, magnetic, IR and radar), longer range, and superior armament and countermeasures. The new MCMV is to be capable of operating as a platform for remotely controlled autonomous unmanned vehicles, capable of both minehunting and minesweeping. These are likely to be based on four types: Remus, Pluto Gigas, RHIB-based USV, Mi-Ki (Plutino) one-shot mine-destroyers.

12 LERICI/GAETA CLASS (MINEHUNTERS/SWEEPERS) (MHSC)

Name	No	Builders	Launched	Commissioned
LERICI	M 5550	Intermarine, Sarzana	3 Sep 1982	22 Mar 1985
SAPRI	M 5551	Intermarine, Sarzana	5 Apr 1984	4 June 1985
MILAZZO	M 5552	Intermarine, Sarzana	4 Jan 1985	6 Aug 1985
VIESTE	M 5553	Intermarine, Sarzana	18 Apr 1985	2 Dec 1985
GAETA	M 5554	Intermarine, Sarzana	28 July 1990	3 July 1992
TERMOLI	M 5555	Intermarine, Sarzana	15 Dec 1990	13 Nov 1992
ALGHERO	M 5556	Intermarine, Sarzana	11 May 1991	31 Mar 1993
NUMANA	M 5557	Intermarine, Sarzana	26 Oct 1991	30 July 1993
CROTONE	M 5558	Intermarine, Sarzana	11 Apr 1992	19 Jan 1994
VIAREGGIO	M 5559	Intermarine, Sarzana	3 Oct 1992	1 July 1994
CHIOGGIA	M 5560	Intermarine, Sarzana	9 May 1994	19 May 1996
RIMINI	M 5561	Intermarine, Sarzana	17 Sep 1994	26 Nov 1996

Displacement, tons: 620 (697, *Gaeta* onwards) full load
Dimensions, feet (metres): 164 (172.1 *Gaeta*) x 32.5 x 8.6 (50 (52.6) x 9.9 x 2.6)
Main machinery: 1 Fincantieri GMT BL 230.8 M diesel (passage); 1,985 hp(m) (1.46 MW) sustained; 1 shaft; LIPS cp prop; 3 Isotta Fraschini ID 36 SS 6V diesels (hunting), 1,481 hp(m) (1.1 MW) sustained; 3 hydraulic 360° rotating thrust props, 506 hp(m) (372 kW) (1 fwd, 2 aft)
Speed, knots: 14, 6 hunting **Range, n miles:** 1,500 at 14 kt
Complement: 44 (4 officers) including 7 divers

Guns: 1 Oerlikon 20 mm/70
Countermeasures: Minehunting: 1 Plutogigas and 1 Pluto standard RoV; 1 SMIN Mk 2 and 1 Pluto Plus (*Gaeta* onwards); diving equipment and Galeazzi recompression chamber; Galeazzi Z1 two-man recompression chamber (*Gaeta* onwards)
Minesweeping: Oropesa Mk 4 wire sweep.
Combat data systems: Motorola MRS III/GPS Eagle precision navigation system with Datamat SMA

SSN-714V(3) automatic plotting and radar indicator IP-7113 Datamat SMA SSN-714 V(2) (*Gaeta* onwards).
Radars: Navigation: SMA SPN-728V(3); I-band
Sonars: FIAR SQQ 14(IT)VDS (lowered from keel forward of bridge); classification and route survey; high frequency.
Programmes: First four (*Lerici* class) ordered 7 January 1978 under Leggo Navale. Next six (*Gaeta* class) ordered from Intermarine 30 April 1988 and two more in 1991. The *Gaeta*-class ships are 2 m longer and are of an improved design. Construction of *Gaetas* started in 1988. The last pair delayed by budget cuts but re-ordered on 17 September 1992.
Modernisation: Improvements to *Gaeta* class include a better minehunting sonar system which was backfitted to the *Lerici* class in 1991. Other *Gaeta* upgrades include a third hydraulic system, improved electrical generators, Pluto Gigas ROV, a new type of recompression chamber, and a reduced magnetic signature. Modernisation of the eight *Gaeta* class is to be implemented 2010-2013.

Upgrades are planned to include replacement of SQQ-14 sonar with Thales 2093; a new combat data system Datamat 712(V)3; replacement of the SMIN Mk 2 ROVs with Plutogigas and provision of Plutino. Miki expendable mine neutralisation system. Some alterations to the superstructure will be required.
Structure: Of heavy GRP throughout hull, decks and bulkheads, with frames eliminated. All machinery is mounted on vibration dampers and main engines made of a magnetic material. Fitted with crane for launching RoVs and for diving operations.
Operational: Endurance, 12 days. For long passages passive roll-stabilising tanks can be used for extra fuel increasing range to 4,000 miles at 12 kt.
 Two *Lerici* class are likely to decommission in 2015 and the other two in 2020.
Sales: Four to Malaysia, two to Nigeria, two to Thailand and three to Finland. 12 of a modified design built by the US and six by Australia



LERICI 1/2008, Giorgio Ghiglione / 1335468



RIMINI 1/2008, Giorgio Ghiglione / 1335468

SURVEY AND RESEARCH SHIPS

1 SURVEY SHIP (AGORH/AGE/AGI)

Name	No	Builders	Commissioned
ELETTRA	A 5340	Fincantieri, Muggiano	2 Apr 2003

Displacement, tons: 3,180 full load
Dimensions, feet (metres): 305.1 × 49.9 × 12.1 (93 × 15.2 × 5.2)
Main machinery: Diesel electric; 2 Wartsila CW 12V 200 diesel generators; 5,750 kVA, 2 ABB motors; 4,023 hp (3 MW); 2 shafts; bow thruster
Speed, knots: 17. **Range, n miles:** 8,000 at 12 kt
Complement: 94 (12 officers)
Radars: Navigation; I-band.
Helicopters: Platform for one medium.

Comment: Ordered on 1 December 1999; construction started in March 2000 and launch on 24 July 2002. The design is derived from that of the NATO *Alliance* but is equipped as an intelligence collector. The propulsion system, based on two multi permanent magnet electric motors, is the first of its type to be fitted in a surface vessel.



ELETTRA 9/2008*, Giorgio Ghiglione / 1335470

1 SURVEY SHIP (AGSH)

Name	No	Builders	Commissioned
AMMIRAGLIO MAGNAGHI	A 5303	Fincantieri, Riva Trigoso	2 May 1975

Displacement, tons: 1,700 full load
Dimensions, feet (metres): 271.3 × 44.9 × 11.5 (82.7 × 13.7 × 3.5)
Main machinery: 2 GMT B 306 SS diesels; 3,000 hptm (2.2 MW); 1 shaft; cp prop; auxiliary motor; 240 hp(m) (176 kW); bow thruster
Speed, knots: 16. **Range, n miles:** 6,000 at 12 kt (1 diesel); 4,200 at 16 kt (2 diesels)
Complement: 148 (14 officers, 15 scientists)
Guns: 1 Breda 40 mm/70 (not fitted).
Radars: Navigation. SMA 3 RM 20; I-band.
Helicopters: Platform only.

Comment: Ordered under 1972 programme. Laid down 13 June 1973. Launched 11 October 1974. Full air conditioning, bridge engine controls, flume-type stabilisers. Equipped for oceanographical studies including laboratories and underwater TV. Two Qubit Trac V integrated navigation and logging systems and a Chart V data processing system installed in 1992 to augment the existing Trac 100-based HODAPS. Carries four surveying motor boats and up to two RHIBs. To be decommissioned 2012–13.



AMMIRAGLIO MAGNAGHI 7/2008*, Giorgio Ghiglione / 1335479

2 SURVEY SHIPS (AGS)

Name	No	Builders	Commissioned
ARETUSA	A 5304	Intermarine	10 Jan 2002
GALATEA	A 5308	Intermarine	10 Jan 2002

Displacement, tons: 415 full load
Dimensions, feet (metres): 128.6 × 41.3 × 8.2 (39.2 × 12.6 × 2.6)
Main machinery: Diesel electric; 2 Isotta Fraschini V170812 ME diesels; 2 ABB generators 1,904 hp(m) (1.4 MW); 2 shafts, Schottel props; 2 bow thrusters
Speed, knots: 13. **Range, n miles:** 1,700 at 13 kt
Complement: 29 (4 officers)
Guns: 2—7.62 mm MGs.
Radars: 2 Navigation; I-band.

Comment: GRP catamaran design. Ordered in January 1998. *Aretusa* launched 8 May 2000 and *Galatea* 7 June 2000. Fitted with Kongsberg EA 500 single-beam echo sounder, towed sidescan sonar and dynamic positioning system.



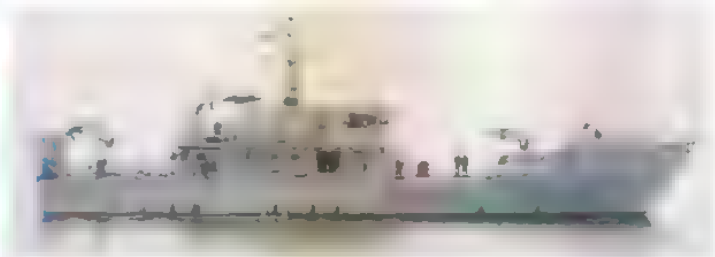
GALATEA 1/2004, Giorgio Ghiglione / 1044371

1 RESEARCH SHIP (AG/AGOR)

Name	No	Builders	Launched	Commissioned
RAFFAELE ROSSETTI	A 5315	Picchiotti, Viareggio	12 July 1986	20 Dec 1986

Displacement, tons: 320 full load
Dimensions, feet (metres): 146.3 × 25.9 × 6.9 (44.6 × 7.9 × 2.1)
Main machinery: 2 Fincantieri Isotta Fraschini ID 36 N 6V diesels; 3,520 hp(m) (2.55 kW) sustained; 2 shafts; cp props; bow thruster
Speed, knots: 17.5
Range, n miles: 700 at 15 kt
Complement: 17 (2 officers)

Comment: Five different design torpedo tubes fitted for above and underwater testing and trials. Other equipment for research into communications, surface and air search as well as underwater weapons. There is a stern doorway which is partially submerged and the ship has a set of 96 batteries to allow 'silent' propulsion. Operated by the Permanent Commission for Experiments of War Materials at La Spezia.



RAFFAELE ROSSETTI 4/2005, Giorgio Ghiglione / 1153247

1 RESEARCH SHIP (AG/AGE)

Name	No	Builders	Commissioned
VINCENZO MARTELLOTTA	A 5320	Picchiotti, Viareggio	22 Dec 1990

Displacement, tons: 340 full load
Dimensions, feet (metres): 146.3 × 25.9 × 7.5 (44.6 × 7.9 × 2.3)
Main machinery: 2 Fincantieri Isotta Fraschini ID 36 SS 16V diesels; 3,520 hp(m) (2.59 MW) sustained; 2 shafts; cp props; bow thruster
Speed, knots: 17. **Range, n miles:** 700 at 15 kt
Complement: 19 (2 officers)

Comment: Launched on 28 May 1988. Has one 21 in (533 mm) and three 12.75 in (324 mm) torpedo tubes and acoustic equipment to operate a 3-D tracking range for torpedoes or underwater vehicles. Like *Rossetti* she is operated by the Commission for Experiments at La Spezia.



VINCENZO MARTELLOTTA 9/2008*, Giorgio Ghiglione / 1335471

TRAINING SHIPS

Notes: (1) In addition to the ships listed the LPDs are used in a training role
 (2) There is a requirement for new training ships to replace the *Aragosta* class but the programme is not funded

1 SAIL TRAINING SHIP (AXS)

Name	No	Builders	Commissioned
AMERIGO VESPUCCI	A 5312	Castellammare	15 May 1931

Displacement, tons: 3,543 standard; 4,146 full load
Dimensions, feet (metres): 229.5 pp; 270 oa hull, 330 oa bowsprit × 51 × 22 (70; 82.4; 100 × 15.5 × 7)
Main machinery: Diesel-electric; 2 Fiat B 306 ESS diesel generators, 2 Marelli motors, 2,000 hp(m) (1.47 MW); 1 shaft
Speed, knots: 10. **Range, n miles:** 5,450 at 6.5 kt
Complement: 243 (13 officers)
Radars: Navigation 2 SMA SPN-748; I-band.

Comment: Launched on 22 March 1930. Hull, masts and yards are of steel. Sail area, 22,604 sq ft. Extensively refitted at La Spezia Naval Dockyard in 1973 and again in 1984. Used for Naval Academy Summer cruise with up to 150 trainees.



AMERIGO VESPUCCI 7/2004, Ships of the World / 1044364

1 SAIL TRAINING SHIP (AXS)

Name	No	Builders	Commissioned
PALINURO (ex-Commandant Louis Richard)	A 5311	Ch Dubigeon, Nantes	1934

Displacement, tons: 1,042 standard; 1,450 full load
 Measurement, tons: 858 gross
 Dimensions, feet (metres): 193.5 x 32.8 x 15.7 (59 x 10 x 4.8)
 Main machinery: 1 GMT A 230 6N diesel, 600 hp (447 kW); 1 shaft
 Speed, knots: 7.5
 Range, n miles: 5,390 at 7.5 kt
 Complement: 69 (6 officers)
 Radars: Navigation, SPN-748; I-band.

Comment: Barquentine launched in 1934. Purchased in 1951. Rebuilt in 1954-55 and commissioned in Italian Navy on 1 July 1955. Sail area, 1,152 sq ft. She was one of the last two French Grand Bank cod-fishing barquentines. Owned by the Armement Glâtre she was based at St Malo until bought by Italy. Used for seamanship basic training



PALINURO 10/2008*, Giorgio Ghiglione / 1335480

3 ARAGOSTA (HAM) CLASS (AXL)

ASTICE A 5379	MITILO A 5380	PORPORA A 5382
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Displacement, tons: 188 full load
 Dimensions, feet (metres): 106 x 21 x 6 (32.5 x 6.4 x 1.8)
 Main machinery: 2 Fiat-MTU 12V 493 TY7 diesels; 2,200 hp(m) (1.62 MW) sustained; 2 shafts
 Speed, knots: 14
 Range, n miles: 2,000 at 9 kt
 Complement: 13 (2 officers)
 Radars: Navigation: BX 732; I-band.

Comment: Builders: CRDA, Monfalcone; *Astice*, Picchiotti, Viareggio; *Mitilo*, Costaguta, Voltri; *Porpora*. Similar to the late UK Ham class. All constructed to the order of NATO in 1955-57. Designed armament of one 20 mm gun not mounted. Originally class of 20. Remaining three converted for training 1986. *Porpora* used by the Naval Academy. *Astice* has a modified bridge structure. To be decommissioned in 2012.

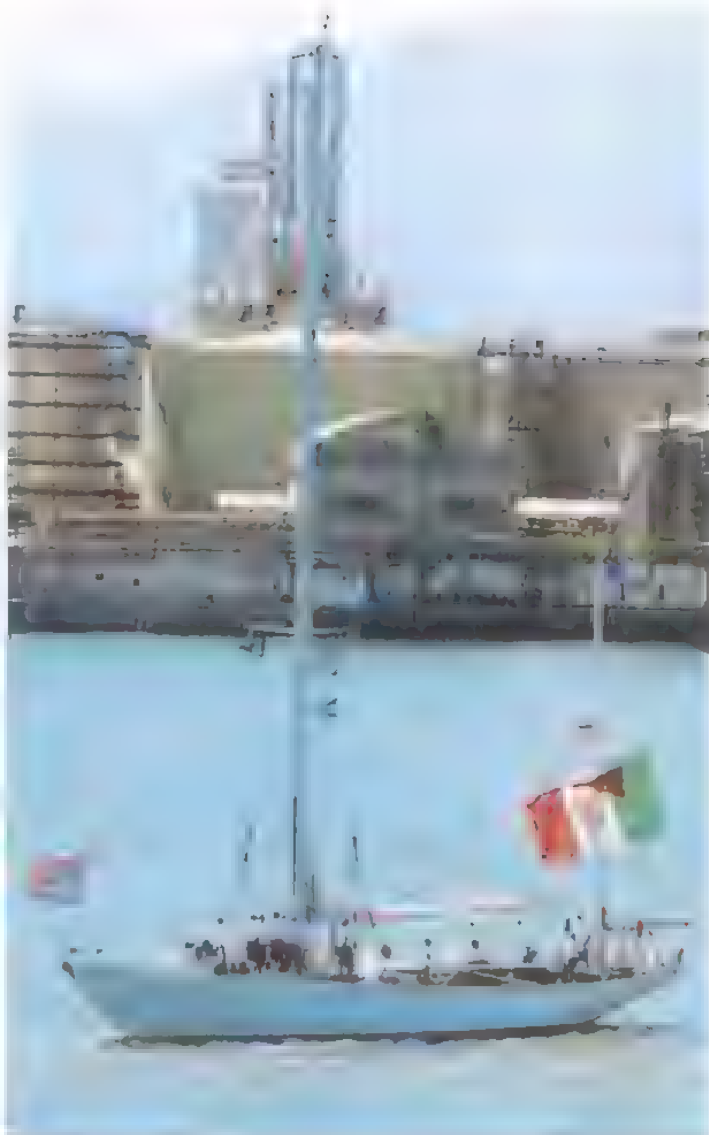


ASTICE 1/2008*, Giorgio Ghiglione / 1335477

5 SAIL TRAINING YACHTS (AXS)

Name	No	Builders	Commissioned
CAROLY	A 5302	Baglietto, Varazze	1948
STELLA POLARE	A 5313	Sangermani, Chiavari	8 Oct 1965
CORSARO II	A 5316	Costaguta, Voltri	5 Jan 1961
CAPRICIA	A 5322	Bengt-Plym	1963
ORSA MAGGIORE	A 5323	Tencara, Venezia	1994

Comment: The first three are sail training yachts between 40 and 60 tons with a crew including trainees of about 16. *Capricia* is a yawl of 55 tons and was donated by the Agnelli foundation as replacement for *Cristoforo Colombo II* which was not completed when the shipyard building her went bankrupt. *Capricia* commissioned in the Navy 23 May 1993. *Orsa Maggiore* is a ketch of 70 tons.



STELLA POLARE 7/2007, Giorgio Ghiglione / 1166587

1 SAIL TRAINING SHIP (AXS)

ITALIA

Displacement, tons: 32 full load
 Dimensions, feet (metres): 61.0 x 9.2 x 7 (200.0 x 30.2 x 7)
 Main machinery: 1 diesel; 490 hp (358 kW)
 Complement: 10 plus 100 passengers

Comment: The world's largest brigantine donated by the Italian Yacht Club to the Italian Navy in 2008. The vessel has 1,300 m² of sails.



ITALIA 6/2008*, Annati Collection / 1335388

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RESCUE VEHICLES

1 RESCUE SUBMERSIBLE

SRV 300

Displacement, tons: 27
Dimensions, feet (metres): 27.7 × 10.2 × 10.4 (8.46 × 3.13 × 3.17)
Main machinery: 1 electric motor; 27 hp (20 kW); 2 transverse/vertical thrusters; 27 hp (20 kW)
Speed, knots: 2.5. **Range, n miles:** 15 at 2 kt
Complement: 2

Comment: Free-swimming Submarine Rescue Vehicle (SRV) built by Drass Galeazzi Srl which entered service in 2005. The SRV can be launched and recovered in up to Sea State 3 from *Anteo* or a suitably equipped commercial or military 'mothership' equipped with a portable launch-and-recovery system. SRV 300 can mate at up to angles of 45° and is capable of rescuing groups of up to 12 at a time. Capable of reaching depths down to 300 m, the vehicle is equipped with an external manipulator and underwater television cameras



SRV 300

6/2008*, Italian Navy / 1305307

AUXILIARIES

Notes: (1) It is planned to replace *Stromboli* and *Vesuvio* with two new Logistic Support ships. The broad requirement is for double-hulled ships, to comply with MARPOL regulations, of about 18,000 tons displacement and capable of 20 kt. Equipped with two RAS fuel stations per side, one stern fuel station and one RAS solid station per side, the ships are to carry of the order of 6,400 cum F76 diesel, 1,500 cum F44 aviation fuel, 1,000 cum fresh

water, 300 tons of aviation and naval ordnance, 120 tons of provisions and spares and space for 12 TEU containers. There is to be a hangar for one EH-101 and a 20-bed hospital to provide role 2 medical support. The complement is to be approximately 165 with accommodation for over 200. An order is expected in 2012.

(2) Replacement of the submarine-rescue and deep-diving support capability by an Underwater Support Ship

is under consideration. The preferred solution to replace *Anteo* and the decommissioned *Proteo* is likely to be the lease of a purpose-built platform capable of acting as mother-ship for a submarine rescue system as well as support for deepwater divers and MCM. A contract is expected in 2009

1 ETNA CLASS (REPLENISHMENT TANKER) (AORH)

Name	No	Builders	Laid down	Launched	Commissioned
ETNA	A 5326	Fincantieri, RivaTrigoso	4 July 1995	12 July 1997	29 Aug 1998

Displacement, tons: 13,400 full load
Dimensions, feet (metres): 480.6 × 68.9 × 24.3 (146.5 × 21 × 7.4)
Flight deck, feet (metres): 91.9 × 68.9 (28 × 21)
Main machinery: 2 Sulzer 12 ZAV 40S diesels; 22,400 hp(m) (16.46 MW) sustained, 2 shafts, bow thruster
Speed, knots: 21
Range, n miles: 7,600 at 18 kt

Complement: 162 (14 officers) plus 81 spare
Cargo capacity: 6,350 tons gas oil; 1,200 tons JP5; 2,100 m³ ammunition and stores
Guns: 1 OTO Melara 76 mm/62. 2 Breda Oerlikon 25 mm/93.
Radars: Surface search: SMA SPS-702(V)3; I-band.
Navigation: GEM SPN 753; I-band.
Helicopters: 1 EH 101 Merlin or SH-3D or 2 AB 212.

Comment: Details revised in 1992 for an order 29 July 1994. Construction authorised on 3 January 1995. The main gun is not fitted, and the specification includes a CIWS on the hangar roof. Two RAS stations on each side. A similar ship has been built for Greece. A major upgrade to C⁴ capability has given the ship a Maritime Component Commander capability. A mid-life update is planned 2014–15.



ETNA

3/2008*, Michael Nitz / 1335381

2 STROMBOLI CLASS (REPLENISHMENT TANKERS) (AORH)

Name	No	Builders	Launched	Commissioned
STROMBOLI	A 5327	Fincantieri, Riva Trigoso	20 Feb 1975	20 Nov 1975
VESUVIO	A 5328	Fincantieri, Muggiano	4 June 1977	18 Nov 1978

Displacement, tons: 3,556 light, 8,708 full load
Dimensions, feet (metres): 423.1 × 59 × 21.3 (129 × 18 × 6.5)
Main machinery: 2 GMT C428 SS diesels; 9,600 hp(m) (7.06 MW); 1 shaft; LIPS cp prop
Speed, knots: 18.5. **Range, n miles:** 5,080 at 18 kt
Complement: 131 (10 officers)
Cargo capacity: 3,000 tons FPO; 1,000 tons dieso; 400 tons JP5. 300 tons other stores
Guns: 1 OTO Melara 3 in (76 mm)/62. 1–40 mm. 2–25 mm.
Weapons control: Argo NA 10 system.
Raders: Surface search. SMA SPQ-2; I-band.
Navigation: SMA SPN-748; I-band.
Fire control: Selenia SPG-70 (RTN 10X), I/J-band
Helicopters: Platform for 1 medium.

Comment: *Vesuvio* was the first large ship to be built at Muggiano (near La Spezia) since the Second World War and the first with funds under Legge Navale 1975. Beam and stern refuelling stations for fuel and stores. Also Vertrep. The two ships have different midships crane arrangements. Similar ship built for Iraq and laid up in Alexandria since 1986. 20 mm guns replaced by 25 mm from 2002. To remain in service until replaced by Logistic Support Ships from about 2014.



VESUVIO

10/2007, Giorgio Ghiglione / 1166588

4 MCC 1101 CLASS (WATER TANKERS) (AWT)

PANAREA (ex-MCC 1101) A 5370	FAVIGNANA (ex-MCC 1103) A 5372
LINOSA (ex-MCC 1102) A 5371	SALINA (ex-MCC 1104) A 5373

Displacement, tons: 898 full load
Dimensions, feet (metres): 155.2 × 32.8 × 10.8 (47.3 × 10 × 3.3)
Main machinery: 2 Fincantieri Isotta Fraschini ID 38 SS 6V diesels; 1,320 hp(m) (970 kW) sustained; 2 shafts
Speed, knots: 13
Range, n miles: 1,500 at 12 kt
Complement: 12 (2 officers)
Cargo capacity: 550 tons
Raders: Navigation: SPN-753; I-band.

Comment: Built by Ferrari, La Spezia and completed one in 1986, two in May 1987, one in May 1988



FAVIGNANA

7/2003, Giorgio Ghiglione / 0570663

1 BORMIDA CLASS (WATERTANKER) (AWT)**BORMIDA** (ex-GGS 1011) A 5359

Displacement, tons: 736 full load
Dimensions, feet (metres): 131.9 × 23.6 × 10.5 (40.2 × 7.2 × 3.2)
Main machinery: 1 diesel; 130 hp(m) (95.6 kW); 1 shaft
Speed, knots: 7
Complement: 11 (1 officer)
Cargo capacity: 260 tons

Comment: Converted at La Spezia in 1974.

**BORMIDA** 9/2002, Giorgio Ghiglione / 0528367**2 SIMETO CLASS (WATERTANKERS) (AWT)**

Name	No	Builders	Commissioned
TICINO	A 5378	Poli Shipyard, Pellestrina	10 June 1994
TIRSO	A 5377	Poli Shipyard, Pellestrina	12 Mar 1994

Displacement, tons: 1,858 full load; 1,968 (*Ticino* and *Tirso*) full load
Dimensions, feet (metres): 229 × 33.1 × 14.4 (69.8 × 10.1 × 4.1)
Main machinery: 2 GMT B 230.6 BL diesels; 2,530 hp(m) (1.86 MW) sustained; 2 shafts; cp props; bow thruster; 300 hp(m) (220 kW)
Speed, knots: 13. **Range, n miles:** 1,800 at 12 kt
Complement: 36 (3 officers)
Cargo capacity: 1,130 tons; 1,200 tons (*Ticino* and *Tirso*)
Guns: 1 20 mm/70. 2—762 mm MGs can be carried
Radars: Navigation: 2 SPN-753B(V); I-band.

Comment: Guns are not normally carried. *Simeto* transferred to Tunisia on 30 June 2003.

**TICINO** 2/2006, Maritime Photographic / 1154402**5 PONZA CLASS (LIGHTHOUSE TENDERS) (ABU)**

Name	No	Builders	Commissioned
PONZA	A 5364	Morini Yard, Ancona	9 Dec 1988
LEVANZO	A 5368	Morini Yard, Ancona	24 Jan 1989
TAVOLARA	A 5367	Morini Yard, Ancona	12 Apr 1989
PALMARIA	A 5368	Morini Yard, Ancona	12 May 1989
PROCIDA	A 5383	Morini Yard, Ancona	14 Nov 1990

Displacement, tons: 608 full load
Dimensions, feet (metres): 186 × 35.4 × 8.2 (56.7 × 10.8 × 2.5)
Main machinery: 2 Fincantieri Isoita Fraschini ID 36 SS 8V diesels; 1,760 hp(m) (1.29 MW) sustained; 2 shafts; cp props; bow thruster; 120 hp(m) (88 kW)
Speed, knots: 14.5
Range, n miles: 1,500 at 14 kt
Complement: 34 (2 officers)
Guns: 2—762 mm MGs
Radars: Navigation: SPN-732; I-band

Comment: MTF 1304-1308. Similar to MTC 1011 class.

**PALMARIA** 8/2004, Giorgio Ghiglione / 1044375**6 MTC 1011 CLASS (RAMPED TRANSPORTS) (AKL)**

Name	No	Builders	Commissioned
GORGONA (1011)	A 5347	CN Mario Marini	23 Dec 1988
TREMITI (1012)	A 5348	CN Mario Marini	2 Mar 1987
CAPRERA (1013)	A 5349	CN Mario Marini	10 Apr 1987
PANTELLERIA (1014)	A 5351	CN Mario Marini	26 May 1987
LIPARI (1015)	A 5352	CN Mario Marini	10 July 1987
CAPRI (1016)	A 5353	CN Mario Marini	16 Sep 1987

Displacement, tons: 631 full load
Dimensions, feet (metres): 186 × 32.8 × 8.2 (56.7 × 10 × 2.5)
Main machinery: 2 CRM 12D/SS diesels; 1,760 hp(m) (1.29 MW); 2 shafts
Speed, knots: 14.5. **Range, n miles:** 1,500 at 14 kt
Complement: 32 (4 officers)
Guns: 1 Oerlikon 20 mm (fitted for). 2—762 mm MGs.
Radars: Navigation: SMA SPN-748; I-band.

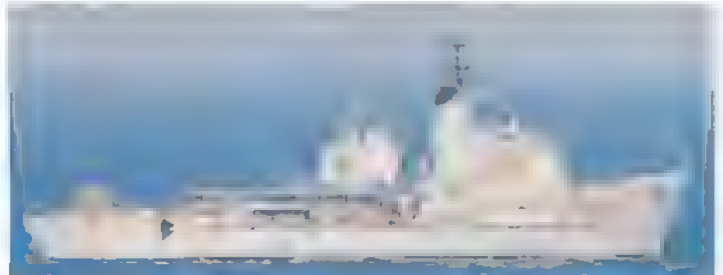
Comment: As well as transporting stores, oil or water they can act as support ships for Light Forces, salvage ships or minelayers. Stern ramp fitted. 1011 based at La Spezia, 1012 at Ancona, 1013 at La Maddalena and 1014 at Taranto. To be decommissioned 2012-13.

**CAPRI** 4/2008, Giorgio Ghiglione / 1335473**1 SALVAGE SHIP (ARSH)**

Name	No	Builders	Launched	Commissioned
ANTEO	A 5309	C N Breda-Mestre	11 Nov 1978	31 July 1980

Displacement, tons: 3,200 full load
Dimensions, feet (metres): 322.8 × 51.8 × 16.7 (98.4 × 15.8 × 5.1)
Main machinery: 2 GMT A 230.12 diesels, 5,000 hp(m) (3.68 MW); 2 motors; 6,000 hp(m) (4.41 MW); 1 shaft; 2 bow thrusters; 1,000 hp(m) (735 kW)
Speed, knots: 20. **Range, n miles:** 4,000 at 14 kt
Complement: 121 (including salvage staff)
Guns: 2 Oerlikon 20 mm/70 fitted during deployments.
Radars: Surface search: SMA SPN-751; I-band.
Navigation: SMA SPN-748; I-band.
Helicopters: 1 AB 212.

Comment: Ordered mid-1977. Comprehensively fitted with flight deck and hangar, extensive salvage gear, including rescue bell and recompression chambers. Carries four lifeboats of various types. Three firefighting systems. Full towing equipment. Carries midget submarine, *Usoi*, of 13.2 tons dived with dimensions 26.2 × 8.2 × 8.9 ft (8 × 1.9 × 2.7 m). Carries SRV 300 rescue vehicle, launched and recovered from the stern, and a McCann diving bell. An atmospheric diving suit or 'newsuit' can also be deployed. To be replaced by Underwater Support Ship in about 2012.

**ANTEO** 7/2007, Marco Ghiglione / 1170077**7 DEPOLI CLASS TANKERS (AOTL/AWT)**

GRS 1012-1014	GRS/G 1010-1012	GRS/J 1013
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Dimensions, feet (metres): 128.3 × 27.9 × 10.2 (39.1 × 8.5 × 3.1)
Main machinery: 2 diesels; 748 hp(m) (550 kW); 2 shafts
Speed, knots: 11
Complement: 12
Cargo capacity: 500 m³ liquids
Radars: Navigation: I-band.

Comment: Built by DePoli and delivered between February 1990 and February 1991. The GGS series is for water, GRS/G for fuel and GRS/J for JP5.

**GRS 1012** 5/2005, Giorgio Ghiglione / 1153240

1 MEN 212 CLASS (YPT)

MEN 212

Displacement, tons: 32 full load
Dimensions, feet (metres): 58.4 x 16.7 x 3.3 (17.8 x 5.1 x 1)
Main machinery: 2 HP diesels; 1,380 hp(m) (1.01 MW); 2 shafts
Speed, knots: 22 **Range, n miles:** 250 at 20 kt
Complement: 4
Radars: Navigation: SPN-732; I-band.

Comment: Torpedo Recovery Vessel completed in October 1983 by Crestitalia. GRP construction with a stern ramp. Capacity for up to three torpedoes.



MEN 212 8/2003, P Marsan / 0570664

2 MEN 215 CLASS (YFU/YFB)

MEN 215 **MEN 216**

Displacement, tons: 82 full load
Dimensions, feet (metres): 89.6 x 23 x 3.6 (27.3 x 7 x 1.1)
Main machinery: 2 Isotta Fraschini ID 36 SS 12V diesels; 2,640 hp(m) (1.94 MW) sustained; 2 shafts
Speed, knots: 28 **Range, n miles:** 250 at 14 kt
Complement: 4
Radars: Navigation: SPN-732; I-band.

Comment: Fast personnel launches completed in June 1986 by Crestitalia. Can also be used for amphibious operations or disaster relief. One is based at La Spezia and one in Taranto, where they are used as local ferries.



MEN 216 3/1998, Giorgio Ghiglione / 0052424

HARBOUR CRAFT

Comment: There are large numbers of naval manned harbour craft with MDN, MCN, MBN and MEN numbers. *Argo* (ex-MEN 209) is being used as a Presidential yacht. There is also a ferry *Cheradi* Y 402 at Taranto. Craft with VF numbers are non-naval.



MCN 1634 5/2001, L-G Nilsson / 0130349



ARGO 5/2000, Giorgio Ghiglione / 0104891

19 FLOATING DOCKS

Number	Date	Capacity-tons
GO 1	1942	1,000
GO 5	1893	100
GO 8	1904	3,800
GO 10	1900	2,000
GO 11	1920	2,700
GO 17	1917	500
GO 18A	1920	800
GO 18B	1920	600
GO 20	1935	1,600
GO 22-23	1935	1,000
GO 51	1971	2,000
GO 52-54	1988-93	6,000
GO 55-57	1995-96	850
GO 58	1995	2,000

Comment: Stationed at La Spezia (GO 52), Augusta (GO 53) and Taranto (GO 54).

TUGS

7 OCEAN TUGS (ATR)

PROMETEO A 5318	POLIFEMO A 5325	SATURNO A 5330
CICLOPE A 5319	GIGANTE A 5328	TENACE A 5365
TITANO A 5324		

Displacement, tons: 658 full load
Dimensions, feet (metres): 127.6 x 32.5 x 12.1 (38.9 x 9.9 x 3.7)
Main machinery: 2 GMT B 230.8 M diesels; 3,970 hp(m) (2.02 MW) sustained; 2 shafts; LIPS cp props
Speed, knots: 14.5
Range, n miles: 3,000 at 14 kt
Complement: 12
Radars: Navigation: SPN-748; I-band

Comment: Details given are for all except A 5318. Built by CN Ferrari, La Spezia. Completed *Ciclope*, 5 September 1985; *Titano*, 7 December 1985; *Polifemo*, 21 April 1986; *Gigante*, 18 July 1986; *Saturno* 5 April 1988 and *Tenace* 9 July 1988. All fitted with firefighting equipment and two portable submersible pumps. Bollard pull 45 tons. *Prometeo* was completed 14 August 1975 and is slightly larger at 746 tons and has single engine propulsion.



TITANO 3/2008*, Giorgio Ghiglione / 1335A/A



POLIFEMO 9/2002, Martin Mokrus / 0528363

9 COASTAL TUGS (YTB)

PORTO FOSSONE Y 413 PORTO EMPEDOCLE Y 421 PORTO FERRAIO Y 425
 PORTO TORRES Y 416 PORTO PISANO Y 422 PORTO VENERE Y 426
 PORTO CORSINI Y 417 PORTO CONTE Y 423 PORTO SALVO Y 428

Displacement, tons: 412 full load
 Measurement, tons: 122 dwt
 Dimensions, feet (metres): 108.3 × 27.9 × 12.8 (32.4 × 8.5 × 3.9)
 Main machinery: 1 GMT B 230.8 M diesels; 1,600 hp(m) (1.18 MW) sustained; 1 shaft; cp prop
 Speed, knots: 12.7 Range, n miles: 4,000 at 12 kt
 Complement: 13
 Radars: Navigation: GEM BX 132; I-band

Comment: Details given are for all except Y 436 and 443. Six ordered from CN De Poli (Pellestrina) and further three from Ferbex (Naples) in 1986. Delivery dates: *Porto Salvo* (13 September 1985), *Porto Pisano* (22 October 1985), *Porto Ferraiolo* (20 July 1985), *Porto Conte* (21 November 1985), *Porto Empedocle* (19 March 1986), *Porto Venera* (16 May 1989), *Porto Fossone* (24 September 1990), *Porto Torres* (16 January 1991) and *Porto Corsini* (4 March 1991). Fitted for firefighting and anti-pollution. Carry a 1-ton telescopic crane. Based at Taranto, La Spezia, Augusta and La Maddalena. *Porto d'Ischia* transferred to Tunisia in 2002 and *Riva Trigoso* decommissioned.



PORTO TORRES

9/2008, Giorgio Ghiglione / 1335475

32 HARBOUR TUGS (YTM)

RP 101 Y 403W (1972)	RP 113 Y 463 (1978)	RP 125 Y 478 (1983)
RP 102 Y 404 (1972)	RP 114 Y 464 (1980)	RP 126 Y 479 (1983)
RP 103 Y 406 (1974)	RP 115 Y 465 (1980)	RP 127 Y 480 (1984)
RP 104 Y 407 (1974)	RP 116 Y 466 (1980)	RP 128 Y 481 (1984)
RP 105 Y 408 (1974)	RP 118 Y 468 (1980)	RP 129 Y 482 (1984)
RP 106 Y 410 (1974)	RP 119 Y 470 (1980)	RP 130 Y 483 (1985)
RP 108 Y 452 (1975)	RP 120 Y 471 (1980)	RP 131 Y 484 (1985)
RP 109 Y 456 (1975)	RP 121 Y 472 (1984)	RP 132 Y 485 (1985)
RP 110 Y 458 (1975)	RP 122 Y 473 (1981)	RP 133 Y 486 (1985)
RP 111 Y 460 (1975)	RP 123 Y 467 (1981)	RP 134 Y 487 (1985)
RP 112 Y 462 (1975)	RP 124 Y 477 (1981)	

Displacement, tons: 120 full load
 Dimensions, feet (metres): 64.9 × 17.1 × 6.9 (19.8 × 5.2 × 2.1)
 Main machinery: 1 Fiat diesel; 368 hp (270 kW); 1 shaft
 Speed, knots: 9.5

Comment: RP 101-124 built by Vistini, Dorada 1972-81. RP 125-134 are larger tugs as shown in details.



RP 129

11/2004, Declerck/Cracco / 1043167



RP 124

9/2008, Giorgio Ghiglione / 1335481

ARMY

Notes: The following units are operated by the 'Serenissima Amphibious Regiment' in the Venice Lagoons area. EIG means Italian Army Craft and is part of the hull number. Four LCM (EIG 28-31), 60 tons; two LCVP (EIG 26, 27), 13 tons; four recce craft (EIG 32, 33, 48, 49), 5 tons; two command craft (EIG 208, 210), 21.5 tons; one rescue tug (EIG 209), 45 tons; one inshore tanker (EIG 44), 95 tons; one ambulance and rescue craft (EIG 142) and about 70 minor craft (ferries, barges, river boats, rigid inflatable raiders).



ARMY CRAFT

7/1993, van Ginderen Collection / 0375865

GOVERNMENT MARITIME FORCES

Notes: Consideration has been given to combine all these forces into one Coast Guard.

CUSTOMS (SERVIZIO NAVALE GUARDIA DI FINANZA)

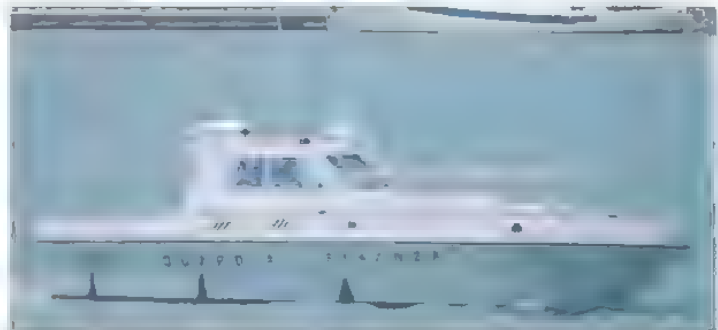
Notes: (1) The force is operated by the Ministry of Finance but in time of war would come under the command of the Marina Militare. The force is organised into five air-naval task groups based at La Spezia, Cagliari, Taranto, Messina and Trapani. Each is composed of one command craft (Zere or Mazzei classes), six to nine FPS (Bigliani or Corrubia classes), three to four AB-412HP helicopters and up to two NH-500 helicopters. All the fixed-wing aircraft (12 P-166 (being upgraded to DP1 configuration) and three ATR-42) are based at Pratica di Mare within the Air Scouting Squadron. Other components include a technical-logistic support centre at Nisida and the Nautical Training Centre at Gaeta. There are a further 14 minor bases.

(2) In addition to the classes detailed, there is a large number of smaller (under 15 m) craft. These include: 30 V 5500 class (12.5 m); 18 V 5800 class (12.6 m); 26 VAI 200 class (9.9 m)



ATR-42

8/2006, Frank Findler / 1166500



V 5538

4/2006, M Declerck / 1158772

1 TRAINING SHIP (AX)

GIORGIO CINI

Displacement, tons: 800 full load
 Dimensions, feet (metres): 172.2 × 32.8 × 9.5 (54.0 × 10.0 × 2.9)
 Main machinery: 1 Fiat B306-SS diesel; 1,500 hp (1.1 MW); 1 shaft
 Speed, knots: 14
 Range, n miles: 800 at 14 kt
 Radars: Navigation: 2 BX-732; I-band

Comment: Former merchant navy training ship acquired in 1981 for training role.



GIORGIO CINI

10/2008, Giorgio Ghiglione / 1335487

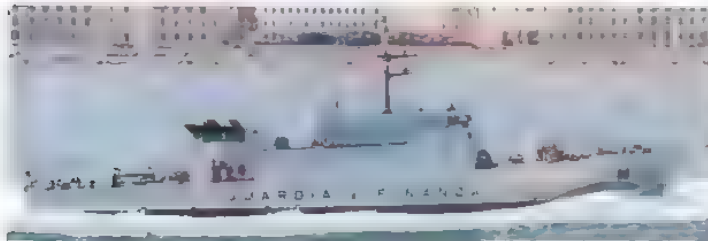
410 Italy/Government maritime forces

1 ANTONIO ZARA CLASS (PB)

Name	No	Builders	Commissioned
GIOVANNI DENARO	P 03	Fincantieri, Muggiano	20 Mar 1998

Displacement, tons: 340 full load
Dimensions, feet (metres): 167 x 24.6 x 8.2 (51 x 7.5 x 1.9)
Main machinery: 2 GMT BL 230 12 M diesels; 5,956 hp(m) (4.38 MW) sustained; 2 shafts
 4 MTU 16V 396 TB94 diesels; 13,029 hp(m) (9.58 MW) sustained; 2 shafts (P 03)
Speed, knots: 27, 35 (P 03)
Range, n miles: 3,800 at 15 kt
Complement: 33 (3 officers)
Guns: 1 or 2 Breda 30 mm/70 (single or twin), 2—7.62 mm MGs.
Weapons control: Selenia Pegaso or AESN Medusa (P 03) optronic director.
Radars: Surface search: Gemant 2 ARPA and SPN 749, I-band.

Comment: Similar to the Ratcharit class built for Thailand in 1976–79. First pair ordered in August 1987. Third ordered in October 1995 with more powerful engines and with a modified armament of a single 30 mm gun with a Medusa optronic director. All are fitted with an infra-red search and surveillance sensor (AMS SVIR). The first pair were decommissioned in 2007.



GIOVANNI DENARO 6/2006, Guardia di Finanza / 1158732

9 MAZZEI CLASS (PB/YXT)

Name	No	Builders	Commissioned
MAZZEI	G 01	Intermarine, Sarzana	Apr 1998
VACCARO	G 02	Intermarine, Sarzana	May 1998
DI BARTOLO	G 03	Intermarine, Sarzana	Oct 2003
AVALLONE	G 04	Intermarine, Sarzana	Dec 2003
OLTRAMONTI	G 05	Intermarine, Sarzana	Apr 2004
BARBARISO	G 06	Intermarine, Sarzana	Jan 2007
PAOLINI	G 07	Intermarine, Sarzana	Apr 2007
GRECO	G 08	Intermarine, Sarzana	Feb 2008
CINULI	G 09	Intermarine, Sarzana	Apr 2008

Displacement, tons: 138 full load
Dimensions, feet (metres): 116.5; 119.7 (G 08, G 09) x 24.8 x 3.6 (35.5, 36.5 x 7.6 x 1.1)
Main machinery: 2 MTU 16V 396 TB94 (MTU 16V 4000 M 90 G 08, G 09) diesels; 5,800 hp(m) (4.26 MW) sustained; 2 shafts
Speed, knots: 35. **Range, n miles:** 700 at 18 kt
Complement: 19 + 18 trainees (G 01 and G 02)
Guns: 1 Breda Mauser 30 mm/70. 2 7.62 mm MGs.
Weapons control: Elsag Medusa optronic director.
Radars: GEM 3072A ARPA; I-band.
Navigation: GEM 1410; I-band.

Comment: Based on the Bigliani class but with an extended hull. G 01 and G 02 used as training ships. All are being fitted with an infra-red search and surveillance sensor (AMS SVIR). G 03-09 are used as command units for air-naval task group.



DI BARTOLO 8/2007, Marco Ghiglino / 1170074

22 + 5 BIGLIANI CLASS (PB)

OTTONELLI G 78	FORTUNA G 85	INZUCCHI G 118	FUSCO G 125
BARLETTA G 79	BUONOCORE G 86	VITALI G 119	DE ROSA G 126
BIGLIANI G 80	SQUITIERI G 87	CALABRESE G 120	ZACCOLA G 127
CAVAGLIA G 81	LA MALFA G 88	URSO G 121	STANISCI G 128
GALIANO G 82	ROSATI G 89	LA SPINA G 122	SOTTILE G 129
MACCHI G 83	LAGANA G 116	SALONE G 123	DE FALCO G 130
SMALTO G 84	SANNA G 117	CAVATORTO G 124	

Displacement, tons: 87 (98 G 126-130) full load
Dimensions, feet (metres): 86.6; 94.5 (G 126-130) x 23 x 3.8 (26.4, 28.8 x 7 x 1.1)
Main machinery: 2 MTU 16V 396 TB94 diesels; 6,850 hp(m) (5.12 MW) sustained; 2 shafts
Speed, knots: 42 **Range, n miles:** 770 at 18 kt
Complement: 12
Guns: 1 Breda Mauser 30 mm/80. 2—7.62 mm MGs. 1 Breda 12.7 mm.
Combat data systems: AMS IPNS.
Weapons control: Elsag Medusa Mk 4 optronic director.
Radars: Surface search: GEM 3072A ARPA, I-band.
Navigation: GEM 1410; I-band.

Comment: First eight built by Crestitalia and delivered from October 1987 to September 1992. Three more were ordered from Crestitalia/Intermarine in October 1994 and were delivered from December 1996 to April 1997. A fourth was delivered in late 1999. There are minor structural differences between Series I (G 80-81), Series II (G 82-87) and Series III (G 78-79, G 88-89). Ten series IV (G 116-125) craft ordered from Intermarine, Sarzana, for delivery in 2004-06. These include Kevlar armour and are fitted with a remote-control Breda 12.7 mm gun and 40 mm grenade launcher. All are being fitted with an infra-red search and surveillance sensor (AMS SVIR). A further five craft (G 126-130) are under construction. These are stretched versions to be delivered in 2009.



LAGANA 6/2007, Marco Ghiglino / 1170073

24 CORRUBIA CLASS (PBF)

ALBERTI G 92	FELICIANI G 98	APRUZZI G 104	LETIZIA G 110
ANGELINI G 93	GARZONI G 99	BALLALI G 105	MAZZARELLA G 111
CAPPELLETTI G 94	LIPPI G 100	BOVIENZO G 106	NIOI G 112
CIORLIERI G 95	LOMBARDI G 101	CARRECA G 107	PARTIPILO G 113
D'AMATO G 96	MICCOLI G 102	CONVERSANO G 108	PULEO G 114
FAIS G 97	TREZZA G 103	INZERILLI G 109	ZANNOTTI G 115

Displacement, tons: 92 full load
Dimensions, feet (metres): 87.9 x 24.9 x 3.9 (26.8 x 7.6 x 1.2)
Main machinery: 2 Isotta Fraschini ID 36 SS 16V diesels; 6,400 hp(m) (4.7 MW); 2 shafts (G 90-91)
 2 MTU 16V 396 TB94; 5,800 hp(m) (4.26 MW) sustained; 2 shafts (G 92-103)
Speed, knots: 43. **Range, n miles:** 700 at 20 kt
Complement: 12 (1 officer)
Guns: 1 Breda Mauser 30 mm/70 (G 90-103). 1 Astra 20 mm (G 104-115). 2—7.62 mm MGs.
Weapons control: Elsag Medusa optronic director.
Radars: Surface search: GEM 3072A ARPA; I-band
Navigation: GEM 1210; I-band.

Comment: First two built by Cantieri del Golfo, Gaeta, delivered in 1990 and decommissioned in 2007. Others built by Cantieri del Golfo (G 92-100), and Crestitalia (G 101-103), and Intermarine from 1996 onwards. G 115 completed in 1999. There are minor structural differences between the second series (G 92-103) and the third batch (G 104-115). All are being fitted with an infra-red search and surveillance sensor (AMS SVIR).



CONVERSANO 6/2005, Marco Ghiglino / 1153210

16 MEATINI CLASS

G 26	G 44	G 49	G 56-58	G 64-65
G 40	G 46-47	G 50-52	G 60-61	

Displacement, tons: 40 full load
Dimensions, feet (metres): 65.9 x 17.1 x 3.3 (20.1 x 5.2 x 1)
Main machinery: 2 CRM 18D/52 diesels; 2,500 hp(m) (1.84 MW); 2 shafts
Speed, knots: 34. **Range, n miles:** 550 at 20 kt
Complement: 11 (1 officer)
Guns: 1—12.7 mm MG
Radars: Surface search: 1 GEM 1210; I-band.

Comment: Fifty-six of the class built from 1970 to 1978. Replacement by new craft is in progress.



DARIDA 4/2004, Giorgio Ghiglione / 1044378

5 + 18 BURATTI CLASS (PB)

BURATTI G 200	CORRIAS G 206	LA PICCIRELLA G 212	PICCINNI LEOPARDI G 218
DE IANNI G 201	CORTILE G 207	PERISSINOTTO G 213	BIANCO G 219
SALERNO G 202	CASOTTI G 208	ROCCA G 214	STARACE G 220
ROSSI G 203	PRATA G 209	BERTOLDI G 216	CULTRONA G 221
GARULLI G 204	MARRA G 210	VERDECCHIA G 216	BENVENUTI G 222
SANGES G 205	GOTTARDI G 211	DE SANTIS G 217	

Displacement, tons: 55 full load
 Dimensions, feet (metres): 72.2 x 17.7 x 6.6 (22.0 x 5.4 x 2.0)
 Main machinery: 2 MTU 12V2000-M93 diesels, 3,595 hp(m) (2.68 MW) sustained; 2 shafts
 Speed, knots: 33. Range, n miles: 850 at 25 kt
 Complement: 8
 Radars. Surface search: To be announced

Comment: A total of 23 of a new class of craft to replace the Meattini class ordered from Intermarine in September 2006. The first two craft commissioned in March 2008.



BURATTI 6/2008*, Annati Collection / 1335396

32 V 5000/6000 CLASS (FAST PATROL CRAFT) (HSIC)

V 5000-5020 V 5100 V 6003-6012

Displacement, tons: 16 (V 6000), 27 (V 5000) full load
 Dimensions, feet (metres): 53.8 x 9.2 x 2.6 (16.4 x 2.8 x 0.8)
 Main machinery: 4 Seatek 6-4V-10D diesels; 2,856 hp(m) (2.13 MW) sustained; 4 surface-piercing propellers
 2 MTU 8V 396 TE94 diesels (V 5000)
 Speed, knots: 70 (V 6000), 52 (V 5000)
 Complement: 4
 Radars. Surface search: I-band

Comment: V 6003-6012 were delivered in 2002-03.



V 6006 6/2005, Marco Ghiglini / 1153709



V 5006 6/2001, Guardia di Finanza 01.30143

34 + 36 V 2000 CLASS (FAST PATROL CRAFT) (PBF)

V 2000-2033

Displacement, tons: 11 full load
 Dimensions, feet (metres): 43.3 x 11.2 x 2.9 (13.2 x 3.4 x 0.9)
 Main machinery: 2 Seatek 600 diesels; 1,240 hp(m) (925 kW) sustained; 2 Kamewa waterjets
 Speed, knots: 45. Range, n miles: 380 at 33 kt
 Complement: 4
 Radars. Surface search: GEM SC412; I-band.

Comment: Constructed by Cantieri Navali, Vittoria. Twenty-eight delivered by 2007. A total of 70 craft to be built.



V 2012 7/2007, Giorgio Ghiglini / 1166589

35 V 600 FALCO CLASS (FAST PATROL CRAFT) (PCF)

V 601-635

Displacement, tons: 4 full load
 Dimensions, feet (metres): 33.5 x 9.2 x 2.6 (10.2 x 2.8 x 0.8)
 Main machinery: 2 VM MD 706 diesels
 Speed, knots: 54. Range, n miles: 200 at 33 kt
 Complement: 4
 Radars. Surface search: I-band.

Comment: FB design RIB designed for high-speed interception work. First prototype delivered in 2001



V 612 6/2007, Marco Ghiglini / 1166568

COAST GUARD (GUARDIA COSTIERA—CAPITANERIE DI PORTO)

Notes: This is a force which is affiliated with the Marina Militare under whose command it would be placed in an emergency. The Coast Guard denomination was given after the Sea Protection Law in 1988. The force is responsible for the Italian Maritime Rescue Co-ordination Centre (MRCC) in Rome and 13 sub-centres (MRSC). The SAR network consists of 109 stations, three air stations and one helicopter station. All vessels have red diagonal stripe painted on the white hull and many are armed with 7.62 mm MGs. There are some 10,500 naval personnel including 1,200 officers of which about half are doing national service. Ranks are the same as the Navy. In addition to the Saettia class (detailed separately), the following craft are in service. All have the prefix CP (Capitaneria di Porto):

- 1 SAR craft: *Giulio Inganni* CP 409 (205 tons); *Francesco Mazzinghi* CP 405, *Antonio Scialoja* CP 406, *Michele Lolini* CP 407, *Mario Grabar* CP 408 (136 tons), *Oreste Cavallari* CP 401, *Renato Pennetti* CP 402, *Walter Fachin* CP 403, *Gaetano Magliano* CP 404 (100 tons); CP 314-318 (45 tons).
- 2 Fast Patrol craft: CP 265-292 (54 tons), CP 261-264 (30 tons), CP 245-260 (22 tons), CP 454-456 (18.4 tons).
- 3 Inshore Patrol Craft: five craft CP 2201-CP 2205 (15 tons); 51 craft CP 2001-CP 2083 (9-15 tons); 20 craft CP 2084-CP 2103 (11.7 tons), 65 craft CP 506-CP 571 (7.5 tons); 8 craft CP 6002-CP 6021 (3.7 tons); 13 craft CP 801-CP 813 (9.1 tons); 25 craft CP 814-CP 824, CP 863-CP 871, CP 882-CP 883, CP 890-CP 892 (12.5 tons); 6 craft CP 829-CP 831, CP 836-CP 838 (12 tons); 48 craft CP 825-CP 828, CP 832-CP 835, CP 839-CP 862, CP 872-CP 881, CP 884-CP 889 (12 tons); 60 RHIB CG 20 class.
- 4 Aircraft include 14 Piaggio P 186 DL3-SEM and two ATR 42MP maritime patrol, 12 Giffon AB-412-CP helicopters and two AW 139 helicopters.
5. CP 451 is a 1,278 ton training ship (ex-US ATF *Bannock*); *Barbara* CP 452 (180 tons) is a former naval Range Safety patrol craft which recommissioned in late 1999
6. CP 210 and CP 211 are airboats used for SAR in the Venice Lagoon area.



ANTONIO SCIALOJA 8/2004, Paolo Marsan / 1044379



CP 288 5/2007, Marco Ghiglini / 1166569



P 166 6/2006, Guardia Costiera / 1158790

6 SAETTIA CLASS (SAR)

Name	No	Builders	Commissioned
SAETTIA	CP 901	Fincantieri, Muggiano	Dec 1985
UBALDO DICCIOTTI	CP 902	Fincantieri, Muggiano	20 July 2002
LUIGI DATTILO	CP 903	Fincantieri, Muggiano	28 Nov 2002
MICHELE FIORILLO	CP 904	Fincantieri, Muggiano	7 Apr 2003
ANTONIO PELUSO	CP 905	Fincantieri, Muggiano	2 July 2003
ORAZIO CORSI	CP 906	Fincantieri, Muggiano	7 Feb 2004

Displacement, tons: 427 full load
Dimensions, feet (metres): 173.3 x 26.6 x 6.6 (52.8 x 8.1 x 2.0)
Main machinery: 4 Isotta Fraschini V1716T2MSD diesels; 12,660 hp (9.44 MW); 4 cp props, bow thruster
Speed, knots: 29. **Range, n miles:** 1,800 at 18 kt
Complement: 30 (2 officers)
Guns: 1 Oerlikon 20 mm/70.
Weapons control: Eurocontrol optronic sensor.
Radars: Surface search: SPN 753; I-band.

Comment: Details are for CP 902 906 which were ordered on 29 June 2000. CP 901 was built as an attack missile craft demonstrator by Fincantieri in 1984 and was later taken over by the Coast Guard on 20 July 1999. 30 tons lighter and with some structural differences, she is powered by 4 MTU 16V538 TB93 engines providing 17,598 hp and a top speed of 40 kt. She is armed with an Otobreda 25 mm gun. All the vessels form a 'Squadria' based at Messina, Sicily, whose role is fishery protection and immigration control.



ANTONIO PELUSO

10/2008, Giorgio Ghiglione / 1335483

POLICE (SERVIZIO NAVALE CARABINIERI)

Notes: (1) The Carabinieri established its maritime force in 1969 and has some 600 personnel. There are 172 craft in service or building which operate in coastal waters within the 3 mile limit and in inshore waters. Craft currently in service include: 23-800 class of 28 tons; 6-700 class of 15 tons; 22-600 class of 12 tons; 25 N 500 class of 6 tons; 3 S 500 class of 18 tons; 72-200 class of 2 tons. 28 minor craft and 30 RHIBs.

Most are capable of 20 to 25 kt except the 800 class at 35 kt.
 (2) The 700 class programme was cancelled after delivery of the first craft in 2006.
 (3) There is also a Sea Police Force of the State. All craft have POLIZIA written on the side. Vessels include 37 Squalo class of 14 tons, 4 Nelson class of 11 tons, 7 Intermarine class of 8.4 tons, 37 Crestalia class of 6 tons and 25 Aquamaster/Drago classes of 3 tons. Speeds vary between 23 and 45 kt.



809

11/2007, Marco Ghiglino / 1170072



Jamaica

Country Overview

Jamaica gained independence in 1962, the British monarch, represented by a governor-general, is head of state. The island country (area 4,244 square miles), third-largest of the Greater Antilles, is situated south of Cuba and has a 552 n mile coastline with the Caribbean Sea. Kingston is the capital, largest town and principal port. An archipelagic state, territorial seas (12 n miles) are claimed. A 200 n mile Exclusive Economic Zone (EEZ) has been claimed but the limits are not fully defined.

Headquarters Appointments

Commanding Officer Coast Guard:
 Commander Kenneth A Douglas

Personnel

(a) 2009: 241 (17 officers) Regulars
 (b) 32 (8 officers) Reserve Forces

Aviation

Seven helicopters (three Bell 412 and four Bell 407) are used for SAR and land operations. One Cessna 210M is used for liaison duties. Two Diamond DA 40 fixed-wing aircraft and one Bell 406B are used for training at the Flight Training School.

Bases

Headquarters: HMJS Cagway, Port Royal
 Bases: Discovery Bay, Pedro Cays, Port Antonio, Port Morant, Montego Bay and Black River.

COAST GUARD

3 COUNTY (DAMEN STAN PATROL 4207) CLASS (PB)

Name	No	Builders	Commissioned
CORNWALL	421	Damen Shipyard, Gorinchem	27 Oct 2005
MIDDLESEX	422	Damen Shipyard, Gorinchem	7 Apr 2006
SURREY	423	Damen Shipyard, Gorinchem	26 June 2007

Displacement, tons: 205
Dimensions, feet (metres): 140.4 x 23.3 x 8.3 (42.8 x 7.11 x 2.52)
Main machinery: 2 Caterpillar 3516B DI-TA; 5,600 hp (4.17 MW); 2 cp props
Speed, knots: 28
Complement: 18 (4 officers)
Guns: 2–12.7 mm MGs

Comment: Contract signed on 21 April 2004 with Damen Shipyard Gorinchem for construction of three Damen 4207 offshore patrol craft. Details are based on those in UK Customs service.



SURREY (on trials)

11/2006, Martyn Westers / 1164414

3 FAST COASTAL INTERCEPTORS (PBF)

CG 131-133

Displacement, tons: 11 full load
Dimensions, feet (metres): 44 x 10.5 x 3 (13.4 x 3.2 x 0.92)
Main machinery: 2 Caterpillar 3196 diesels; 1,140 hp (850 kW); two twin disc waterjets
Speed, knots: 37
Range, n miles: 400 at 20 kt
Complement: 6
Guns: 1–7.62 mm M60 MG
Radars: Surface search: Raytheon Pathfinder; I-band.

Comment: Aluminium construction. Built by Silver Ships, Mobile, Alabama. Funded by the US State Department, Narcotics Affairs Section. Delivered in March 2003.



CG 131

6/2003, JDFCG 0568335

1 HERO CLASS (PB)

Name	No	Builders	Commissioned
PAUL BOGLE	P 8	Lantana Boatyard Inc, FL	17 Sep 1985

Displacement, tons: 93 full load
Dimensions, feet (metres): 105 × 20.6 × 7 (32 × 6.3 × 2.1)
Main machinery: 3 MTU 8V 396TB93 diesels; 3,270 hp(m) (2.4 MW) sustained; 3 shafts
Speed, knots: 32
Complement: 20 (4 officers)
Guns: 1 Oerlikon 20 mm, 2 – 12.7 mm MGs.
Radars: Surface search: Furuno 2400; I-band.
Navigation: Sperry 4016; I-band.

Comment: Of all-aluminium construction, launched in 1984. *Paul Bogle* was originally intended for Honduras as the third of the Guardian class. Similar to patrol craft in Honduras and Grenada navies. Refitted in March 1998 at Network Marine, Louisiana and further refitted in 2004-05 by Damen Shipyards, Gorinchem.



PAUL BOGLE

6/1999, JDFCG / 0080126

4 DAUNTLESS CLASS (INSHORE PATROL CRAFT) (PB)

CG 121-124

Displacement, tons: 11 full load
Dimensions, feet (metres): 40 × 14 × 4.3 (12.2 × 4.3 × 1.3)
Main machinery: 2 Caterpillar 3208TA diesels; 870 hp (650 kW); 2 shafts
Speed, knots: 27
Range, n miles: 600 at 18 kt
Complement: 5
Guns: 1 – 7.62 mm MG (can be carried).
Radars: Surface search: Raytheon 40X; I band.

Comment: Delivered in September and November 1992, January 1993 and May 1994. Built by SeaArk Marine, Monticello. Aluminium construction. Craft of this class have been distributed throughout the Caribbean under FMS funding. Two craft were refitted during 2006.



CG 121

10/2000 / 0171383

4 FAST COASTAL INTERCEPTORS (PBF)

CG 134-137

Displacement, tons: 7.5 full load
Dimensions, feet (metres): 44.0 × 9.0 × 3.0 (13.4 × 2.75 × 0.9)
Main machinery: 3 Yanmar diesels, 945 hp (704 kW); Bravo X drives
Speed, knots: 45
Range, n miles: 600 at 25 kt
Complement: 4

Comment: Manufactured by Nor-Tech, Fort Myers, Florida. Composite and glass-fibre hull with V-bottomed hull. The first two donated by the US Southern Command in February 2008 and the second two in October 2008. Employed on counter drugs duties.



CG 134

6/2006, Jamaica Coast Guard / 1335391

SUBMARINES

1 + 4 SOURYU CLASS (SSK)

Name	No	Builders	Laid down	Launched	Commissioned
SOURYU	SS 501	Mitsubishi, Kobe	31 Mar 2005	5 Dec 2007	30 Mar 2009
UNRYU	SS 502	Kawasaki, Kobe	31 Mar 2006	15 Oct 2008	Mar 2010
-	SS 503	Mitsubishi, Kobe	6 Feb 2007	Oct 2009	Mar 2011
-	SS 504	Kawasaki, Kobe	31 Mar 2008	Oct 2010	Mar 2012
-	SS 505	Mitsubishi, Kobe	2009	2011	2013

Displacement, tons: 2,900 standard; 4,200 dived

Dimensions, feet (metres): 275.6 × 29.9 × 33.8
(84.0 × 9.1 × 10.5)

Main machinery: Diesel-stirling-electric; 2 diesels; 4 Kockums Stirling AIP; 1 motor; 8,000 hp (5.96 MW); 1 shaft

Speed, knots: 20 dived; 12 surfaced

Range, n miles: To be announced

Complement: 70

Missiles: SSM: McDonnell Douglas Sub-Harpoon; active radar homing to 130 km (70 n miles) at 0.9 Mach, warhead 227 kg.

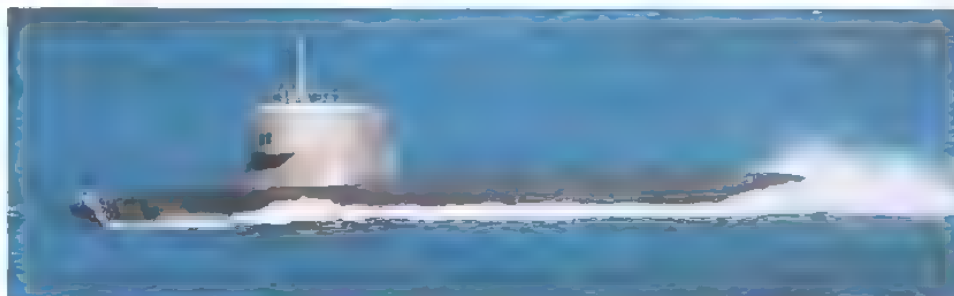
Torpedoes: 6–21 in (533 mm) bow tubes. Japanese Type 89, wire-guided (option), active/passive homing to 50 km (27 n miles) at 40/55 kt; warhead 267 kg. Type 80 ASW SSM and torpedoes (total unknown).

Countermeasures: To be announced.

Weapons control: To be announced.

Radars: Surface search, JRC ZPS-6F, I-band.

Sonars: Hughes/OKI ZQQ 7; hull and flank arrays; active/passive search and attack; medium/low frequency Towed array



SOURYU

10/2008*, Hachiro Nakai / 1353105

Programmes: First of new class authorized in FY04 budget, second in FY05 budget, third in FY06 budget, fourth in FY07 budget and fifth in FY08 budget

Structure: The hull design is based on the Oyashio class and incorporates the Swedish Stirling air-independent propulsion system. Components of this system are provided by Kockums for assembly by KHI.

11 OYASHIO CLASS (SSK)

Name	No	Builders	Laid down	Launched	Commissioned
OYASHIO	SS 590	Kawasaki, Kobe	26 Jan 1994	15 Oct 1996	16 Mar 1998
MICHISHIO	SS 591	Mitsubishi, Kobe	16 Feb 1995	18 Sep 1997	10 Mar 1999
UZUSHIO	SS 592	Kawasaki, Kobe	6 Mar 1996	26 Nov 1998	9 Mar 2000
MAKISHIO	SS 593	Mitsubishi, Kobe	26 Mar 1997	22 Sep 1999	29 Mar 2001
ISOSHIO	SS 594	Kawasaki, Kobe	9 Mar 1998	27 Nov 2000	14 Mar 2002
NARUSHIO	SS 595	Mitsubishi, Kobe	2 Apr 1999	4 Oct 2001	3 Mar 2003
KUROSHIO	SS 596	Kawasaki, Kobe	27 Mar 2000	23 Oct 2002	8 Mar 2004
TAKASHIO	SS 597	Mitsubishi, Kobe	30 Jan 2001	1 Oct 2003	9 Mar 2005
YAESHIO	SS 598	Kawasaki, Kobe	15 Jan 2002	4 Nov 2004	9 Mar 2006
SETOSHIO	SS 599	Mitsubishi, Kobe	23 Jan 2003	5 Oct 2005	28 Feb 2007
MOCHISHIO	SS 600	Kawasaki, Kobe	23 Feb 2004	6 Nov 2006	6 Mar 2008

Displacement, tons: 2,750 standard; 3,500 dived

Dimensions, feet (metres): 268 × 29.2 × 24.3
(81.7 × 8.9 × 7.4)

Main machinery: Diesel-electric; 2 Kawasaki 12V25S diesels, 5,520 hp(m) (4.1 MW); 2 Kawasaki alternators; 3.7 MW; 2 Toshiba motors; 7,750 hp(m) (5.7 MW); 1 shaft

Speed, knots: 12 surfaced, 20 dived

Complement: 70 (10 officers)

Missiles: SSM. McDonnell Douglas Sub-Harpoon; active radar homing to 130 km (70 n miles) at 0.9 Mach, warhead 227 kg.

Torpedoes: 6–21 in (533 mm) tubes, Type 89; wire-guided; active/passive homing to 50 km (27 n miles)/38 km (21 n miles) at 40/55 kt; warhead 267 kg and Type 80 ASW. Total of 20 SSM and torpedoes.

Countermeasures: ESM, NZLR-18; radar warning

Weapons control: SMCS type TFC5.

Radars: Surface search; JRC ZPS 6D; I-band.

Sonars: Hughes/OKI ZQQ 6; hull and flank arrays; active/passive search and attack; medium/low frequency. Towed array; passive search; very low frequency



SETOSHIO

9/2007*, Hachiro Nakai / 1305087

Programmes: First of a new class approved in the 1993 budget and then one a year up to FY03.

Structure: Fitted with large flank sonar arrays which are reported as the reason for the increase in displacement

over the Harushio class. Double hull sections forward and aft and anechoic tiles on the fin. A new type of deck casing and faired fin are other distinguishing features. Diving depth 650 m (2,130 ft).



MOCHISHIO

3/2008*, Hachiro Nakai / 1353106



KUROSHIO

7/2008*, Hachiro Nakai / 1353107

7 HARUSHIO CLASS (SSK)

Name	No	Builders	Laid down	Launched	Commissioned
HARUSHIO	SS 583	Mitsubishi, Kobe	21 Apr 1987	26 July 1989	30 Nov 1990
NATSUSHIO	SS 584	Kawasaki, Kobe	8 Apr 1988	20 Mar 1990	20 Mar 1991
HAYASHIO	TSS 3606 (ex-SS 585)	Mitsubishi, Kobe	9 Dec 1988	17 Jan 1991	25 Mar 1992
ARASHIO	SS 586	Kawasaki, Kobe	8 Jan 1990	17 Mar 1992	17 Mar 1993
WAKASHIO	SS 587	Mitsubishi, Kobe	12 Dec 1990	22 Jan 1993	1 Mar 1994
FUYUSHIO	SS 588	Kawasaki, Kobe	12 Dec 1991	16 Feb 1994	7 Mar 1995
ASASHIO	TSS 3601 (ex-SS 589)	Mitsubishi, Kobe	24 Dec 1992	12 July 1995	12 Mar 1997

Displacement, tons: 2,450 (2,900, TSS 3601) standard; 3,200 (3,700, TSS 3601) dived

Dimensions, feet (metres): 252.6; 285.5 (TSS 3601) × 32.8 × 25.3 (77, 87 × 10 × 7.7)

Main machinery: Diesel-electric; 2 Kawasaki 12V25/25S diesels; 5,520 hp(m) (4.1 MW); 2 Kawasaki alternators; 3.7 MW; 2 Fuji motors; 7,200 hp(m) (5.3 MW); 1 shaft
4 Stirling engines (TSS 3601) Kockums V4-275R Mk 2; 348 hp (260 kW)

Speed, knots: 12 surfaced; 20 dived

Complement: 75 (10 officers); 70 (10 officers) (TS 3601)

Missiles: SSM: McDonnell Douglas Sub-Harpoon; active rader homing to 130 km (70 n miles) at 0.9 Mach; warhead 227 kg.

Torpedoes: 6–21 in (533 mm) tubes. Japanese Type 89: wire-guided (option); active/passive homing to 50 km (27 n miles)/38 km (21 n miles) at 40/55 kt; warhead 267 kg; depth to 900 m, and Type 80 ASW. Total of 20 SSM and torpedoes.

Countermeasures: ESM: NZLR-1, radar warning.

Radars: Surface search: JRC ZPS 6, I-band.

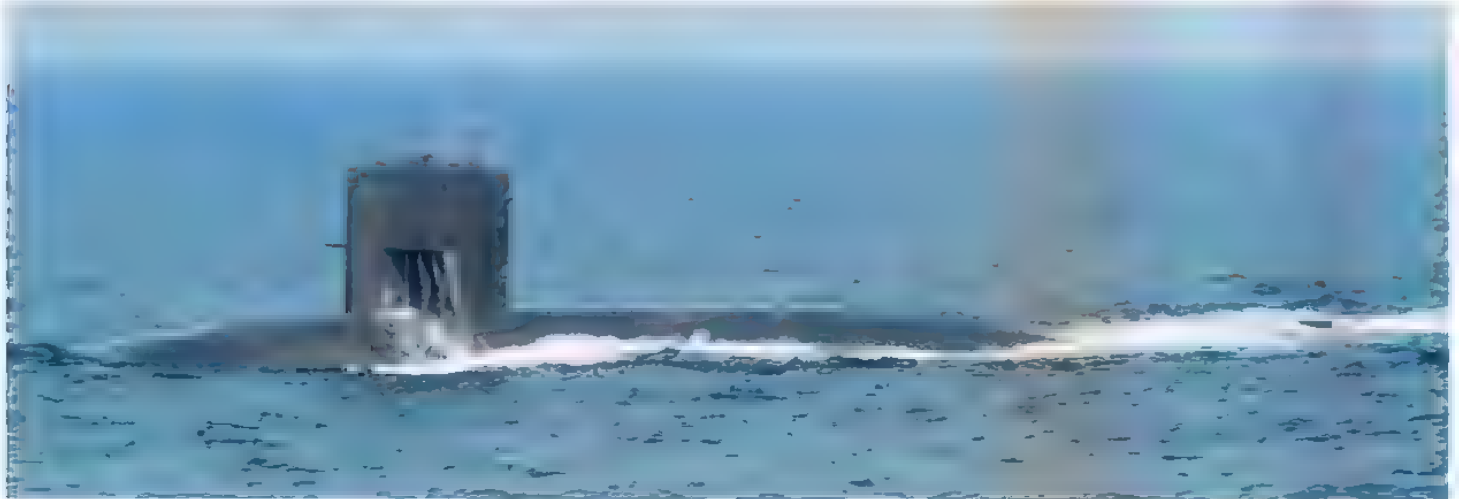
Sonars: Hughes/Okii ZQQ 5B, hull-mounted; active/passive search and attack; medium/low frequency.

ZQR 1 towed array similar to BQR 15; passive search; very low frequency.

Programmes: First approved in 1986 estimates end then one per year until 1992

Structure: The slight growth in all dimensions is a natural evolution from the Yuushio class and includes more noise reduction, towed sonar and wireless aerials, as well as anechoic coating. Double hull construction. *Asashio* had a slightly larger displacement on build and a small cutback in the crew as a result of greater systems automation for machinery and snorting control. The hull was extended in 2001 to accommodate an AIP module (Stirling engine) which was fitted by Mitsubishi, Kobe. Diving depth 550 m (1,800 ft).

Operational: A remote periscope viewer is fitted in *Asashio*. *Asashio* is an experimental submarine which has been used for testing of AIP propulsion.



NATSUSHIO

10/2006, Guy Toremans / 116/174



ARASHIO

8/2008, Hachiro Nakai / 1353108



WAKASHIO

10/2006, Michael Nitz / 1167173

HELICOPTER CARRIERS

1 + 1 HYUGA CLASS (CVHG)

Name	No	Builders	Laid down	Launched	Commissioned
HYUGA	DDH 181	IHI Marine United, Yokohama	11 May 2006	23 Aug 2007	18 Mar 2009
-	DDH 182	IHI Marine United, Yokohama	30 May 2008	Aug 2009	Mar 2011

Displacement, tons: 13,500 standard; 18,000 full load
Dimensions, feet (metres): 646.3 x 108.3 x 31.8
 (1970 x 33.0 x 9.7)
Main machinery: COGAG, 4 LM 2500 gas turbines; 2 shafts
Speed, knots: 30
Range, n miles: 6,000 at 20 kt
Complement: 322 (+25 HQ staff)

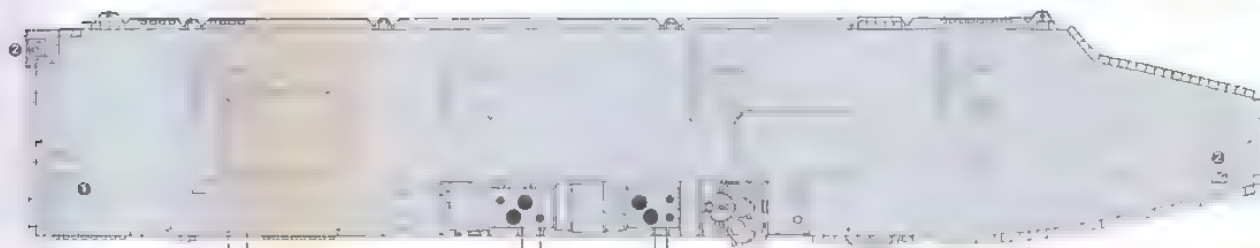
Missiles: SAM: Raytheon Sea Sparrow RIM-162 ESSM; Lockheed Martin Maritime Mk 41 Mod 5 sixteen cell vertical launcher; semi-active radar homing to 18.0 km (9.7 n miles) at 3.6 Mach; warhead 38 kg, 64 missiles.
 A/S: Vertical launch ASROC.

Guns: 2 GE 20 mm/76 Sea Vulcan 20; 3 barrels per mounting; 1,500 rds/min. 2-12.7 mm MGs.
Torpedoes: 6-324 mm (2 triple) HOS-303 tubes
Countermeasures: Decoys. 4 Hycor Mk 137 sextuple RBOC chaff launchers
ESM/ECM: NOLQ-3C
Combat data systems: Link 16.
Radars: Air search/Fire control. Meico FCS-3; G/H/I-band
Navigation: JRC OPS-20C; I-band.
Sonars: Bow-mounted sonar. OQQ 21.
Helicopters: 3 SH-60K plus 7 SH-60K or 7 MCH-101

Programmes: Two new aviation capable ships to replace the Haruna class authorised in the FY01-05 and FY05-09 programmes. The first authorised in the FY04 budget and the second in the FY06 budget.
Structure: Broadly similar to the Spanish light carrier *Principe de Asturias* although not fitted with a ski jump and VSTOL capability. The flight deck has two lifts and four helicopter spots. The Mk 41 VLS launcher is situated on the starboard quarter.
Operational: To be capable of acting as Command Vessels.



HYUGA (Scale 1 : 1,200), Ian Sturton / 1153013



HYUGA (Scale 1 : 1,200), Ian Sturton / 1153012



HYUGA 7/2008*, Hachiro Nakai / 1353109



HYUGA 7/2008*, Ships of the World / 1353184

DESTROYERS

2 ATAGO CLASS (DDGHM)

Name	No	Builders	Laid down	Launched	Commissioned
ATAGO	DDG 177	Mitsubishi, Nagasaki	5 Apr 2004	24 Aug 2005	15 Mar 2007
ASHIGARA	DDG 178	Mitsubishi, Nagasaki	6 Apr 2005	30 Aug 2006	13 Mar 2008

Displacement, tons: 7,700 standard; 10,000 full load
Dimensions, feet (metres): 540.1 × 68.9 × 20.3
 (164.9 × 21.0 × 6.2)
Main machinery: COGAG; 4 GE LM 2500 gas turbines;
 102,160 hp (76.21 MW) sustained; 2 shafts; cp props
Speed, knots: 30
Range, n miles: 4,500 at 20 kt
Complement: 309 (27 officers)

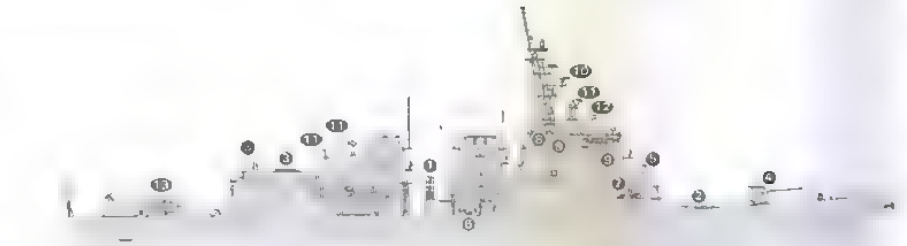
Missiles: SSM: 8 Mitsubishi Type 90 SSM-1B (2 quad) ●;
 active radar homing to 200 km (108 n miles) at 0.9 Mach;
 warhead 270 kg.

SAM: Raytheon Standard SM-2MR Block IIIB, FMC Mk 41 VLS,
 64 cells forward ● 32 cells aft ●; command/inertial guidance;
 semi-active radar homing to 187 km (90 n miles) at 2.5 Mach
A/S: Vertical launch ASROC; inertial guidance to 1.6-10 km
 (1-5.4 n miles); payload Mk 46 Mod 5 Nearip.

Guns: 1 United States Mk 45 Mod 4 5 in (127 mm)/62 ●;
 20 rds/min to 23 km (12.6 n miles); weight of shell 32 kg
 2 GE/GD 20 mm/78 Mk 15 Vulcan Phalanx Block IB ●;
 4,500 rds/min combined to 1.5 km.

Torpedoes: 6-324 mm (2 triple) HOS 302 tubes ● Honeywell
 Mk 46 Mod 5 Nearip; anti-submarine; active/passive
 homing to 11 km (5.9 n miles) at 40 kt; warhead 44 kg.

Countermeasures: Decoys. 4 Mk 36 SRBOC ● 6-barrelled
 Mk 36 chaff launchers; Type 4 towed torpedo decoy.
ESM/ECM: NOLO-2B ●



ATAGO

(Scale 1 : 1,500), Ian Sturton / 1167684

Combat data systems: Aegis NTDS with Link 11, AN/USC-42
 SATCOM.

Radars: Air search: RCA SPY 1D(V) ●; 3D; F-band.
 Surface search: JRC OPS-28E ●; G-band.

Navigation: JRC OPS-20; I-band.

Fire control: 3 SPG-62 ●, 1 Mk 2/21 ●, I/J-band.
 2 AN/UPS-2; J-band.

Sonars: SQS 53C bow sonar.

Helicopters: 1 Mitsubishi/Sikorsky SH-60J/K ●

Programmes: Two ships authorised in the FY01-05
 programme. The first authorised in the FY02 budget and
 the second in FY03 budget.

Structure: The upgrade from the Kongou class includes
 one hangar for embarked helicopters. The arrangement
 of vertical launchers is different to that of the Kongou
 class: there are 64 cells forward (rather than 29) and
 32 aft (61).

Operational: Atago sailed for sea trials on 17 May 2006.



ASHIGARA

3/2008, Hachiro Nakai / 1353110



ATAGO

6/2007, Ships of the World / 1305058

4 KONGOU CLASS (DDGHM)

Name	No	Builders	Laid down	Launched	Commissioned
KONGOU	DDG 173	Mitsubishi, Nagasaki	8 May 1990	26 Sep 1991	25 Mar 1993
KIRISHIMA	DDG 174	Mitsubishi, Nagasaki	7 Apr 1992	19 Aug 1993	16 Mar 1995
MYOUKOU	DDG 175	Mitsubishi, Nagasaki	8 Apr 1993	5 Oct 1994	14 Mar 1996
CHOUKAI	DDG 176	Ishikawajima Harima, Tokyo	29 May 1995	27 Aug 1996	20 Mar 1998

Displacement, tons: 7,250 standard; 9,485 full load
Dimensions, feet (metres): 528.2 x 68.9 x 20.3, 32.7 (sonar) (167 x 21 x 6.2, 10)
Main machinery: COGAG; 4 GE LM 2500 gas turbines, 102,160 hp (76.21 MW) sustained, 2 shafts; cp props
Speed, knots: 30
Range, n miles: 4,500 at 20 kt
Complement: 300 (27 officers)

Missiles: SSM: 8 McDonnell Douglas Harpoon Block 1B (2 quad) launchers; active radar homing to 92 km (50 n miles) at 0.9 Mach; warhead 227 kg.
SAM: Raytheon Standard SM-2MR Block IIIA, FMC Mk 41 VLS (29 cells) forward; Martin Marietta Mk 41 VLS (61 cells) aft; command/inertial guidance; semi-active radar homing to 167 km (90 n miles) at 2.5 Mach. Standard SM-3 Block 1A (DDG 173, 175, 176), command/inertial/GPS guidance and IR homing to 650 n miles (1,200 km) at 3 Mach. Total of 90 Standard and ASROC weapons.
A/S: Vertical launch ASROC; inertial guidance to 1.6-10 km (1-5.4 n miles); payload Mk 46 Mod 5 Nearthip.
Guns: 1 OTO Melara 5 in (127 mm) 54 Compact; 45 rds/min to 23 km (12.42 n miles); weight of shell 32 kg. 2 GE/GD 20 mm/76 Mk 15 Vulcan Phalanx Block 1B; 6 barrels per mounting, 3,000 rds/min combined to 1.5 km.
Torpedoes: 6-324 mm (2 triple) HOS 302 tubes; Honeywell Mk 46 Mod 5 Nearthip; anti-submarine; active/passive homing to 11 km (5.9 n miles) at 40 kt; warhead 44 kg
Countermeasures: Decoys: 4 Mk 36 SRBOC; 6-barrelled Mk 36 chaff launchers; Type 4 towed torpedo decoy.
ESM/ECM: Melco NOLQ 2; intercept/jammer
Combat data systems: Aegis NTDS with Link 11. SATCOM WSC-3/OE 82C; ORQ-1 helicopter datalink



KONGOU

(Scale 1 : 1,500), Ian Sturton / 0130381

Weapons control: 3 Mk 99 Mod 1 MFCS, Type 2-21 GFCS, Mk 116 Hitachi OYQ 102 (Mod 7 for ASW)
Radars: Air search RCA SPY 1D; 3D; F-band. Surface search JRC OPS 28D; G-band.
Navigation: JRC OPS-20; I-band.
Fire control: 3 SPG-62; 1 Type 2-21; I/J-band. IFF UPX 29
Sonars: Nec OQS 102 (SQS-53B/C) bow-mounted; active search and attack. Oki OQR 2 (SQR-19A (V)) TACTASS; towed array; passive; very low frequency.

Helicopters: Platform and fuelling facilities for SH-60J.

Programmes: Proposed in the FY87 programme; first one accepted in FY88 estimates, second in FY90, third in FY91, fourth in FY93. Designated as destroyers but these ships are of cruiser size. The combination of cost and US

Congressional reluctance to release Aegis technology slowed the programme down. The ships' names were last used by battleships and cruisers of the Second World War era.

Modernisation: These ships are undergoing an upgrade programme to include Aegis Baseline 3.6.1 and Standard SM-3 Block 1A missiles. Kongou was completed in 2007 and a successful SM-3 test-firing was conducted on 17 December 2007. Choukai completed upgrade in 2008 and Myoukou and Kirishima are to be completed in 2009 and 2011 respectively.

Structure: This is an enlarged and improved version of the USN Arleigh Burke with a lightweight version of the Aegis system. There are two missile magazines. OQS 102 plus OQR 2 towed array is the equivalent of SQC-89, Prairie-Masker acoustic suppression system.

Operational: As well as air defence of the Fleet, these ships contribute to the air defences of mainland Japan.



CHOUKAI

7/2008*, Hachiro Nakai / 1353112



MYOUKOU

4/2008*, Hachiro Nakai / 1353111

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0 + 2 (2) 19DD CLASS (DESTROYER) (DDHM)

Name	No	Builders	Laid down	Launched	Commissioned
-	-	Mitsubishi, Nagasaki	July 2009	Sep 2010	Mar 2012
-	-	Mitsubishi, Nagasaki	2010	2011	Mar 2013

Displacement, tons: 5,000 standard
Dimensions, feet (metres): 492.1 x 57.7 x 7; 32.8 (sonar) (150.0 x 17.6 x 7; 10.0)
Main machinery: COGAG; 4 gas turbines; 2 shafts
Speed, knots: 30. **Range, n miles:** To be announced
Complement: To be announced

Missiles: SSM, 8 Mitsubishi Type 90 (2 quad) ●
SAM: Lockheed Martin Mk 41 vertical launcher (32 cells forward) ●; Raytheon RIM-162 ESSM
Guns: 1-5 in (127 mm)/62 Mk 45 Mod 4 ●, 2 Raytheon 20 mm/76 Vulcan Phalanx ●
Torpedoes: 6-324 mm (2 triple) tubes.
Countermeasures: To be announced.
Combat data systems: To be announced.
Weapons control: To be announced.
Radars: Air search: Melco FCS-3 ●; G/H/I-band.
Surface search: To be announced.
Fire control: Melco FCS-3; G/H/I-band
Navigation: To be announced.
Sonars: Bow-mounted sonar

Helicopters: 2 Mitsubishi/Sikorsky SH-60J/K ● or 1 MCH-101.



19DD CLASS (Scale 1 : 1,200), Ian Sturton / 1353185

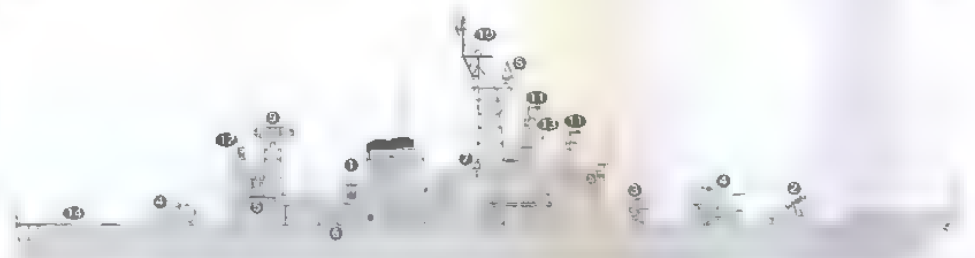
Programmes: First authorised in FY07 and second in FY08 budget. Two more authorised in FY09 budget. The ships are to replace the Hatsuyuki class in the current inventory.
Structure: Measures to reduce the radar cross-section include a new design mast

2 HATAKAZE CLASS (DDGHM)

Name	No	Builders	Laid down	Launched	Commissioned
HATAKAZE	DDG 171	Mitsubishi, Nagasaki	20 May 1983	9 Nov 1984	27 Mar 1986
SHIMAKAZE	DDG 172	Mitsubishi, Nagasaki	30 Jan 1985	30 Jan 1987	23 Mar 1988

Displacement, tons: 4,600 (4,650, DDG 172) standard; 5,900 full load
Dimensions, feet (metres): 492 x 53.8 x 15.7 (150 x 16.4 x 4.8)
Main machinery: COGAG; 2 RR Olympus TM3B gas turbines; 49,400 hp (36.8 MW) sustained; 2 RR Spyc SM1A gas turbines; 26,650 hp (19.9 MW) sustained; 2 shafts; Kamewa cp props
Speed, knots: 30
Complement: 260 (23 officers)

Missiles: SSM: 8 McDonnell Douglas Harpoon Block 1B ●; active radar homing to 92 km (50 n miles) at 0.9 Mach; warhead 227 kg.
SAM: 40 Raytheon Standard SM-1MR Block VIA; Mk 13 Mod 4 launcher ●; command guidance; semi-active radar homing to 38 km (20.5 n miles) at 2 Mach; height envelope 45-18,288 m (150-60,000 ft).
A/S: Honeywell ASROC Mk 112 octuple launcher ●; inertial guidance to 1.8-10 km (1-5.4 n miles) at 0.9 Mach; payload Mk 46 Mod 5 Nearthip. Reload capability.
Guns: 2 FMC 5 in (127 mm)/54 Mk 42 automatic ●; 20-40 rds/min to 24 km (13 n miles) anti-surface; 14 km (7.6 n miles) anti-aircraft; weight of shell 32 kg. 2 General Electric/General Dynamics 20 mm Phalanx Mk 15 CIWS ●; 6 barrels per mounting; 3,000 rds/min combined to 15 km.
Torpedoes: 6-324 mm Type 68 or HOS 301 (2 triple) tubes ● Honeywell Mk 46 Mod 5 Nearthip; anti-submarine; active/



HATAKAZE (Scale 1 : 1,200), Ian Sturton / 0506023

passive homing to 11 km (5.9 n miles) at 40 kt; warhead 44 kg.
Countermeasures: Decoys: 2 Loral Hycor SRBOC 6-barrelled Mk 36 chaff launchers; range 4 km (2.2 n miles)
ESM/ECM: Melco NOLQ-1; intercept/jammer Fujitsu OLR 9B; intercept.
Combat data systems: OYQ-4 Mod 1 action data automation; Link 11. SATCOM ●
Weapons control: Type 2-21C for 127 mm guns. General Electric Mk 74 Mod 13 for Standard.
Radars: Air search: Hughes SPS-52C ●; 3D; E/F-band. Melco OPS-11C ●; B-band.
Surface search: JRC OPS-26B ●; G/H-band.
Navigation: JRC OPS-20; I-band.
Fire control: 2 Raytheon SPG-51C ●, G-band. Melco 2-21 ●, U/J-band. Type 2-12 ●, I-band.
Sonars: Nec OQS 4 Mod 1; bow-mounted; active search and attack; medium frequency.
Helicopters: Platform for 1 SH-60J Seahawk ●.
Programmes: DDG 171 provided for in 1981 programme. DDG 172 provided for in 1983 programme, ordered 29 March 1984.



SHIMAKAZE //2008*, Hachiro Nakai / 1353113

5 TAKANAMI CLASS (DDGHM)

Name	No	Builders	Laid down	Launched	Commissioned
TAKANAMI	DD 110	IHI Marine United, Yokosuka (Urage)	25 Apr 2000	26 July 2001	12 Mar 2003
ODONAMI	DD 111	Mitsubishi, Nagasaki	17 May 2000	20 Sep 2001	13 Mar 2003
MAKINAMI	DD 112	IHI Marine United, Yokohama	7 July 2001	8 Aug 2002	18 Mar 2004
SAZANAMI	DD 113	Mitsubishi, Nagasaki	4 Apr 2002	29 Aug 2003	16 Feb 2005
SUZUNAMI	DD 114	IHI Marine United, Yokohama	24 Sep 2003	26 Aug 2004	16 Feb 2006

Displacement, tons: 4,650 standard; 6,300 full load
 Dimensions, feet (metres): 495.4 x 57.1 x 17.4
 (151 x 17.4 x 5.3)

Main machinery: COGAG; 2 RR Spey SM1C gas turbines; 26,600 hp (19.9 MW) sustained; 2 GE LM 2500 gas turbines; 32,500 hp (24.3 MW) sustained; 2 shafts

Speed, knots: 30
 Complement: 176

Missiles: SSM: 8 Mitsubishi Type 90 SSM-1B (2 quad) ●; active radar homing to 150 km (81 n miles) at 0.9 Mach, warhead 225 kg.

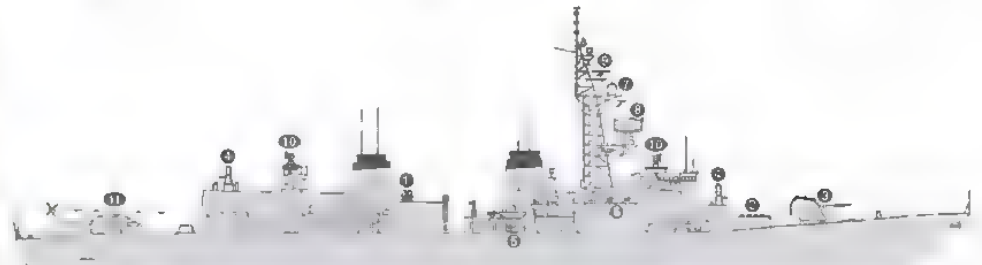
SAM: Mk 41 VLS 32 cells ● Sea Sparrow RIM 162 ESSM (PIP); semi-active radar homing to 18 km (9.7 n miles) at 3.6 Mach, warhead 38 kg and VL ASROC; internal guidance to 1.6-10 km (1-5.4 n miles); payload Mk 46 Mod 5 Near tip

Guns: 1 Otobreda 5 in (127 mm)/54 ●; 45 rds/min to 24 km (12.42 n miles); weight of shell 32 kg.
 2 General Electric/General Dynamics 20 mm Phalanx Mk 15 CIWS ●; 6 barrels per mounting; 3,000 rds/min combined to 1.5 km

Torpedoes: 6—324 mm HOS-302 (2 triple) tubes ● Mk 46 Mod 5; anti-submarine, active/passive homing to 11 km (5.9 n miles) at 40 kt; warhead 44 kg

Countermeasures: Decoys: 4 Mk 36 SRBOC chaff launchers ● SLQ-25 Nixie towed torpedo decoy.

ESM/ECM: Nec NOLQ 3; intercept and jammer.



TAKANAMI CLASS

(Scale 1 : 1,200), Ian Sturton / 0080139

Combat data systems: OYQ-9 with Link 11, ORQ-1B helicopter data link ●
 Weapons control: Hitachi OYQ-103 ASW control system
 Radars: Air search: Melco OPS-24B ●; 3D; D-band.
 Surface search: JRC OPS-28D ●; G-band.
 Fire control: Two FCS 2-31B ●
 Navigation: DPS-20; I-band.
 Sonars: OQS-5, Bow-mounted; active search and attack; low frequency.
 OQR-2, towed array; passive search, very low frequency.

Helicopters: 1 Mitsubishi/Sikorsky SH-60J/K ●
 Programmes: First two approved in FY98, then one a year up to FY01
 Structure: Murasame class modified to fit a Mk 41 VLS, improved missile fire control and new sonar.



MAKINAMI

6/2007, Hachiro Nakai / 1305019



SUZUNAMI

10/2008, Michael Nitz / 1353180

9 MURASAME CLASS (DDGHM)

Name	No	Builders	Laid down	Launched	Commissioned
MURASAME	DD 101	Ishikawajima Harima, Tokyo	18 Aug 1993	23 Aug 1994	12 Mar 1996
HARUSAME	DD 102	Mitsui, Tamano	11 Aug 1994	16 Oct 1995	24 Mar 1997
YUUDACHI	DD 103	Marine United (Sumitomo, Uraga)	18 Mar 1996	19 Aug 1997	4 Mar 1999
KIRISAME	DD 104	Mitsubishi, Nagasaki	3 Apr 1996	21 Aug 1997	18 Mar 1999
INAZUMA	DD 105	Mitsubishi, Nagasaki	8 May 1997	8 Sep 1998	15 Mar 2000
SAMIDARE	DD 106	Marine United (Ishikawajima Harima, Tokyo)	11 Sep 1997	24 Sep 1998	21 Mar 2000
IKAZUCHI	DD 107	Hitachi, Maizuru	25 Feb 1998	24 June 1999	14 Mar 2001
AKEBONO	DD 108	Marine United (Ishikawajima Harima, Tokyo)	29 Oct 1999	26 Sep 2000	19 Mar 2002
ARIAKE	DD 109	Mitsubishi, Nagasaki	18 May 1999	16 Oct 2000	6 Mar 2002

Displacement, tons: 4,550 standard; 6,200 full load
Dimensions, feet (metres): 495.4 × 57.1 × 17.1
 (151 × 17.4 × 5.2)

Main machinery: COGAG; 2 RR Spey SM1C gas turbines, 26,800 hp (19.9 MW) sustained; 2 GE LM 2500 gas turbines; 32,500 hp (24.3 MW) sustained; 2 shafts

Speed, knots: 30
Complement: 165

Missiles SSM: 8 Type 90 SSM-1B (Harpoon); active radar homing to 130 km (70 n miles) at 0.9 Mach; warhead 227 kg.

SAM: Raytheon Mk 48 VLS 16 cells ● Sea Sparrow RIM-7P; semi-active radar homing to 16 km (8.5 n miles) at 2.5 Mach, warhead 38 kg.

A/S: Mk 41 VL ASROC 16 cells ●. Total of 29 missiles can be carried.

Guns: 1 Otobreda 3 in (76 mm)/62 compact ●; 85 rds/min to 16 km (8.6 n miles) anti-surface, 12 km (6.5 n miles) anti-aircraft; weight of shell 6 kg.

2 General Electric/General Dynamics 20 mm Phalanx Mk 15 CIWS ●; 8 barrels per mounting; 3,000 rds/min combined to 1.5 km.

Torpedoes: 6—324 mm HOS 302 (2 triple tubes ● Mk 46 Mod 5; anti-submarine; active/passive homing to 11 km (5.9 n miles) at 40 kt; warhead 44 kg.

Countermeasures: Decoys: 4 Mk 36 SRBOC chaff launchers ●. Type 4 towed torpedo decoy

ESM/ECM: Nec NOLQ 3; intercept and jammer.
Combat data systems: OYQ-9B with Link 11. ORQ-1 helicopter datalink ●

Weapons control: Hitachi OYQ-103 ASW control system.

Radars: Air search: Melco OPS-24B ●; 3D; D-band

Surface search: JRC OPS-28D ●; G-band

Fire control: 2 Type 2-31 ●

Navigation: OPS-20; I-band.

Sonars: Mitsubishi: OQS-5; hull-mounted; active search and attack; low frequency.
 OQR-1 towed array; passive search, very low frequency.

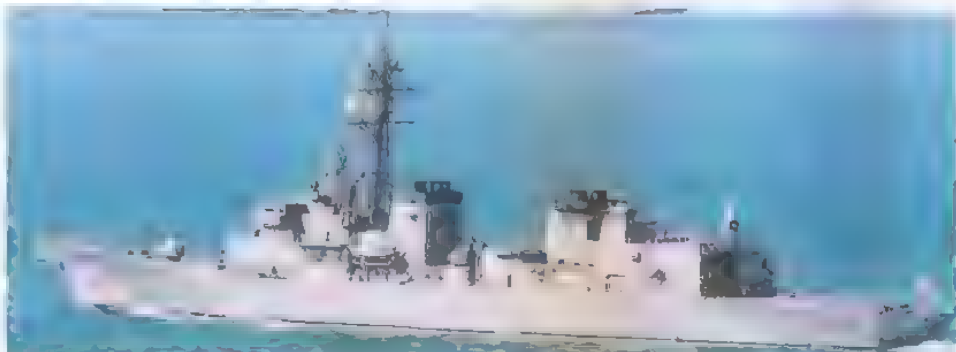
Helicopters: 1 SH-60J Seahawk ●.

Programmes: First one approved in FY91 as an addition to the third Aegis-type destroyer. Second approved in



MURASAME

(Scale 1 : 1,200), Ian Sturton / 0506235



INAZUMA

7/2008, Hiroshi Yamamoto / 1353165

FY92. Two more approved in FY94, two in FY95, one in FY96 and two in FY97. The programme was given added priority as the Kongou class was reduced to four ships because of the cost of Aegis.

Modernisation: DD 103, 108 and 109 converted to fire ESSM 2007-08. One further ship to be converted in 2009.

Structure: More like a mini-Kongou than an enlarged Asagiri class, with VLS and a much reduced complement. Stealth features are evident in sloping sides and rounded superstructure. Indal RAST helicopter hauldown.

Operational: ASROC missiles are not carried. *Kirisame* deployed to Indian Ocean in November 2001 to provide non-combatant support to US forces.



AKEBONO

4/2008, Hachiro Nakai / 1353165



ARIAKE

10/2008, Hachiro Nakai / 1353164

6 ASAGIRI CLASS (DDGHM)

Name	No	Builders	Laid down	Launched	Commissioned
YUUGIRI	DD 153	Sumitomo, Uraga	25 Feb 1986	21 Sep 1987	28 Feb 1989
AMAGIRI	DD 154	Ishikawajima Harima, Tokyo	3 Mar 1986	9 Sep 1987	17 Mar 1989
HAMAGIRI	DD 155	Hitachi, Maizuru	20 Jan 1987	4 June 1988	31 Jan 1990
SETOGIRI	DD 156	Sumitomo, Uraga	9 Mar 1987	12 Sep 1988	14 Feb 1990
SAWAGIRI	DD 157	Mitsubishi, Nagasaki	14 Jan 1987	25 Nov 1988	6 Mar 1990
UMIGIRI	DD 158	Ishikawajima Harima, Tokyo	31 Oct 1988	9 Nov 1989	12 Mar 1991

Displacement, tons: 3,500 (DD 153-154), (3,550, DD 155-158) standard; 4,900 (DD 153-154) (4,950 DD 155-158) full load

Dimensions, feet (metres): 449.4 x 48 x 14.6 (137 x 14.6 x 4.5)

Main machinery: COGAG; 4 RR Spey SM1A gas turbines; 53,300 hp (39.8 MW) sustained; 2 shafts; cp props

Speed, knots: 30+

Complement: 220

Missiles: SSM: 8 McDonnell Douglas Harpoon (2 quad) launchers; active radar homing to 130 km (70 n miles); at 0.9 Mach; warhead 227 kg.

SAM: Raytheon Sea Sparrow RIM-7M Mk 29 (Type 3/3A) octuple launcher; semi-active radar homing to 16 km (8.5 n miles) at 2.5 Mach; warhead 38 kg; 20 missiles.

A/S: Honeywell ASROC Mk 112 octuple launcher; inertial guidance to 1.6-10 km (1-5.4 n miles) at 0.9 Mach; payload Mk 46 Mod 5 Neartip. Reload capability.

Guns: 1 Otobreda 3 in (76 mm)/62 compact; 85 rds/min to 16 km (8.6 n miles) anti-surface; 12 km (6.5 n miles) anti-aircraft; weight of shell 6 kg.

2 General Electric/General Dynamics 20 mm Phalanx Mk 15 CIWS; 6 barrels per mounting; 3,000 rds/min combined to 1.5 km.

Torpedoes: 6 - 324 mm Type 68 (2 triple) HOS 301 tubes; Honeywell Mk 46 Mod 5 Neartip; anti-submarine; active/passive homing to 11 km (5.9 n miles) at 40 kt; warhead 44 kg.

Countermeasures: Decoys 2 Loral Hycor SRBOC 6-barrelled Mk 36 chaff launchers; range 4 km (2.2 n miles); 1 SLQ-25 Nixie or Type 4; towed torpedo decoy.

ESM: Nec NOLR 6C or NOLR B (DD 152); intercept.

ECM: Fujitsu OLT-3; jammer.



(Scale 1 : 1,200), Ian Sturton / 0012635

UMIGIRI

Combat data systems: OYQ-7B data automation; Link 11/14.

SATCOM. ORQ-1 helicopter datalink for SH-60J.

Radars: Air search: Melco OPS-14C (DD 151-154); D-band Melco OPS-24 (DD 155-158); 3D; D-band.

Surface search. JRC OPS-28C; G band (DD 151, 152, 155-158).

JRC OPS-28C-Y; G-band (DD 153-154)

Navigation: JRC OPS-20; I-band.

Fire control: Type 2-22 (for guns); Type 2-12E (for SAM) (DD 151-154); Type 2-12G (for SAM) (DD 155-158).

Tecan: ORN-6D (URN 25)

Sonars: Mitsubishi OOS 4A (III); hull-mounted, active search and attack; low frequency

QCR-1; towed array; passive search; very low frequency.

Helicopters: 1 SH-60J Seahawk

Programmes: DD 153-154 in 1984 estimates, DD 155-157 in 1985 and DD 158 in 1986

Modernisation: The last four were fitted on build with improved air search radar, updated fire-control radars and a helicopter datalink. Plans to fit the first four may have been postponed. Umigiri also commissioned with a sonar towed array which has been fitted to the rest of the class

Structure: Because of the enhanced IR signature and damage to electronic systems on the mainmast caused by after funnel gases there were modifications to the original design to help contain the problem. The mainmast is now slightly higher and has been offset to port. The forward funnel is also offset slightly to port and the after funnel to the starboard side of the superstructure. The hangar structure is asymmetrical extending to the after funnel on the starboard side but only to the mainmast to port. SATCOM is fitted at the after end of the hangar roof.

Operational: Beartrap helicopter hauldown system. Yamagiri (D 152) converted to training ship on 18 March 2004 and Asagiri (D 151) on 16 February 2005.



HAMAGIRI

4/2008, Hachiro Nakai / 1353167



SAWAGIRI

4/2008, Hachiro Nakai / 1353168

11 HATSUYUKI CLASS (DDGHM)

Name	No	Builders	Laid down	Launched	Commissioned
HATSUYUKI	DD 122	Sumitomo, Uraga	14 Mar 1979	7 Nov 1980	23 Mar 1982
SHIRAYUKI	DD 123	Hitachi, Maizuru	3 Dec 1979	4 Aug 1981	8 Feb 1983
MINEYUKI	DD 124	Mitsubishi, Nagasaki	7 May 1981	19 Oct 1982	26 Jan 1984
SAWAYUKI	DD 125	Ishikawajima Harima, Tokyo	22 Apr 1981	21 June 1982	15 Feb 1984
HAMAYUKI	DD 126	Mitsui, Tamano	4 Feb 1981	27 May 1982	18 Nov 1983
ISOYUKI	DD 127	Ishikawajima Harima, Tokyo	20 Apr 1982	19 Sep 1983	23 Jan 1985
HARUYUKI	DD 128	Sumitomo, Uraga	11 Mar 1982	6 Sep 1983	14 Mar 1985
YAMAYUKI	DD 129	Hitachi, Maizuru	25 Feb 1983	10 July 1984	3 Dec 1985
MATSUYUKI	DD 130	Ishikawajima Harima, Tokyo	7 Apr 1983	25 Oct 1984	19 Mar 1986
SETOYUKI	DD 131	Mitsui, Tamano	26 Jan 1984	3 July 1985	11 Dec 1986
ASAYUKI	DD 132	Sumitomo, Uraga	22 Dec 1983	16 Oct 1985	20 Feb 1987

Displacement, tons: 2,950 (3,050 from DD 129 onwards) standard; 4,000 (4,200) full load

Dimensions, feet (metres): 426.4 x 44.8 x 13.8 (14.4 from 129 onwards) (130 x 13.6 x 4.2) (4.4)

Main machinery: COGOG; 2 Kawasaki RR Olympus TM3B gas turbines; 49,400 hp (36.8 MW) sustained; 2 RR Type RM1C gas turbines, 8,900 hp (74 MW) sustained; 2 shafts; cp props

Speed, knots: 30, 19 cruise

Complement: 195 (200, DD 124 onwards)

Missiles: SSM: 8 McDonnell Douglas Harpoon (2 quad) launchers; active radar homing to 130 km (70 n miles) at 0.9 Mach; warhead 227 kg.

SAM: Raytheon Sea Sparrow RIM-7M Mk 29 Type 3A launcher; semi-active radar homing to 18 km (8.6 n miles) at 2.5 Mach; warhead 38 kg; 12 missiles.

A/S: Honeywell ASROC Mk 112 octuple launcher; inertial guidance to 1.6-10 km (1-5.4 n miles) at 0.9 Mach, payload Mk 46 Mod 5 Nearthip.

Guns: 1 Otobreda 3 in (76 mm)/62 compact; 85 rds/min to 16 km (8.6 n miles) anti-surface; 12 km (6.5 n miles) anti-aircraft; weight of shell 6 kg

2 General Electric/General Dynamics 20 mm Phalanx Mk 15 CIWS; 6 barrels per mounting; 3,000 rds/min combined to 1.5 km

Torpedoes: 6-324 mm Type 88 or HOS 301 (2 triple) tubes; Honeywell Mk 46 Mod 5 Nearthip; anti-submarine; active/passive homing to 11 km (5.9 n miles) at 40 kt; warhead 44 kg.



HATSUYUKI

(Scale 1 : 1,200), Ian Sturton / 0506301

Countermeasures: Decoys: 2 Loral Hycor SRBOC 6-barrelled Mk 36 chaff launchers; range 4 km (2.2 n miles)

ESM: Nec NOLR 6C; intercept.

ECM: Fujitsu OLT 3; jammer.

Combat data systems: OYO-5B action data automation.

SATCOM

Radars: Air search: Molco OPS-14B; D-band.

Surface search: JRC OPS-18C; G-band.

Navigation: JRC OPS-20; I-band

Fire control: Type 2-12 A; I/J-band (for SAM).

2 Type 2-21/21A; I/J-band (for guns).

Tacan: ORN-6C-Y (DD 122, 125 and 132); ORN-6C (remainder).

Sonars: Nec OQS 4A (II) (SQS-23 type); bow-mounted, active search and attack; low frequency

QGR 1 TACTASS (in some); passive; low frequency.

Helicopters: 1 SH-60J Seahawk

Modernisation: *Shirayuki* retrofitted with Phalanx in early 1992, and the rest of the class by 1995. *Matsuyuki* first to get sonar towed array in 1990 and *Hatsuyuki* in 1994, the others are being fitted. All of the class converted to carry Seahawk helicopters.

Structure: Fitted with fin stabilisers. Steel in place of aluminium alloy for bridge etc after DD 129 which increased displacement.

Operational: Canadian Beartrap helicopter landing aid. Improved ECM equipment in the last two of the class. Last of class *Shimayuki* converted to a training ship 18 March 1999



SHIRAYUKI

4/2008, Hachiro Nakai / 1353169



SETOYUKI

7/2008, Hachiro Nakai / 1353170

1 TACHIKAZE CLASS (DDGM)

Name	No	Builders	Laid down	Launched	Commissioned
SAWAKAZE	DDG 170	Mitsubishi, Nagasaki	14 Sep 1979	4 June 1981	30 Mar 1983

Displacement, tons: 3,950 standard; 5,200 full load
Dimensions, feet (metres): 469 × 47 × 15.1
 (143 × 14.3 × 4.6)
Main machinery: 2 Mitsubishi boilers; 600 psi (40 kg/cm²); 850°F (454°C); 2 Mitsubishi turbines; 80,000 hp(m); (44.7 MW); 2 shafts
Speed, knots: 32
Complement: 250

Missiles, SSM: 8 McDonnell Douglas Harpoon Block 1B; active radar homing to 92 km (50 n miles) at 0.9 Mach; warhead 227 kg HE.
SAM: Raytheon Standard SM-1MR Block VIA; Mk 13 Mod 4 launcher; command guidance; semi-active radar homing to 38 km (20.5 n miles) at 2 Mach; height envelope 45-18,288 m (150-60,000 ft); 40 missiles (SSM and SAM combined).
A/S: Honeywell ASROC Mk 112 octuple launcher; inertial guidance to 1.5-10 km (1-5.4 n miles) at 0.9 Mach; payload Mk 46 Mod 5 Neartip.
Guns: 1 or 2 FMC 5 in (127 mm)/54 Mk 42 automatic; 20-40 rds/min to 24 km (13 n miles) anti-surface; 14 km (7.6 n miles) anti-aircraft; weight of shell 32 kg
 2 General Electric/General Dynamics 20 mm Phalanx CIWS Mk 15; 6 barrels per mounting; 3,000 rds/min combined to 1.5 km
Torpedoes: 6—324 mm Type 68 or HOS 301 (2 triple) tubes; Honeywell Mk 46 Mod 5 Neartip; anti-submarine; active/passive homing to 11 km (5.9 n miles) at 40 kt; warhead 44 kg.
Countermeasures: Decoys: 4 Loral Hycor SRBOC Mk 36 multibarrelled chaff launchers. SLQ-25 towed torpedo decoy
ESM: Nec NOLQ 1, intercept
ECM: Fujitsu OLT 3, jammer.
Combat data systems: OYQ-4 action data automation; Links 11 and 14. SATCOM
Weapons control: 2 Mk 74 Mod 13 missile control directors. US Mk 114 ASW control. GFCS-2-21 for gun.
Radars: Air search: Melco OPS-11C; 8-band. Hughes SPS-52C; 3D, E/F-band.
Surface search: JRC OPS-28; G-band
Navigation: JRC OPS-20; I-band.



SAWAKAZE (Scale 1 : 1,200), Ian Sturton / 0506074



SAWAKAZE 9/2008, Hachiro Nakai / 1353171

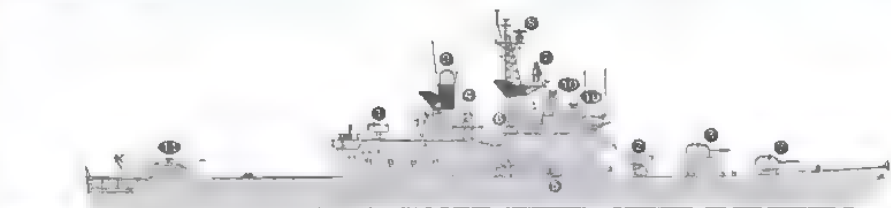
Fire control: 2 Raytheon SPG-51; G/I-band. Type 2 FCS; I/J-band.
Operational: Tachikaze decommissioned on 15 January 2007 and Asakaze on 12 March 2008.
Sonars: Nec OQS-3A (Type 66); bow-mounted; active search and attack; low frequency.

2 SHIRANE CLASS (DDHM)

Name	No	Builders	Laid down	Launched	Commissioned
SHIRANE	DDH 143	Ishikawajima Harima, Tokyo	25 Feb 1977	18 Sep 1978	17 Mar 1980
KURAMA	DDH 144	Ishikawajima Harima, Tokyo	17 Feb 1978	20 Sep 1979	27 Mar 1981

Displacement, tons: 5,200 standard; 7,200 full load
Dimensions, feet (metres): 521.5 × 57.5 × 17.5
 (159 × 17.5 × 5.3)
Main machinery: 2 IHI boilers, 850 psi (60 kg/cm²); 900 F (480°C); 2 IHI turbines; 70,000 hp(m) (51.5 MW); 2 shafts
Speed, knots: 31 (144); 32 (143)
Complement: 350; 360 (DDH 144) plus 20 staff

Missiles, SAM: Raytheon Sea Sparrow RIM-7M; Type 3 launcher; semi-active radar homing to 16 km (8.5 n miles) at 2.5 Mach; warhead 38 kg, 24 missiles.
A/S: Honeywell ASROC Mk 112 octuple launcher; inertial guidance to 10 km (5.4 n miles) at 0.9 Mach; payload Mk 46 Mod 5 Neartip.
Guns: 2 FMC 5 in (127 mm)/54 Mk 42 automatic; 20-40 rds/min to 24 km (13 n miles) anti-surface; 14 km (7.6 n miles) anti-aircraft; weight of shell 32 kg
 2 General Electric/General Dynamics 20 mm Phalanx Mk 15 CIWS; 6 barrels per mounting; 3,000 rds/min combined to 1.5 km
Torpedoes: 6—324 mm HOS 301 (2 triple) tubes; Honeywell Mk 46 Mod 5 Neartip; anti-submarine; active/passive homing to 11 km (5.9 n miles) at 40 kt; warhead 44 kg
Countermeasures: Decoys: 4 Mk 36 SRBOC chaff launchers. Prairie Masker; blade rate suppression system.
ESM/ECM: Melco NOLQ 1; intercept/jammer. Fujitsu QLR 98; intercept.
Combat data systems: OYQ-3B, Links 11 and 14. SATCOM.



SHIRANE (Scale 1 : 1,500), Ian Sturton / 1153010

Weapons control: Singer Mk 114 for ASROC and TFCS; Type 72-1A GFCS.
Radars: Air search: Nec OPS-12; 3D; D-band.
Surface search: JRC OPS-28; G-band.
Navigation: JRC OPS-20; I-band.
Fire control: Type 2-12; I/J-band. 2 Type 72-1A FCS; I/J-band.
Tacan: DRN-6C/6C-Y.
Sonars: EDO/Nec SQS-35(J); VDS, active/passive search; medium frequency. Nec OQS 101; bow-mounted; low frequency. EDO/Nec SQR-18A; towed array; passive; very low frequency.
Programmes: One each in 1975 and 1976 programmes.
Modernisation: DDH 143 refit in 1989-90. Both fitted with CIWS and towed array sonars by mid-1990. DDH 144 upgraded with Type 3 launcher to fire RIM-7M during 2003-04 refit at Mitsubishi, Nagasaki. DDH 143 similarly upgraded at IHI Yokohama in 2004.
Structure: Fitted with Vosper Thornycroft fin stabilisers. The after funnel is set to starboard and the forward one to port. The crane is on the starboard after corner of the hangar. Bear Trap helicopter hauldown gear.
Operational: Shirane badly damaged by a fire in December 2007 and repair plans are under consideration.

Helicopters: 3 SH-60J Seahawk



KURAMA 10/2006, Hachiro Nakai / 1040629

1 HARUNA CLASS (DDHM)

Name	No	Builders	Laid down	Launched	Commissioned
HIEI	DDH 142	Ishikawajima Harima, Tokyo	8 Mar 1972	13 Aug 1973	27 Nov 1974

Displacement, tons: 4,950 (5,050, DDH 142) standard, 6,900 full load

Dimensions, feet (metres): 502 × 57.4 × 17.1 (153 × 17.5 × 5.2)

Main machinery: 2 Mitsubishi (DDH 141) or IHI (DDH 142) boilers; 850 psi (60 kg/cm²); 900°F (480°C); 2 Mitsubishi (DDH 141) or IHI (DDH 142) turbines; 70,000 hp (51.5 MW); 2 shafts

Speed, knots: 31

Complement: 370 (360, DDH 141) (36 officers)

Missiles: SAM: Raytheon Sea Sparrow RIM-7M Mk 29 (Type 3A) octuple launcher ●; semi-active radar homing to 16 km (8.5 n miles) at 2.5 Mach; warhead 38 kg; 24 missiles.

A/S: Honeywell ASROC Mk 112 octuple launcher ●; inertial guidance to 1.6-10 km (1-5.4 n miles) at 0.9 Mach; payload Mk 46 Mod 5 Nearthip.

Guns: 2 FMC 5 in (127 mm) Mk 42 automatic ●; 20-40 rds/min to 24 km (13 n miles) anti-surface; 14 km (7.6 n miles) anti-aircraft; weight of shell 32 kg.
2 General Electric/General Dynamics 20 mm Phalanx Mk 15 CIWS ●; 6 barrels per mounting; 3,000 rds/min combined to 1.5 km.

Torpedoes: 6-324 mm HOS 301 (2 triple) tubes ●. Honeywell Mk 46 Mod 5 Nearthip; anti-submarine; active/passive homing to 11 km (5.9 n miles), at 40 kt; warhead 44 kg.

HARUNA

Countermeasures: Decoys: 4 Loral Hycor SRBOC Mk 36 multi-barrelled chaff launchers.

ESM/ECM: Melco NOLQ 1; Intercept/jammer Fujitsu OLR 9; intercept.

Combat data systems: OYQ-7B action data automation; Links 11 and 14; US SATCOM ●

Weapons control: 2 Type 2-12 FCS (1 for guns, 1 for SAM)

Radars: Air search: Melco OPS-11C ●, B-band.

Surface search: JRC OPS-28C/28C-Y ●, G-band.

Fire control: 1 Type 1A ●, I/J-band (guns).

1 Type 2-12 ●, I/J-band (SAM).

Navigation: JRC OPS-20; I-band.

IFF: YPA-2 YPX-3

Tacan: Nec ORN-6D/6C.

Sonars: Sangamo/Mitsubishi OQS 3; bow-mounted; active search and attack; low frequency with bottom bounce.

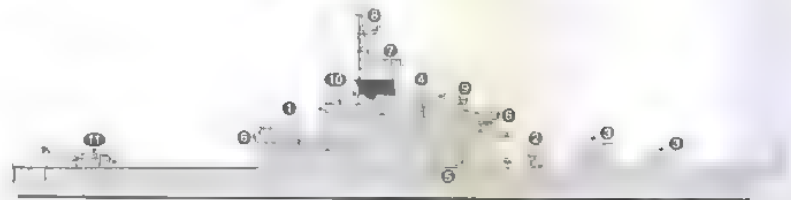
Helicopters: 3 SH-60J Seahawk ●.

Programmes: Ordered under the third five-year defence programme (from 1967-71).

Modernisation: DDH 142 received FRAM from 31 August 1987 to 30 March 1989 at IHI, Tokyo; included Sea Sparrow, two CIWS and chaff launchers.

Structure: The funnel is offset slightly to port. Fitted with fin stabilisers. A heavy crane has been fitted on the top of the hanger, starboard side.

Operational: Fitted with Canadian Beartrap hauldown gear.



(Scale 1 : 1,500), Ian Sturton / 00126/1



HIEI

4/2008*, Hachiro Nakai / 13531/7

FRIGATES

Notes: The MSDF classifies these ships as Destroyer Escorts.

6 ABUKUMA CLASS (FPGM/DE)

Name	No	Builders	Laid down	Launched	Commissioned
ABUKUMA	DE 229	Mitsui, Tamano	17 Mar 1988	21 Dec 1988	12 Dec 1989
JINTSU	DE 230	Hitachi, Maizuru	14 Apr 1988	31 Jan 1989	28 Feb 1990
OOYODO	DE 231	Mitsui, Tamano	8 Mar 1989	19 Dec 1989	23 Jan 1991
SENDAI	DE 232	Sumitomo, Uraga	14 Apr 1989	26 Jan 1990	15 Mar 1991
CHIKUMA	DE 233	Hitachi, Maizuru	14 Feb 1991	22 Jan 1992	24 Feb 1993
TONE	DE 234	Sumitomo, Uraga	8 Feb 1991	6 Dec 1991	8 Feb 1993

Displacement, tons: 2,000 standard; 2,550 full load

Dimensions, feet (metres): 357.6 × 44 × 12.5 (109 × 13.4 × 3.8)

Main machinery: CODOG; 2 RR Spey SM1A gas turbines; 26,650 hp (19.9 MW) sustained; 2 Mitsubishi S12U-MTK diesels; 6,000 hp (4.4 MW); 2 shafts

Speed, knots: 27

Complement: 120

Missiles: SSM: 8 McDonnell Douglas Harpoon (2 quad) launchers ●; active radar homing to 130 km (70 n miles) at 0.9 Mach; warhead 227 kg.

A/S: Honeywell ASROC Mk 112 octuple launcher ●; inertial guidance to 1.6-10 km (1-5.4 n miles) at 0.9 Mach; payload Mk 46 Mod 5 Nearthip.

Guns: 1 Otobreda 3 in (76 mm) Mk 62 compact ●; 85 rds/min to 16 km (8.6 n miles) anti-surface; 12 km (6.5 n miles) anti-aircraft; weight of shell 6 kg

1 General Electric/General Dynamics 20 mm Phalanx CIWS Mk 15 ●; 6 barrels per mounting; 3,000 rds/min combined to 1.5 km

Torpedoes: 6-324 mm HOS 301 (2 triple) tubes ●. Honeywell Mk 46 Mod 5 Nearthip; anti-submarine; active/passive homing to 11 km (5.9 n miles) at 40 kt; warhead 44 kg

Countermeasures: Decoys: 2 Loral Hycor SRBOC 6-barrelled Mk 36 chaff launchers

ESM: Nec NOLR-8; intercept.

Combat data systems: OYQ-6. SATCOM

Weapons control: Type 2-21; GFCS

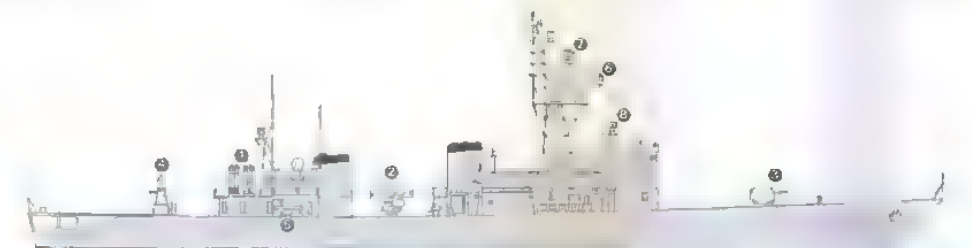
Radars: Air search: Melco OPS-14C ●, D-band.

Surface search: JRC OPS-28D (DE 233-234); JRS OFC-28C (remainder) ●; G-band.

Fire control: Type 2-21 ●

Sonars: Hitachi OQS-8; hull-mounted, active search and attack; medium frequency.
SQR-19A towed passive array in dual course.

Programmes: First pair of this class approved in 1986 estimates, ordered March 1987; second pair in 1987



ABUKUMA

(Scale 1 : 900), Ian Sturton / 05061/7



JINTSU

4/2008*, Hachiro Nakai / 13531/7

estimates, ordered February 1988; last two in 1989 estimates, ordered 24 January 1989. The name of the first of class commemorates that of a light cruiser which was sunk in the battle of Leyte Gulf in October 1944.

Structure: Stealth features include non-vertical and rounded surfaces. German RAM PDMS may be fitted later, although this now seems unlikely, and space has been left for a towed sonar array. SATCOM fitted aft of the after funnel

2 ISHIKARI/YUUBARI CLASS (FFG/DE)

Name	No	Builders	Laid down	Launched	Commissioned
YUUBARI	DE 227	Sumitomo, Uraga	9 Feb 1981	22 Feb 1982	18 Mar 1983
YUBETSU	DE 228	Hitachi, Maizuru	14 Jan 1982	25 Jan 1983	14 Feb 1984

Displacement, tons: 1,470 standard; 1,690 full load
Dimensions, feet (metres): 298.5 x 35.4 x 11.8
 (91.0 x 10.8 x 3.6)

Main machinery: CODOG; 1 Kawasaki/RR Olympus TM38 gas turbine; 24,700 hp (18.4 MW) sustained, 1 Mitsubishi/MAN 6DRV diesel; 4,700 hp (3.45 MW); 2 shafts; cp props

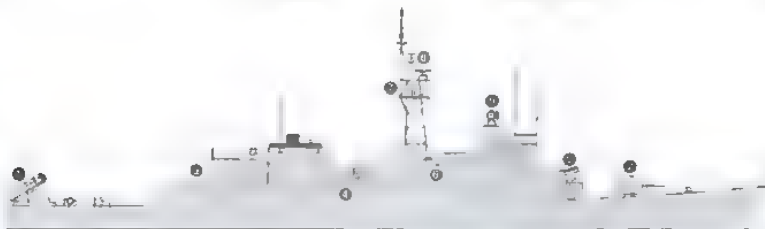
Speed, knots: 25
Complement: 95

Missiles, SSM: 8 McDonnell Douglas Harpoon (2 quad) launchers; active radar homing to 130 km (70 n miles) at 0.9 Mach; warhead 227 kg

Guns: 1 Otobreda 3 in (76 mm) M62 compact; 85 rds/min to 16 km (8.6 n miles) anti-surface; 12 km (6.5 n miles) anti-aircraft; weight of shell 6 kg. 1 General Electric/General Dynamics 20 mm Phalanx (unlikely to be fitted)

Torpedoes: 6—324 mm Type 68 (2 triple tubes); Honeywell Mk 46 Mod 5 Neartip; anti-submarine; active/passive homing to 11 km (5.9 n miles) at 40 kt; warhead 44 kg.

A/S mortars: 1—375 mm Bofors Type 71 4 to 6-barrelled trainable rocket launcher; automatic loading; range 16 km.



(Scale 1 : 900), Ian Sturton / 0506026

YUUBARI

Countermeasures: Decoys: 2 Loral Hycor SRBOC 6-barrelled Mk 36 chaff launchers; range 4 km (2.2 n miles).

ESM: Nec NOLR 6B; intercept

Combat data systems: OYQ-5.

Weapons control: Type 2-21 system for 76 mm gun.
Radars: Surface search: JRC OPS-28B/28-1; G-band Navigation: Fujitsu OPS-19B; I-band.

Fire control: Type 2-21; I/J-band

Sonars: Nec SQS-38J; hull-mounted; active/passive; medium frequency.

Programmes. The name *Yuubari* commemorates that of a light cruiser sunk in the Second World War

Structure: *Yuubari* and *Yubetsu* were slightly larger versions of *Ishikari* which was decommissioned in 2007.



YUUBARI

10/2006, Hachiro Nakai / 1040640

SHIPBORNE AIRCRAFT

Numbers/Type: 83/15 Sikorsky/Mitsubishi SH-60J/SH-60K (Seahawk).

Operational speed: 139 kt (257 km/h).

Service ceiling: 13,500 ft (4,090 m)

Range: 600 n miles (1,110 km)

Role/Weapon systems: ASW helicopter; started replacing HSS-2B in July 1991; built in Japan; prototypes fitted by Mitsubishi with Japanese avionics and mission equipment. Overall requirement for 103 aircraft. SH-60K are upgraded aircraft with an improved tactical data processing system. Sensors: Texas Instruments APS 124 search radar; sonobuoys plus datalink; Bendix AQS 18/Nippon HQS 103 dipping sonar, ECM, HLR 108 ESM. Weapons: ASW; two Mk 46 torpedoes or depth bombs. 2 Hellfire ASM (SH-60K)



SH-60K

10/2006, Hachiro Nakai / 1040641

Numbers/Type: 2/1 Agusta Westland/Kawasaki MCH 101/CH 101.

Operational speed: 150 kt (278 km/h).

Service ceiling: 15,000 ft (4,575 m).

Range: 610 n miles (1,129 km)

Role/Weapon systems: Based on the Agusta Westland EH-101. There are to be 11 MCH-101 AMCM and cargo carrying aircraft to replace the MH-53E. Three CH-101 are to replace the S-61A support aircraft deployed in the ice patrol ship.



MCH-101

11/2006, Japanese Navy / 1167169

LAND-BASED MARITIME AIRCRAFT

Notes: Aircraft type names are not used by the MSDF

Numbers/Type: 10 NAMC YS-11

Operational speed: 248 kt (459 km/h).

Service ceiling: 21,500 ft (6,580 m).

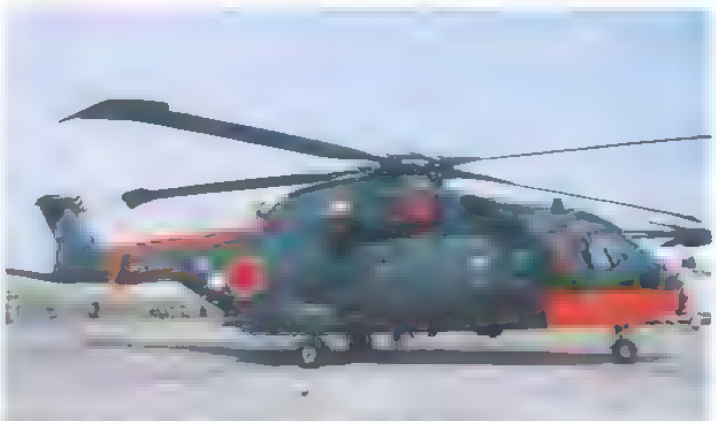
Range: 1,960 n miles (3,629 km).

Role/Weapon systems: First flew in 1962. Of 182 aircraft constructed, 10 remain in service. Of these, two YS-11EA are EW trainers while there are believed to be four YS-11B configured for Sigint operations. These are equipped with dorsal and ventral blade antennas and with radomes. These aircraft may be designated YS-11EL. Other variants include two YS-11FC flight checkers, a YS-11NT navigational trainer and YS-11C transport aircraft.



YS-11

9/2008*, Hachiro Nakai / 1353175



CH-101

9/2008*, Hachiro Nakai / 1353174

Numbers/Type: 95/5/1/3/5 Lockheed/Kawasaki P-3C/EP-3/UP-3C/UP-3D/OP-3C
Operational speed: 395 kt (732 km/h).
Service ceiling: 28,300 ft (8,625 m).
Range: 3,300 n miles (6,100 km).

Role/Weapon systems: Long-range MR/ASW and surface surveillance and attack. Most maritime surveillance is done by these aircraft. Sensors: APS-115 radar, ASQ-81 MAD, AQA 7 processor, Unisys CP 2044 computer, IFF, ECM, ALQ 78, ESM, ALR 66, sonobuoys. Weapons: ASW; eight Mk 48 torpedoes, depth bombs or mines, four underwing stations for Harpoon and ASM-1.



P-3C 9/2008*, Hachiro Nakai / 1353176



EP-3 9/2008*, Hachiro Nakai / 1353177

Numbers/Type: 6 Shinmeiwa US-1A Rescue.
Operational speed: 265 kt (491 km/h).
Service ceiling: 28,400 ft (8,655 m).
Range: 2,300 n miles (4,260 km).

Role/Weapon systems: Turboprop amphibian designed for maritime patrol and SAR missions. Crew of 12. Accommodation for 16 survivors or 12 stretchers.



US-1A 7/2008*, Hachiro Nakai / 1353115

Numbers/Type: 10 Sikorsky/Mitsubishi S-80M-1 (Sea Dragon) (MH53E).
Operational speed: 170 kt (315 km/h).
Service ceiling: 18,500 ft (5,640 m).
Range: 1,120 n miles (2,000 km).

Role/Weapon systems: Three-engined AMCM helicopter tows Mk 103, 104, 105 and 106 MCM sweep equipment; self-deployed. Weapons: Two 12.7 mm guns for mine disposal.



MH-53E 9/2008*, Hachiro Nakai / 1353104

Numbers/Type: 2 Kawasaki XP-1
Operational speed: 448 kt (830 km/h).
Service ceiling: 36,100 ft (11,000 m).
Range: 4,320 n miles (8,000 km).

Role/Weapon systems: The first test version of the XP-1 future maritime patrol aircraft was rolled out on 4 July 2007. The aircraft has been under full development since 2001 and is to replace the P-3C inventory in due course. The aircraft incorporates the world's first Fly-By-Light (FBL) system. The aircraft is to be equipped with new acoustic and radar systems. Following flight testing, the aircraft is to be delivered to the Ministry of Defence by the end of 2008. Up to 70 aircraft may be acquired.



XP-1 10/2008*, Ships of the World / 1353183

Numbers/Type: 3 Shinmeiwa US-2.
Operational speed: 300 kt (556 km/h).
Service ceiling: 28,400 ft (8,655 m).
Range: 2,500 n miles (4,630 km).

Role/Weapon systems: Following trials, two former experimental aircraft entered service in 2007. A further aircraft was authorised in the FY07 budget. The US-2 is an upgraded version of the US-1A and is designed for maritime patrol and SAR missions. Sensors: Thales Ocean Master radar.



US-2 12/2008*, Hachiro Nakai / 1353114

PATROL FORCES

6 HAYABUSA CLASS (PGGF)

Name	No	Builders	Launched	Commissioned
HAYABUSA	824	Mitsubishi, Shimonoseki	13 June 2001	25 Mar 2002
WAKATAKA	825	Mitsubishi, Shimonoseki	13 Sep 2001	25 Mar 2002
OOTAKA	826	Mitsubishi, Shimonoseki	13 May 2002	24 Mar 2003
KUMATAKA	827	Mitsubishi, Shimonoseki	2 Aug 2002	24 Mar 2003
UMITAKA	828	Mitsubishi, Shimonoseki	21 May 2003	24 Mar 2004
SHIRATAKA	829	Mitsubishi, Shimonoseki	8 Aug 2003	24 Mar 2004

Displacement, tons: 200 standard; 240 full load
Dimensions, feet (metres): 164.4 × 27.6 × 13.8 (50.1 × 8.4 × 4.2)
Main machinery: 3 LM 500-G07 gas turbines 16,200 hp (12.08 MW); 3 water jets
Speed, knots: 44
Complement: 18 (+3 staff)
Missiles: 4 Mitsubishi Type 90 SSM-1B; active radar homing to 130 km (70 n miles) at 0.9 Mach; warhead 227 kg.
Guns: 1 OTO Melara 3 in (76 mm)/62 compact; 85 rds/min to 16 km (8.7 n miles) anti-surface; 12 km (6.6 n miles) anti-aircraft; weight of shd, 6 kg.
 2—12.7 mm MGs.
Countermeasures: Decoys: Chaff launchers.
ESM/ECM: NOLR-9B
Radars: Surface search: OPS-18-3; G-band
Fire control: Type 2-31C.
Navigation: OPS-20; I-band

Comment: First pair authorised in FY99 budget, second pair in FY00 and third pair in FY01. Single hull



OOTAKA 10/2008*, Hachiro Nakai / 1353116

1 PG 01 (SPARVIERO) CLASS (FAST ATTACK HYDROFOILS—MISSILE) (PTGK)

Name	No	Builders	Launched	Commissioned
MISAIRUTEI-SAN-GOU	823	Sumitomo, Uraga	15 June 1994	13 Mar 1995

Displacement, tons: 50 standard; 60 full load
Dimensions, feet (metres): 71.5 × 22.9 × 4.6 (21.8 × 7 × 1.4) (hull)
 80.7 × 23.1 × 14.4 (24.6 × 7 × 4.4) (foilborne)
Main machinery: 1 GE/IMI LM 500 gas turbine; 6,000 hp (3.72 MW) sustained; 1 pumpjet (foilborne); 1 diesel; 1 retractable prop (hullborne)
Speed, knots: 46; 8 (diesel). **Range, n miles:** 400 at 40 kt; 1,000 at 8 kt
Complement: 11 (3 officers)
Missiles: SSM: 4 Mitsubishi Type 90 SSM-1B (derivative of land-based system); range 150 km (81 n miles)
Guns: 1 GE 20 mm/76 Sea Vulcan; 3 barrels per mounting; 1,500 rds/min combined to 4 km (2.2 n miles)
Countermeasures: Decoys: 2 Loral Hycoor Mk 36 SRBOC chaff launchers.
ESM/ECM: NOLR-9B.
Combat data systems: Link 11
Radars: Surface search: JRC OPS-28-2; G band.
Navigation: JRC OPS-20; I-band

Comment: Classified as Guided Missile Patrol Boats. First two approved in FY90 and one more approved in FY92. The first two were decommissioned in 2008



PG 01 CLASS 7/2006, Hachiro Nakai / 1040645

AMPHIBIOUS FORCES

3 OOSUMI CLASS (LPD/LSTH)

Name	No	Builders	Laid down	Launched	Commissioned
OOSUMI	LST 4001	Mitsui, Tamano	6 Dec 1995	18 Nov 1996	11 Mar 1998
SHIMOKITA	LST 4002	Mitsui, Tamano	30 Nov 1999	29 Nov 2000	12 Mar 2002
KUNSAKI	LST 4003	Universal, Maizuru	7 Sep 2000	13 Dec 2001	26 Feb 2003

Displacement, tons: 8,900 standard; 14,000 full load

Dimensions, feet (metres): 584 × 84.6 × 19.7

(178 × 25.8 × 6)

Flight deck, feet (metres): 426.5 × 75.5 (130 × 23)

Main machinery: 2 Mitsui 16V42MA diesels; 26,000 hp(m)

(19.4 MW); 2 shafts; 2 bow thrusters

Speed, knots: 22

Complement: 135

Military lift: 330 troops; 2 LCAC; 10 Type 90 tanks or 1,400 tons cargo

Guns: 2 GE/GD 20 mm Vulcan Phaenx Mk 15 ● 6 barrels per mounting; 3,000 rds/min combined to 1.5 km.

Countermeasures: ESM/ECM.

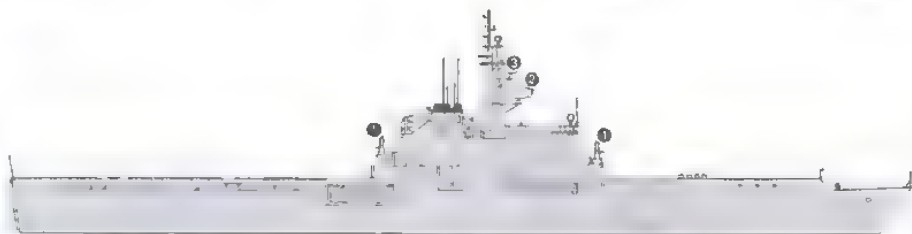
Radars: Air search: Mitsubishi OPS-14C ●; C-band.

Surface search: JRC OPS-28D ●; G-band.

Navigation: JRC OPS-20; I-band

Helicopters: Platform for 2 CH-47J.

Programmes: A 5,500 ton LST was requested and not approved in the 1989 or 1990 estimates. The published



OOSUMI

(Scale 1 : 1,500), Ian Sturton / 0012652

design resembled the Italian San Giorgio with a large flight deck and a stern dock. No further action was taken for two years but the FY93 request included a larger ship showing the design of a USN LPH, although smaller in size. This vessel, with some modifications, was authorised in the 1993 estimates. A second of class approved in FY98 and third in FY99.

Structure: Through deck, flight deck and stern docking well make this more like a mini LHA than an LST, except that the ship is described as providing only 'platform and refuelling facilities for helicopters'.



OOSUMI

5/2008*, Hachiro Nakai / 1353117



SHIMOKITA

4/2008*, Hachiro Nakai / 1353118

430 Japan (MSDF)/Amphibious forces – Mine warfare forces

2 YURA CLASS (LSU/LCU)

Name	No	Builders	Commissioned
YURA	LSU 4171	Sasebo Heavy Industries	27 Mar 1981
NOTO	LSU 4172	Sasebo Heavy Industries	27 Mar 1981

Displacement, tons: 590 standard
Dimensions, feet (metres): 190.2 x 31.2 x 5.6 (58 x 9.5 x 1.7)
Main machinery: 2 Fuji 6L275XF diesels, 3,250 hp(m) (2.39 MW); 2 shafts; cp props
Speed, knots: 12
Complement: 31
Military lift: 70 troops
Guns: 1 GE 20 mm/76 Sea Vulcan 20; 3 barrels per mounting; 1,500 rds/min combined to 4 km (2.2 n miles)
Radars: Navigation: Fujitsu OPS-9B; I-band.

Comment: Both laid down 23 April 1980. 4171 launched 15 October 1980 and 4172 on 12 November 1980.



YURA 8/2007, Hachiro Nakai / 1305095

2 YUSOUTEI CLASS (LCU)

Name	No	Builders	Commissioned
YUSOUTEI-CHI-GOU	LCU 2001	Sasebo Heavy Industries	17 Mar 1988
YUSOUTEI-NI-GOU	LCU 2002	Sasebo Heavy Industries	11 Mar 1992

Displacement, tons: 420 standard; 540 full load
Dimensions, feet (metres): 170.6 x 28.5 x 5.2 (52 x 8.7 x 1.6)
Main machinery: 2 Mitsubishi S6U-MTK diesels; 3,000 hp(m) (2.23 MW); 2 shafts
Speed, knots: 12
Complement: 28
Guns: 1 GE 20 mm/76 Sea Vulcan; 3 barrels per mounting; 1,500 rds/min combined to 4 km (2.2 n miles)
Radars: Navigation. OPS-9B/26; I-band

Comment: First approved in 1986 estimates, laid down 11 May 1987, launched 9 October 1987. Second approved in FY90 estimates, laid down 15 May 1991, launched 7 October 1991; plans for a third have been scrapped. Official names are LCU 01 and LCU 02.



YUSOUTEI-CHI-GOU 10/2008*, Hachiro Nakai / 1353119

6 LANDING CRAFT AIR CUSHION (LCAC)

AIR CUSHION-TEI (1-6) GOU LCAC 2101 2106

Displacement, tons: 100 standard; 180 full load
Dimensions, feet (metres): 88 oa (on cushion) (81 between hard structures) x 47 beam (on cushion) (43 beam hard structure) x 2.9 draught (off cushion) (26.8 (24.7) x 14.3 (13.1) x 0.9)
Main machinery: 4 Avco-Lycoming TF-40B gas turbines; 2 for propulsion and 2 for lift; 16,000 hp (12 MW) sustained; 2 shrouded reversible-pitch airscrews (propulsion); 4 double entry fans, centrifugal or mixed flow (lift)
Speed, knots: 40 (loaded)
Range, n miles: 300 at 35 kt, 200 at 40 kt
Complement: 5
Military lift: 24 troops; 1 MBT or 60-75 tons
Radars: Navigation: LN-66; I-band.

Comment: Built by Textron Marine, New Orleans for embarkation in LPDs. Approval for sale given by US on 8 April 1994. First two commissioned in March 1998, second two in March 2002 and third in February 2003. Cargo space capacity is 1,809 sq ft.



LCAC 2103 7/2008*, Hachiro Nakai / 1353170

10 LCM TYPE (LCM)

YF 2121	YF 2124-25	YF 2127-29	YF 2132	YF 2135	YF 2138	YF 2141
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Displacement, tons: 25 standard
Dimensions, feet (metres): 55.8 x 14 x 2.3 (17.0 x 4.3 x 0.7)
Main machinery: 2 Isuzu E120-MF6R diesels, 480 hp(m) (353 kW); 2 shafts
Speed, knots: 10
Range, n miles: 130 at 9 kt
Complement: 3
Military lift: 34 tons or 80 troops

Comment: Built in Japan. YF 2127-29 commissioned in March 1992, 2132 in March 1993, 2135 in March 1995, 2138 in March 1996 and 2141 in March 1997. YF 2150-51 are 50 ton vessels built by Yokohama Yacht and completed in March 2003. With a military lift of 100 tons they are capable of 16 kt.



YF 2135 10/2007, Hachiro Nakai / 1305095

2 YF 2150 CLASS LCM (LCM)

YF 2150-51

Displacement, tons: 50 standard
Dimensions, feet (metres): 121.4 x 22.0 x 11.2 (36.8 x 6.7 x 3.4)
Main machinery: 2 Mitsubishi S12R-MTK diesels; 3,000 hp (2.24 MW); 2 waterjets
Speed, knots: 16
Complement: 4
Military lift: 100 troops or 1 vehicle

Comment: Built in Japan by Universal, Keihin and commissioned on 19 March 2003.



YF 2150 10/2007, Hachiro Nakai / 1305096

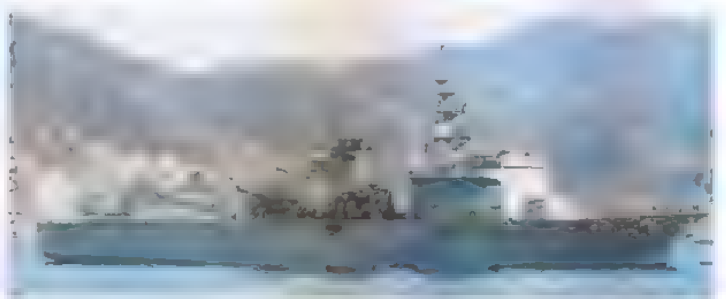
MINE WARFARE FORCES

2 URAGA CLASS (MINESWEEPER TENDERS) (MSTH/ML)

Name	No	Builders	Launched	Commissioned
URAGA	MST 463	Hitachi, Maizuru	22 May 1996	19 Mar 1997
BUNGO	MST 464	Mitsui, Tamano	24 Apr 1997	23 Mar 1998

Displacement, tons: 5,650 standard; 6,850 full load
Dimensions, feet (metres): 462.6 x 72.2 x 17.7 (141 x 22 x 5.4)
Main machinery: 2 Mitsui 16V42MA diesels; 19,500 hp(m) (14.33 MW); 2 shafts
Speed, knots: 22
Complement: 160
Guns: 1 OTO Melara 3 in (76 mm)/62 compact (MST 464), 85 rds/min to 16 km (8.6 n miles); weight of shell 6 kg.
Mines: Laying capability; 4 rails (Type 3). 200 mines.
Radars: Air search OPS-14C; C-band.
Fire control: Type 2-23; I/J-band.
Navigation: JRC OPS 39C, I-band.
Helicopters: Platform for 1 MH-53E

Comment: First one authorised 15 February 1994 and laid down 19 May 1995; second authorised in FY95 and laid down 4 July 1996. Capable of laying mines, from four internal rails. Phalanx is planned to be fitted forward of the bridge and on the superstructure aft of the funnel.



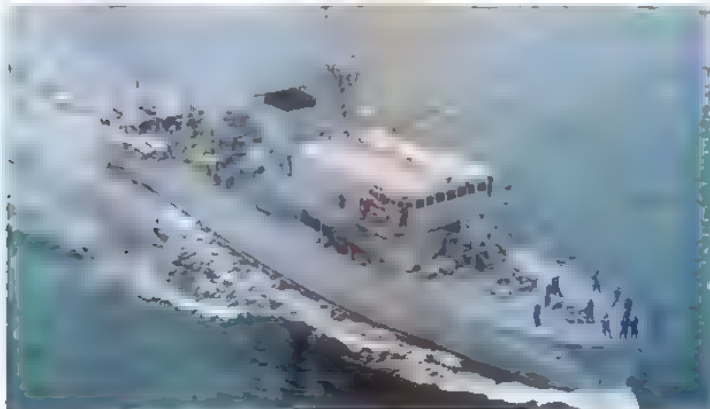
URAGA 2/2008*, Hachiro Nakai / 1353171

3 YAEYAMA CLASS (MINESWEEPERS—OCEAN) (MSO)

Name	No	Builders	Launched	Commissioned
YAEYAMA	MSO 301	Hitachi Zosen, Kanagawa	29 Aug 1991	16 Mar 1993
TSUSHIMA	MSO 302	Nippon Koukan, Tsurumi	20 Sep 1991	23 Mar 1993
HACHIJYO	MSO 303	Nippon Koukan, Tsurumi	15 Dec 1992	24 Mar 1994

Displacement, tons: 1,000 standard; 1,200 full load
Dimensions, feet (metres): 219.8 x 38.7 x 10.2 (67 x 11.8 x 3.1)
Main machinery: 2 Mitsubishi 6NMU-TA1 diesels; 2,400 hp(m) (1.76 MW); 2 shafts; 1 hydrojet bow thruster; 360 hp(m) (257 kW)
Speed, knots: 14
Complement: 60
Guns: 1 JM-61 20 mm/76 Sea Vulcan; 3 barrels per mounting; 1,500 rds/min combined to 4 km (2.2 n miles).
Radars: Surface search: Fujitsu OPS-39B; I-band.
Sonars: Raytheon SQQ-32 VDS; high frequency; active.

Comment: First two approved in 1989 estimates, third in 1990. First laid down 30 August 1990, second 20 July 1990 and third 17 May 1991. Wooden hulls. Fitted with S 7 deep sea minehunting system, S 8 (SLQ-48) deep sea moored minesweeping equipment and ADI Dyad sweeps. Appears to be a derivative of the USN Avenger class. An integrated tactical system is fitted. Termination of the programme at three of the class suggests similar problems to US ships of the same class.



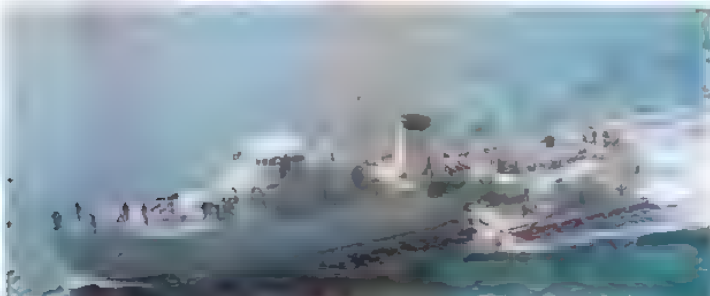
TSUSHIMA 7/2006, Hachiro Nakai / 1040651

2 NIJIMA CLASS (DRONE CONTROL SHIPS) (MCSD)

Name	No	Builders	Commissioned
OGISHIMA	MCL 726 (ex-MSO 668)	Hitachi, Kanagawa	19 Dec 1987
SAKUSHIMA	MCL 727 (ex-MSO 671)	Nippon Koukan, Tsurumi	18 Dec 1989

Displacement, tons: 440 standard; 510 full load
Dimensions, feet (metres): 180.4 x 30.8 x 8.2 (56 x 9.4 x 2.5)
Main machinery: 2 Mitsubishi 122C diesels; 1,440 hp(m) (1.08 MW); 2 shafts
Speed, knots: 14
Complement: 28
Guns: 1 GE 20 mm/76 Sea Vulcan 20; 3 barrels per mounting; 1,500 rds/min combined to 4 km (2.2 n miles).
Radars: Surface search: Fujitsu OPS-9B; I-band.

Comment: Both converted to act as Minesweeper Control Ship (MCLs) and equipped to operate SAM remote controlled drones. All minesweeping gear removed. *Ogishima* converted as MCL on 8 February 2006.



NIJIMA CLASS (with SAM 02) 2/2008*, Hachiro Nakai / 1353133

6 SAM CLASS (MSD)

SAM 01-06
Displacement, tons: 20 full load
Dimensions, feet (metres): 59.1 x 20 x 5.2 (18 x 6.1 x 1.6)
Main machinery: 1 Volvo Penta TAMD 70D diesel; 210 hp(m) (154 kW); 1 Schottel prop
Speed, knots: 8. Range, n miles: 330 at 8 kt

Comment: First pair acquired from Karlskronavarvet, Sweden in February 1998 followed by two more in December 1998 and two more in 2000. Remotely controlled magnetic and acoustic catamaran sweepers operated by *Kamishima* and *Ogishima*.



SAM 02 2/2008*, Hachiro Nakai / 1353124

12 SUGASHIMA CLASS (MINEHUNTER (COASTAL)) (MHC)

Name	No	Builders	Launched	Commissioned
SUGASHIMA	MSC 681	NKK, Tsurumi	25 Aug 1997	16 Mar 1999
NOTOJIMA	MSC 682	Hitachi, Kanagawa	3 Sep 1997	16 Mar 1999
TSUNOSHIMA	MSC 683	Hitachi, Kanagawa	22 Oct 1998	13 Mar 2000
NAOSHIMA	MSC 684	NKK, Tsurumi	7 Oct 1999	16 Mar 2001
TOYOSHIMA	MSC 685	Hitachi, Kanagawa	13 Sep 2000	4 Mar 2002
UKUSHIMA	MSC 686	Universal, Keihin (Tsurumi)	17 Sep 2001	18 Mar 2003
IZUSHIMA	MSC 687	Universal, Keihin (Kanagawa)	31 Oct 2001	18 Mar 2003
AISHIMA	MSC 688	Universal, Keihin (Tsurumi)	8 Oct 2002	16 Feb 2004
AOSHIMA	MSC 689	Universal, Keihin (Kanagawa)	16 Sep 2003	9 Feb 2005
MIYAJIMA	MSC 690	Universal, Keihin (Tsurumi)	10 Oct 2003	9 Feb 2005
SHISHIJIMA	MSC 691	Universal, Keihin (Tsurumi)	29 Sep 2004	8 Feb 2006
KUROSHIMA	MSC 692	Universal, Keihin (Tsurumi)	31 Aug 2005	23 Feb 2007

Displacement, tons: 510 standard; 590 full load
Dimensions, feet (metres): 177.2 x 30.8 x 9.8 (54.0 x 9.4 x 3.0)
Main machinery: 2 Mitsubishi 6 NMU-TA1 diesels; 1,800 hp(m) (1.33 MW); 2 shafts; bow thrusters
Speed, knots: 14. Range, n miles: 2,500 at 10 kt
Complement: 45
Guns: 1 JM-61 20 mm/76 Sea Vulcan, 3 barrels for mounting, 1,500 rds/min combined to 4 km (2 n miles)
Combat data systems: AMS/NEC Neutis-M type MCM control system.
Radars: Surface search: Fujitsu OPS-39B; I-band.
Sonars: THALES Hitachi GEC Type 2093 VDS; high frequency; active.

Comment: First pair authorised in FY95, third in FY96, fourth in FY97, fifth in FY98, sixth and seventh in FY99, eighth in FY00, ninth and tenth in FY01, eleventh in FY02 and twelfth in FY03. Hull is similar to *Uwayima* but the upper deck is extended aft to provide more storage for mine disposal gear, and there are twin funnels. PAP 104 Mk 5 ROVs are carried and ADI Dyad minesweeping gear fitted.



NAOSHIMA 2/2008*, Hachiro Nakai / 1353122

2 + 1 HIRASHIMA CLASS (MINESWEEPERS/MINEHUNTERS—COASTAL) (MHSC)

Name	No	Builders	Launched	Commissioned
HIRASHIMA	MSC 601	Universal, Keihin (Tsurumi)	27 Sep 2006	11 Mar 2008
YAKUSHIMA	MSC 602	Universal, Keihin (Tsurumi)	26 Sep 2007	6 Mar 2009
TAKASHIMA	MSC 603	Universal, Keihin (Tsurumi)	25 Sep 2008	Mar 2010

Displacement, tons: 570 standard; 650 full load
Dimensions, feet (metres): 187 x 32.1 x 14.4 (57.0 x 9.8 x 4.4)
Main machinery: 2 Mitsubishi 6 NMU diesels; 2,200 hp (1.64 MW); 2 shafts; bow thrusters
Speed, knots: 14
Complement: 45
Guns: 1—20 mm Sea Vulcan.
Sonars: Hitachi ZQS 4; hull-mounted; high frequency.

Comment: First authorised in FY04 budget, second in FY05 budget and third in FY06 budget. Wooden hull. Equipped with S-10 minesweeping and disposal system.



HIRASHIMA 3/2008*, Hachiro Nakai / 1353123

0 + 2 IMPROVED HIRASHIMA CLASS (MINESWEEPERS—COASTAL) (MSC)

Name	No	Builders	Laid down	Launched	Commissioned
-	-	-	2009	2010	2012

Displacement, tons: 570 standard
Dimensions, feet (metres): 206.7 x 32.1 x 14.4 (63.0 x 9.8 x 4.4)
Main machinery: 2 diesels; 2 shafts
Speed, knots: 14
Complement: To be announced
Guns: 1—30 mm (remote controlled).

Comment: A larger, improved version of the *Hirashima* class. FRP construction. First authorised in FY08 budget and second in FY09 budget.

10 HATSUSHIMA/UWAJIMA CLASS (MINEHUNTERS/SWEEPERS—COASTAL) (MHSC)

Name	No	Builders	Commissioned
AWASHIMA	MSC 670	Hitachi, Kanagawa	13 Dec 1989
UWAJIMA	MSC 672	Nippon Koukan, Tsurumi	19 Dec 1990
IESHIMA	MSC 673	Hitachi, Kanagawa	19 Dec 1990
TSUKISHIMA	MSC 674	Hitachi, Kanagawa	17 Mar 1993
MAEJIMA	MSC 675	Hitachi, Kanagawa	15 Dec 1993
KUMEJIMA	MSC 676	Nippon Koukan, Tsurumi	12 Dec 1994
MAKISHIMA	MSC 677	Hitachi, Kanagawa	12 Dec 1994
TOBISHIMA	MSC 678	Nippon Koukan, Tsurumi	10 Mar 1995
YUGESHIMA	MSC 679	Hitachi, Kanagawa	11 Dec 1996
NAGASHIMA	MSC 680	Nippon Koukan, Tsurumi	26 Dec 1996

Displacement, tons: 440 (490, MSC 672-680) standard; 520 (550 MSC 670-671) (570 MSC 672-680) full load

Dimensions, feet (metres): 180.4 (190.3, MSC 670 onwards) × 30.8 × 8.2 (9.5)

(55 (58.0) × 9.4 × 2.5 (2.9))

Main machinery: 2 Mitsubishi 6NMU-TAI diesels; 1,800 hp(m) (1.3 MW); 2 shafts

Speed, knots: 14

Range, n miles: 2,500 at 10 kt

Complement: 45

Guns: 1 JM-61 20 mm/76 Sea Vulcan 20; 3 barrels per mounting; 1,500 rds/min combined to 4 km (2.2 n miles)

Radars: Surface search: Fujitsu OPS-9 or OPS-39 (MSC 674 onwards); I-band.

Sonars: Nec/Hitachi ZQS 2B or ZQS 3 (MSC 672 onwards); hull-mounted; minehunting; high frequency.

Programmes: First ordered in 1976. Last two authorised in FY94. Because of the new sonar and mine detonating equipment vessels from MSC 672 onwards are known as the Uwajima class.

Structure: From MSC 670 onwards the hull is lengthened by 2.7 m in order to improve the sleeping accommodation from three tier to two tier bunks. Hulls are made of wood. The last pair has more powerful engines developing 1,800 hp(m) (1.32 MW)

Operational: Fitted with S 4 (S 7 from MSC 672 onwards) mine detonating equipment, a remote-controlled counter-mine charge. Four clearance divers are carried. Earlier vessels of the class converted to drone control or paid off at a rate of one or two a year.



MAKISHIMA

7/2008*, Hachiro Nakai / 1353125

0 + 1 SURVEY SHIP (AGS)

Name	No	Builders	Laid down	Launched	Commissioned
-	AGS 5106	Mitsui, Tamano	Dec 2008	June 2009	Mar 2010

Displacement, tons: 3,200 standard

Dimensions, feet (metres): 337.9 × 53.8 × 14.8 (103.0 × 16.4 × 4.5)

Main machinery: Diesel-electric; 2 shafts

Speed, knots: 16

Range, n miles: To be announced

Complement: 80

Radars: Navigation: I-band.

Comment: New survey ship authorised in FY07 budget

1 NICHINAN CLASS (SURVEY SHIP) (AGS)

Name	No	Builders	Launched	Commissioned
NICHINAN	AGS 5105	Mitsubishi, Shimonoseki	11 June 1998	24 Mar 1999

Displacement, tons: 3,300 standard; 4,500 full load

Dimensions, feet (metres): 364.2 × 55.8 × 14.8 (111 × 17 × 4.5)

Main machinery: Diesel-electric; 2 Mitsubishi S16U diesel generators; 3 motors, 3,600 hp(m) (2.7 MW); 2 shafts; bow and stern thrusters

Speed, knots: 18

Complement: 90

Comment: Authorisation approved in FY96. Combination cable repair and hydrographic survey ship. Equipped with one ROV



NICHINAN

8/2007, Hachiro Nakai / 1305104

1 SUMA CLASS (AGS)

Name	No	Builders	Launched	Commissioned
SUMA	AGS 5103	Hitachi, Maizuru	1 Sep 1981	30 Mar 1982

Displacement, tons: 1,180 standard; 1,700 full load

Dimensions, feet (metres): 236.2 × 42 × 11.1 (72 × 12.8 × 3.4)

Main machinery: 2 Fuji 6L275XF diesels; 3,000 hp(m) (2.24 MW); 2 shafts; cp props; bow thruster

Speed, knots: 15

Complement: 64 plus 5 scientists

Countermasures: ESM NOLR-6.

Radars: Navigation: OPS-20; I-band.

Comment: Laid down 24 September 1980. Carries an 11 m launch for surveying work.



SUMA

2/1999, Hachiro Nakai / 0080180

2 FUTAMI CLASS (AGS)

Name	No	Builders	Launched	Commissioned
FUTAMI	AGS 5102	Mitsubishi, Shimonoseki	9 Aug 1978	27 Feb 1979
WAKASA	AGS 5104	Hitachi, Maizuru	21 May 1985	25 Feb 1986

Displacement, tons: 2,050 standard; 3,175 full load

Dimensions, feet (metres): 318.2 × 49.2 × 13.8 (97 × 15 × 4.2)

Main machinery: 2 Kawasaki-MAN V8V22/30ATL diesels; 4,000 hp(m) (2.94 MW) (AGS 5102); 2 Fuji 8L275XF diesels, 3,250 hp(m) (2.39 MW) (AGS 5104); 2 shafts; cp props, bow thruster

Speed, knots: 16

Complement: 105 (95 AG 5104)

Radars: Navigation: JRC OPS-18-3; G-band.

Comment: AGS 5102 laid down 20 January 1978, AGS 5104 21 August 1984. Built to merchant marine design. Carry an RCV 225 remote-controlled rescue/underwater survey submarine. *Wakasa* has a slightly taller funnel.



FUTAMI

8/2008*, Hachiro Nakai / 1353176

SURVEY AND RESEARCH SHIPS

Notes: Survey ships are also included in the Coast Guard section

2 HIBIKI CLASS (OCEAN SURVEILLANCE SHIPS) (AGOSH)

Name	No	Builders	Launched	Commissioned
HIBIKI	AOS 5201	Mitsui, Tamano	27 July 1990	30 Jan 1991
HARIMA	AOS 5202	Mitsui, Tamano	11 Sep 1991	10 Mar 1992

Displacement, tons: 2,850 standard; 3,000 full load

Dimensions, feet (metres): 219.8 × 98.1 × 24.6 (67 × 29.9 × 7.5)

Main machinery: Diesel-electric; 4 Mitsubishi Stu diesels; 3,000 hp(m) (2.2 MW); 4 generators; 2 motors; 3,000 hp(m) (2.2 MW); 2 shafts

Speed, knots: 11 (3 towing)

Range, n miles: 3,800 at 10 kt

Complement: 40

Radars: Surface search: JRC OPS-16, G-band.

Navigation: Koden OPS-9; I-band.

Sonars: UQQ 2 SURTASS; passive surveillance.

Helicopters: Platform only.

Comment: First authorised 24 January 1989, laid down 28 November, second approved in FY90, laid down 26 December 1990. Auxiliary Ocean Surveillance (AOS) ships to a SWATH design similar to USN TAGOS-19 class. A data collection station is based at Yokosuka Bay using WSC-6 satellite data relay to the AOS.



HARIMA

4/2007, Hachiro Nakai / 1305102

1 KURIHAMA CLASS (ASE/AGE)

Name	No	Builders	Launched	Commissioned
KURIHAMA	ASE 6101	Sasebo Heavy Industries	20 Sep 1979	8 Apr 1980

Displacement, tons: 950 standard; 1,100 full load
Dimensions, feet (metres): 223 x 37.9 x 9.8 (screws) (68 x 11.6 x 3)
Main machinery: 2 Fuji 6S308 diesels; 2,600 hp(m) (1.94 MW); 2 shafts; 2 cp props; 2 auxiliary electric props; bow thruster
Speed, knots: 15
Complement: 40 plus 12 scientists
Radars: Navigation: Fujitsu OPS-9B, I-band

Comment: Experimental ship built for the Technical Research and Development Institute and used for testing underwater weapons and sensors.



KURIHAMA 5/2006, Hechiro Nakai / 1040618

1 ASUKA CLASS (AGEH)

Name	No	Builders	Launched	Commissioned
ASUKA	ASE 6102	Sumitomo, Uraga	21 June 1994	22 Mar 1995

Displacement, tons: 4,250 standard; 6,200 full load
Dimensions, feet (metres): 495.4 x 56.8 x 16.4 (157 x 17.3 x 5)
Main machinery: COGLAG; 2 IHI/GE LM 2500 gas turbines; 43,000 hp (31.6 MW); 2 shafts; cp props
Speed, knots: 27
Complement: 70 plus 100 scientists
Missiles: SAM: 8 cell VLS
Weapons control: Type 3 FCS
Radars: Air search: SPY-1D type; E/F-band.
 Air/surface search: Melco OPS-14C; D-band
 Surface search: JRC OPS-18-1; G-band
Fire control: Type 3; I/J-band.
Sonars: Bow-mounted; active search; medium frequency.
 Towed passive/active array in due course
Helicopters: 1 SH-60J Seahawk.

Comment: Included in the FY92 programme and laid down 21 April 1993. For experimental and weapon systems testing which started with the FCS 3 in 1996. The bow sonar dome extends aft to the bridge. The VLS system is on the forecastle. Surveillance and countermessures systems are also evaluated



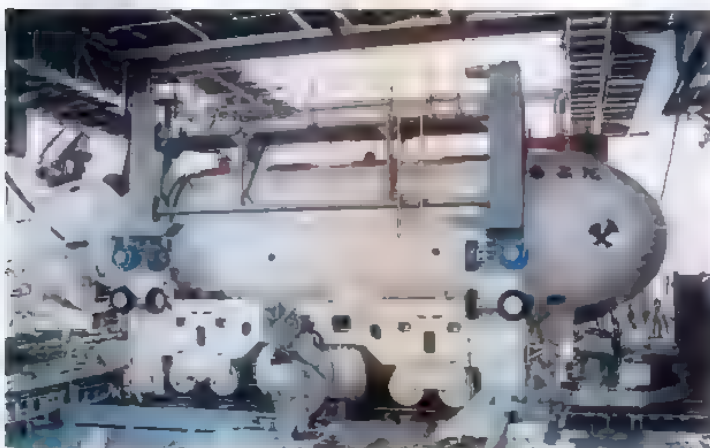
ASUKA 8/2008, Hechiro Nakai / 1353127

RESCUE VEHICLES

2 RESCUE SUBMARINES (DSRV)

Displacement, tons: 40
Dimensions, feet (metres): 40.7 x 10.5 x 14.1 (12.4 x 3.2 x 4.6)
Main machinery: Electric; 30 hp (22 kW); single shaft
Speed, knots: 4
Complement: 2

Comment: Rescue submersibles built by Kawasaki Heavy Industries, Kobe and delivered on 27 August 1999. Space for 12 people. Sonars are fitted on the bow, upper and lower casings for depth sounding and obstacle avoidance. Can be deployed in the submarine rescue ships *Chiyoda* (AS 405) and *Chihaya* (ASR 403).



DSRV 7/2005, Hechiro Nakai / 1153295

TRAINING SHIPS

1 SHIMAYUKI CLASS (TRAINING SHIP) (AXGHM/TV)

Name	No	Builders	Commissioned
SHIMAYUKI	TV 3513 (ex-DD 133)	Mitsubishi, Nagasaki	17 Feb 1987

Displacement, tons: 3,050 standard; 4,200 full load
Dimensions, feet (metres): 426.4 x 44.6 x 14.4 (130 x 13.6 x 4.4)
Main machinery: COGOG; 2 Kawasaki-RR Olympus TM3B gas turbines; 45,000 hp (33.5 MW) sustained; 2 RR Type RM1C gas turbines; 9,900 hp (7.4 MW) sustained; 2 shafts, cp props
Speed, knots: 30; 19 cruise
Complement: 200

Missiles: SSM: 8 McDonnell Douglas Harpoon (2 quad) launchers; active radar homing to 130 km (70 n miles) at 0.9 Mach; warhead 227 kg
SAM: Raytheon Sea Sparrow RIM-7M Mk 29 Type 3A launcher; semi-active radar homing to 16 km (8.5 n miles) at 2.5 Mach; warhead 38 kg; 12 missiles.
A/S: Honeywell ASROC Mk 112 octuple launcher; inertial guidance to 1.6-10 km (1-5.4 n miles) at 0.9 Mach; payload Mk 46 Mod 5 Neartip.
Guns: 1 OTO Melara 3 in (76 mm)/62 compact; 85 rds/min to 16 km (8.6 n miles) anti-surface; 12 km (6.5 n miles) anti-aircraft; weight of shell 6 kg
 2 General Electric/General Dynamics 20 mm Phalanx Mk 15 CIWS; 6 barrels per mounting; 3,000 rds/min combined to 1.5 km.
Torpedoes: 6-324 mm Type 68 (2 triple) tubes. Honeywell Mk 46 Mod 5 Neartip, anti-submarine; active/passive homing to 11 km (5.9 n miles) at 40 kt; warhead 44 kg.
Countermessures: Decoys: 2 Loral Hycor SRBOC 6-barrelled Mk 36 chaff launchers; range 4 km (2.2 n miles).
ESM: NOLR 8C; intercept
ECM: Fujitsu OLT 3; jammer.
Combat data systems: OYQ-5 action data automation; Link 14 (receive only) SATCOM.
Radars: Air search: Melco OPS-14B; D-band
 Surface search: JRC OPS-18-1; G-band
Fire control: Type 2-12 A; I/J-band (for SAM).
 2 Type 2-21/21A; I/J-band (for guns)
Tacans: ORN 6C
Sonars: Nec OQS 4A (III) (SQS-23 type), bow-mounted; active search and attack; low frequency.
Helicopters: Platform for 1 SH-60J Seahawk.

Comment: Converted to training ship in March 1999. Helicopter hangar converted to lecture rooms.



SHIMAYUKI 8/2007, Mick Prendergast / 1305107

1 KASHIMA CLASS (TRAINING SHIP) (AXH/TV)

Name	No	Builders	Launched	Commissioned
KASHIMA	TV 3508	Hitachi, Maizuru	23 Feb 1994	26 Jan 1995

Displacement, tons: 4,050 standard; 5,400 full load
Dimensions, feet (metres): 469.2 x 69.1 x 15.1 (143 x 18 x 4.6)
Main machinery: CODOG; 2 RR Spey SM1C gas-turbines; 27,000 hp (20.1 MW) sustained; 2 Mitsubishi S16U MTK diesels; 8,000 hp(m) (5.88 MW); 2 shafts
Speed, knots: 25
Range, n miles: 7,000 at 18 kt
Complement: 360 (includes 125 midshipmen)
Guns: 1 OTO Melara 76 mm/62 2-40 mm saluting guns.
Torpedoes: 6-324 mm (2 triple) tubes.
Radars: Air/surface search: Melco OPS-14C; D-band.
 Surface search: JRC OPS-18-1; D-band
Navigation: Fujitsu OPS-20, I-band
Fire control: Type 2-23; I/J-band.
Sonars: Hull-mounted; active search and attack; medium frequency OQS-4.
Helicopters: Platform for 1 medium

Comment: Approved in FY91 as a dedicated training ship but the project postponed to FY92 as a budget saving measure. Laid down 20 April 1993.



KASHIMA 4/2008, Kazumasa Watanabe / 1353103

2 ASAGIRI CLASS (TRAINING SHIPS) (AX/TV)

Name	No	Builders	Laid down	Launched	Commissioned
YAMAGIRI	TV 3515 (ex-DD 152)	Mitsui, Tamano	5 Feb 1986	8 Oct 1987	25 Jan 1989
ASAGIRI	TV 3516 (ex-DD 151)	Ishikawajima Harima, Tokyo	13 Feb 1985	19 Sep 1986	17 Mar 1988

Displacement, tons: 3,500 standard; 4,900 full load
Dimensions, feet (metres): 449.4 x 48 x 14.8 (137 x 14.6 x 4.5)
Main machinery: COGAG; 4 RR Spay SM1A gas turbines; 53,300 hp (39.8 MW) sustained;
 2 shafts; cp props
Speed, knots: 30+
Complement: 220

Missiles: SSM-8 McDonnell Douglas Harpoon (2 quad) launchers; active radar homing to 130 km (70 n miles) at 0.9 Mach; warhead 227 kg.
SAM: Raytheon Sea Sparrow Mk 29 (Type 3/3A) octuple launcher; semi-active radar homing to 14.6 km (8 n miles) at 2.5 Mach, warhead 39 kg; 20 missiles.
A/S: Honeywell ASROC Mk 112 octuple launcher; inertial guidance to 1.6-10 km (1-5.4 n miles) at 0.9 Mach, payload Mk 46 Mod 5 Neartip. Reload capability
Guns: 1 Otobreda 3 in (76 mm)/62 compact; 85 rds/min to 16 km (8.6 n miles) anti-surface; 12 km (6.5 n miles) anti-aircraft; weight of shell 6 kg.
 2 General Electric/General Dynamics 20 mm Phalanx Mk 15 CIWS; 6 barrels per mounting; 3,000 rds/min combined to 1.5 km.
Torpedoes: 6—324 mm Type 68 (2 triple) HOS 301 tubes. Honeywell Mk 46 Mod 5 Neartip; anti-submarine; active/passive homing to 11 km (5.9 n miles) at 40 kt; warhead 44 kg.
Countermeasures: Decoys: 2 Loral Hycor SRBOC 6-barrelled Mk 36 chaff launchers; range 4 km (2.2 n miles).
 1 SLQ-25 Nixie or Type 4; towed torpedo decoy.
ESM: Nec NOLR 6C or NOLR B (DD 152); intercept.
ECM: Fujitsu OLT-3; jammer.
Combat data systems: OYQ-7B data automation; Link 11/14. SATCOM. ORQ-1 helicopter datalink for SH-60J.
Radars: Air search: Melco OPS-14C; D-band.
 Surface search: JRC OPS-28C; G-band.
Fire control: Type 2-22 (for guns). Type 2-12E (for SAM).
Tacan: ORN-6D (URN 25)
Sonars: Mitsubishi OQS 4A (III); hull-mounted; active search and attack; low frequency.
 OQR-1; towed array; passive search; very low frequency.

Helicopters: Platform for 1 SH-60J Seahawk.

Comment: TV 3515 converted to training ship on 18 March 2004 and TV 3516 on 16 February 2005. Hangars converted to lecture rooms.



ASAGIRI 7/2008*, A A de Kruijff / 1353181

1 TENRYU CLASS (TRAINING SUPPORT SHIP) (AVHM/TV)

Name	No	Builders	Launched	Commissioned
TENRYU	ATS 4203	Sumitomo, Uraga	14 Apr 1999	17 Mar 2000

Displacement, tons: 2,450 standard; 2,750 full load
Dimensions, feet (metres): 347.8 x 54.1 x 13.5 (106 x 16.5 x 4.1)
Main machinery: 4 Niigata 8MG28H diesels, 12,800 hp(m) (9.5 MW) sustained; 2 shafts
Speed, knots: 22
Complement: 140
Guns: 1 OTO Melara 3 in (76 mm)/62 compact; 85 rds/min to 16 km (8.6 n miles); weight of shell 6 kg.
Radars: Air/surface search: Melco OPS-14; D-band.
 Surface search: OPS-28D, G/H-band.
Fire control: Type 2-22; I/J-band.
Helicopters: 1 medium

Comment: Authorised in 1997 budget as a replacement for *Azuma* and laid down 19 June 1998. Carries four BQM-34J drones and four Northrop Chukar III drones used for evaluating performance of ships SAM systems. Improved 'Kurobe' design



TENRYU 4/2008*, Hachiro Nakai / 1353102

1 KUROBE CLASS (TRAINING SUPPORT SHIP) (AVM/TV)

Name	No	Builders	Commissioned
KUROBE	ATS 4202	Nippon Koukan, Tsurumi	23 Mar 1989

Displacement, tons: 2,200 standard; 2,750 full load
Dimensions, feet (metres): 331.4 x 54.1 x 13.1 (101 x 16.5 x 4)
Main machinery: 4 Fuji 8L275XF diesels; 9,160 hp(m) (6.8 MW); 2 shafts; cp props
Speed, knots: 20
Complement: 155 (17 officers)
Guns: 1 FMC/OTO Melara 3 in (76 mm)/62 Mk 75; 85 rds/min to 16 km (8.6 n miles) anti-surface; 12 km (6.5 n miles) anti-aircraft; weight of shell 8 kg.
Radars: Air search: Melco OPS-14C, D-band.
 Surface search: JRC OPS-18-1; G-band.
Fire control: Type 2-22; I/J-band.

Comment: Approved under 1986 estimates, laid down 31 July 1987, launched 23 May 1988. Carries four BQM-34AJ high-speed drones and four Northrop Chukar II drones with two stern launchers. Used for training crews in anti-aircraft operations and evaluating the effectiveness and capability of ships' anti-aircraft missile systems.



KUROBE 7/2008*, Hachiro Nakai / 1353101

1 TRAINING TENDER (YXT)

YTE 13

Displacement, tons: 179 standard
Dimensions, feet (metres): 115.0 x 24.2 x 5.6 (35.3 x 7.4 x 1.72)
Main machinery: 2 Yanmar 12 LAK ST2 diesels, 2,200 hp(m) (1.16 MW); 2 shafts
Speed, knots: 16

Comment: Approved in FY00 budget and commissioned in 2002. Assigned to 1st Maritime Service School for cadet training



YTE 13 8/2005, Hachiro Nakai / 1153301

AUXILIARIES

2 MASHUU CLASS (FAST COMBAT SUPPORT SHIPS) (AOE/AORH)

Name	No	Builders	Laid down	Launched	Commissioned
MASHUU	AOE 425	Mitsui, Tamano	21 Jan 2002	5 Feb 2003	15 Mar 2004
OUMI	AOE 426	Universal, Maizuru	7 Feb 2003	19 Feb 2004	3 Mar 2005

Displacement, tons: 13,500 standard; 25,000 full load
Dimensions, feet (metres): 725 x 88.6 x 27.2 (221 x 27 x 8.3)
Main machinery: 2 Kawasaki RR Spay SM1C gas turbines, 40,000 hp (29.8 MW); 2 shafts
Speed, knots: 24
Complement: 145
Guns: 2—20 mm CIWS (to be fitted).
Countermeasures: Decoys: 4 SRBOC Mk 36 chaff and IR launchers.
Radars: Navigation: I-band
Helicopters: 2 medium.

Comment: First ship approved in FY00 and second in FY01. Capacity for 30 containers. Cranes capable of lifting 15 tons. Three replenishment at sea positions on each side.



MASHUU 10/2008*, Michael Nitz / 1353187

6 300 TON CLASS (EOD TENDERS) (YDT)

YDT 01-06

Displacement, tons: 300 standard
Dimensions, feet (metres): 150.9 x 28.2 x 7.2 (46 x 8.6 x 2.2)
Main machinery: 2 Niigata 6NSDL diesels; 1,500 hp(m) (1.1 MW); 2 shafts
Speed, knots: 15
Complement: 15 plus 15 divers
Radars: Navigation, I-band.

Comment: Built by Meehata Zousen. First pair approved in FY98, third in FY99, fourth in FY00 and fifth and sixth in FY01. First two commissioned 24 March 2000, third on 21 March 2001, fourth in December 2001 and last two on 14 March 2003. Used as diving tenders.



YDT 05 4/2008*, Hachiro Nakai / 1353178

1 CHIYODA CLASS**(SUBMARINE TENDER DEPOT AND RESCUE SHIP) (AS/ASRH)**

Name	No	Builders	Launched	Commissioned
CHIYODA	AS 405	Mitsui, Tamano	7 Dec 1983	27 Mar 1985

Displacement, tons: 3,650 standard; 5,400 full load
Dimensions, feet (metres): 370.6 x 57.7 x 15.1 (113 x 17.6 x 4.6)
Main machinery: 2 Mitsui 8L42M diesels; 11,500 hp(m) (8.6 MW); 2 shafts; cp props; bow and stern thrusters
Speed, knots: 17
Complement: 120 plus 80 submarine crew rest facility
Radars: Navigation: JRC OPS-16; G-band.
Sonars: SQS-38D.
Helicopters: Platform for up to MH-53 size.

Comment: Laid down 19 January 1983. Carries a 40 ton Deep Submergence Rescue Vehicle (DSRV), which is lowered and recovered through a centreline moonpool. The DSRV can mate to a decompression chamber. A personnel transfer capsule can also be deployed. Flagship Second Submarine Flotilla based at Yokosuka.



CHIYODA 1/2007, Hachiro Nakai / 1305114

1 CHIHAYA CLASS (SUBMARINE RESCUE SHIP) (ASRH)

Name	No	Builders	Launched	Commissioned
CHIHAYA	ASR 403	Mitsui, Tamano	8 Oct 1998	23 Mar 2000

Displacement, tons: 5,450 standard; 6,900 full load
Dimensions, feet (metres): 419.9 x 85.6 x 16.7 (128 x 20 x 5.1)
Main machinery: 2 Mitsui 12V 42M-A diesels; 19,500 hp(m) (14.33 MW); 2 shafts; 2 bow and 2 stern thrusters
Speed, knots: 21
Complement: 125
Radars: Navigation: OPS-20; I-band
Helicopters: Platform for up to MH-53 size.

Comment: Authorisation approved in the 1996 budget as a replacement for *Fushimi*. Laid down 13 October 1997. Fitted with a search sonar and carries a 40 ton DSRV. Also used as a hospital ship.



CHIHAYA 7/2008*, Hachiro Nakai / 1353129

3 TOWADA CLASS**(FAST COMBAT SUPPORT SHIPS) (AOE/AORH)**

Name	No	Builders	Launched	Commissioned
TOWADA	AOE 422	Hitachi, Maizuru	25 Mar 1986	24 Mar 1987
TOKIWA	AOE 423	Ishikawajima Harima, Tokyo	23 Mar 1989	12 Mar 1990
HAMANA	AOE 424	Hitachi, Maizuru	18 May 1989	29 Mar 1990

Displacement, tons: 8,150 standard; 15,850 full load
Dimensions, feet (metres): 547.8 x 72.2 x 26.9 (167 x 22 x 8.2)
Main machinery: 2 Mitsui 16V42MA diesels; 26,000 hp(m) (19.4 MW); 2 shafts
Speed, knots: 22 Range, n miles: 10,500 at 20 kt
Complement: 140
Cargo capacity: 5,700 tons
Countermeasures: Decoys: 2 chaff launchers can be fitted.
Radars: Surface search: JRC OPS-18-1/28C; G-band.
Helicopters: Platform for MH-53 size.

Comment: First approved under 1984 estimates, laid down 17 April 1985. Second and third of class in 1987 estimates. AOE 423 laid down 12 May 1988, and AOE 424 8 July 1988. Three replenishment at sea positions on each side (two fuel only, one stores).



TOWADA 7/2006, Hachiro Nakai / 1040592

34 HARBOUR TANKERS (YO/YW/YG)

Comment: There are: 18 of 490 tons (YO 14, 21-27, 29-31, 33-39); eight of 310 tons (YW 17-24), one of 280 tons (YO 13), seven of 270 tons (YG 202-206, YO 28, YO 32)



YO 21 2/2008*, Hachiro Nakai / 1353130

2 FIREFIGHTING TENDERS (YTR)

YTR 01-02

Displacement, tons: 60 standard
Dimensions, feet (metres): 82.0 x 18.0 x 3.6 (26.0 x 5.5 x 1.1)
Main machinery: 1 Isuzu Marine UM6WGITC diesel; 750 hp (560 kW); 2 Isuzu Marine UM6RB diesels; 1,040 hp (775 kW); 3 shafts
Speed, knots: 19
Complement: 10

Comment: Built in Japan by Ishikawajima-Harima Heavy Industries. YR 01 approved in FY99 budget and commissioned in 2001. YR 02 approved in FY00 budget and commissioned in 2002. Fitted with three waterjets forward and a crane aft.



YTR 01 9/2002, Takatoshi Okano / 0570888

1 MUROTO CLASS (CABLE REPAIR SHIP) (ARC)

Name	No	Builders	Launched	Commissioned
MUROTO	ARC 482	Mitsubishi, Shimonoseki	25 July 1979	27 Mar 1980

Displacement, tons: 4,500 standard; 6,000 full load
Dimensions, feet (metres): 436.2 x 57.1 x 18.7 (133 x 17.4 x 5.7)
Main machinery: 4 Kawasaki-MAN V8V22/30ATL diesels; 8,800 hp(m) (6.6 MW); 2 shafts; bow thruster
Speed, knots: 18
Complement: 135
Radars: Navigation: Fujitsu OPS-98; I-band.

Comment: Ocean survey capability. Laid down 28 November 1978. Similar vessels in civilian use.



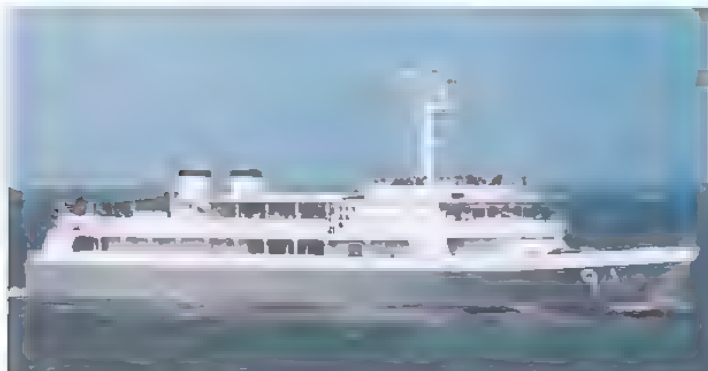
MUROTO 7/2006, Hachiro Nakai / 1040593

1 HASHIDATE CLASS (ASY/YAC)

Name	No	Builders	Launched	Commissioned
HASHIDATE	ASY 91	Hitachi, Kanagawa	26 July 1999	30 Nov 1999

Displacement, tons: 400 standard; 490 full load
Dimensions, feet (metres): 203.4 × 30.8 × 6.6 (82 × 9.4 × 2.0)
Main machinery: 2 Niigata 16V 16FX diesels; 5,500 hp(m) (4.04 MW); 2 shafts
Speed, knots: 20
Range, n miles: 1,000 at 12 kt
Complement: 29 plus 130 passengers

Comment: Authorised in FY97 budget. Laid down 28 October 1998. Has replaced *Hiyodori* as a ceremonial yacht. Has facilities for disaster relief. Based at Yokosuka.



HASHIDATE 9/2007, Hachiro Nakai / 1305113

5 HIUCHI CLASS (MULTIPURPOSE SUPPORT SHIPS) (YTT)

Name	No	Builders	Launched	Commissioned
HIUCHI	AMS 4301	NKK, Tsurumi	4 Sep 2001	27 Mar 2002
SUOU	AMS 4302	Universal, Keihin (Tsurumi)	25 Apr 2003	16 Mar 2004
AMAKUSA	AMS 4303	Universal, Keihin (Tsurumi)	6 Aug 2003	16 Mar 2004
GENKAI	AMS 4304	Universal, Keihin (Tsurumi)	24 May 2007	20 Feb 2008
ENSHUU	AMS 4305	Universal, Keihin (Tsurumi)	9 Aug 2007	20 Feb 2008

Displacement, tons: 980 standard
Dimensions, feet (metres): 213.3 × 39.4 × 11.5 (65 × 12 × 3.5)
Main machinery: 2 Daihatsu 6 DKM-28 (L) diesels; 5,000 hp(m) (3.67 MW); 2 shafts
Speed, knots: 15
Complement: 40
Radars: Navigation: OPS-26B; I-band.

Comment: First authorised in FY99, two more in FY01 and two further in FY05 budget. Equipped for torpedo launch and recovery. Replaced ASU 81 class. Used as an ocean tug.



AMAKUSA 4/2008, Hachiro Nakai / 1353131

7 LANDING CRAFT (LIGHTER) (YL)

YL 9-15

Displacement, tons: 120 full load
Dimensions, feet (metres): 88.6 × 23.0 × 3.4 (270 × 70 × 1.04)
Main machinery: 2 Isuzu diesels; 560 hp (410 kW); 2 shafts
Speed, knots: 10
Complement: 5

Comment: Cargo lighters constructed by Ishihara, Takasago. First entered service in 1980 and latest in 1998. Equipped with a bow ramp and two 2 ton cranes



YL 10 4/2007, Hachiro Nakai / 1305117

ICEBREAKERS

0 + 1 FUTURE ICEBREAKER (AGBH)

Name	No	Builders	Laid down	Launched	Commissioned
SHIRASE	AGB 5003	Universal, Maizuru	15 Mar 2007	16 Apr 2008	May 2009

Displacement, tons: 12,500 standard; 20,000 full load
Dimensions, feet (metres): 452.7 × 91.9 × 30.2 (138.0 × 28.0 × 9.2)
Main machinery: Diesel-electric; 4 Mitsui 16V42M-B diesels; 4 generators; 4 motors; 30,000 hp (22 MW); 2 shafts
Speed, knots: 19.5 **Range, n miles:** 30,000 at 15 kt
Complement: 179 (34 officers) plus 80 scientists
Cargo capacity: 1,100 tons
Radars: Surface search: JRC OPS-18-3; G/H-band.
Navigation: Fujitsu OPS-39D; I-band
Tacan: ORN-6E.
Helicopters: 2 CH-101.

Comment: New Antarctic expedition ship planned to replace the decommissioned *Shirase*.



SHIRASE 4/2008, Hachiro Nakai / 1305319

TUGS

22 OCEAN TUGS (ATA/YT)

YT 58 YT 63-74 YT 78-79 YT 81 YT 84 YT 86 YT 89-90 YT 92 YT 94

Displacement, tons: 260 standard
Dimensions, feet (metres): 93 × 28 × 8.2 (28.4 × 8.6 × 2.5)
Main machinery: 2 Niigata 6L26B diesels; 1,800 hp(m) (1.32 MW); 2 shafts
Speed, knots: 11
Complement: 10

Comment: YT 58 entered service on 31 October 1978, YT 63 on 27 September 1982, YT 64 on 30 September 1983, YT 65 on 20 September 1984, YT 66 on 20 September 1985, YT 67 on 4 September 1986, YT 68 on 9 September 1987, YT 69 on 16 September 1987, YT 70 on 2 September 1988, YT 71 on 28 July 1989, YT 72 on 28 July 1990, YT 73 on 31 July 1991, YT 74 on 30 September 1991, YT 78 in July 1994, YT 79 on 29 September 1994, YT 81 on 8 July 1996, YT 84 on 30 September 1998, YT 86 on 21 March 2000, YT 89 and 90 on 16 March 2001, YT 92 on 17 March 2006 and YT 94 in March 2007. All built by Yokohama Yacht.



YT 78 7/2008, Hachiro Nakai / 1353137

21 COASTAL AND HARBOUR TUGS (YTM/YTB)

YT 53-57 YT 59-62 YT 75-77 YT 80 YT 82-83 YT 85 YT 87-88 YT 91 YT 93

Displacement, tons: 53 standard
Dimensions, feet (metres): 55.8 × 15.8 × 7.8 (170 × 4.8 × 2.4)
Main machinery: 2 Isuzu UM6SD1TCB diesels; 500 hp (373 kW); 2 shafts
Speed, knots: 8
Complement: 4

Comment: Details given are for 50 ton class (YT 75-77, YT 80, YT 85, YT 87-88, YT 91 and YT 93). There are also four of 190 tons (YT 53, YT 55-57), two of 35 tons (YT 60-61), one of 30 tons (YT 62) and two of 29 tons (YT 54, YT 59).



YT 83 1/2007, Hachiro Nakai / 1305110

COAST GUARD

KAIJYOU HOANCHOU

Headquarters Appointments

Commandant of the Coast Guard:
Teiji Iwasaki

Establishment

The Japan Coast Guard (Maritime Safety Agency before 1 April 2000) was established on 1 May 1948. Its five missions are Maintenance of Maritime Order, Maritime Search and Rescue, Maritime Environmental Protection and Enforcement, Maritime Traffic Safety and Co-operation with other national and international agencies. The HQ is at Tokyo, the Coast Guard Academy is at Kure and the Coast Guard School is at Maizuru.

The main operational branches are the Guard and Rescue, the Hydrographic and the Maritime Traffic Departments. Regional offices control the 11 districts with their location as follows (airbases in brackets): RMS 1-Otaru (Chitose, Hakodate, Kushiro); 2-Shiogama (Sendai), 3-Yokohama (Haneda); 4-Nagoya (Ise); 5-Kobe; 6-Hiroshima (Hiroshima); 7-Ube (Fukuoka); 8-Maizuru (Miho); 9-Niigata (Niigata); 10-Kagoshima (Kagoshima); 11-Naha (Naha, Ishigaki). This organisation includes, as well as the JCG HQ, 67 CG offices, 63 CG stations, 13 CG air stations, seven district communication centres, seven traffic advisory service centres, two hydrographic observatories, two aids to navigation offices, one Special Rescue station, one Special

Security station, one National Strike Team station and one Transnational Organised Crime Strike Force station.

Personnel

2009: 12,258 (2,630 officers)

Strength of the Fleet

Type	Active	Building
GUARD AND RESCUE SERVICE		
Patrol Vessels:		
Large with helicopter (PLH)	13	—
Large (PL)	40	4
Medium (PM)	42	7
Small (PS)	29	—
Firefighting Vessels (FL)	5	—
Patrol Craft:		
Patrol Craft (PC)	63	3
Patrol Craft (CL)	178	8
Firefighting Craft (FM)	4	—
Special Service Craft:		
Monitoring Craft (MS)	3	—
Guard Boats (GS)	2	—
Surveillance Craft (SS)	42	—
Oil Recovery Craft (OR)	5	—
Oil Skimming Craft (OS)	3	—
Oil Boom Craft (OX)	19	—

Strength of the Fleet — continued

Type	Active	Building
HYDROGRAPHIC SERVICE		
Surveying Vessels:		
Large (HL)	8	—
Small (HS)	8	—
AIDSTO NAVIGATION SERVICE		
Aids to Navigation Research Vessel (LL)	1	—
Buoy Tenders:		
Large (LL)	2	—
Aids to Navigation Tenders:		
Medium (LM)	8	—
Small (LS)	13	—

DELETIONS

2006	<i>Iwaki, Rishiri, Choukai, Nojima, Kurma, Tone, Hayagumo, Miyazuki, LS 161, LS 164-167, LS 189, LS 212</i>
2007	<i>CL 206-209, 231, 237, 240, 255, LM 201, LS 168, 188-193, 213-215, OR 01-05, OS 01-03.</i>
2008	<i>Esan, Rebun, Amagi, Hateruma, Bihoro, Kuzuryu, Ooyodo, Akigumo, Yaegumo, Natsugumo, Kaiou, CL 211, CL 213, CL 215, CL 226, CL 228, CL 232, CL 234, CL 252, CL 258, CL 260, OX 03, OX 05-07, OX 09-19, CL 262-263</i>
2009	<i>Matsushima, Tosa, Kikuchi, Natori, Akagi, Tsukuba, Natsuzuki, Tatsugumo</i>

LARGE PATROL VESSELS

1 SHIKISHIMA CLASS (PLH/PSOH)

Name	No	Builders	Laid down	Launched	Commissioned
SHIKISHIMA	PLH 31	Ishikawajima Harima, Tokyo	24 Aug 1990	27 June 1991	8 Apr 1992

Displacement, tons: 6,500 standard; 9,350 full load
Dimensions, feet (metres): 492.1 × 54.1 × 29.5 (150 × 18.5 × 9.0)
Main machinery: 2 SEMT-Pielstick 16 PC2.5 V 400; 20,800 hp(m) (15.29 MW); 2 shafts; bow thruster
Speed, knots: 25
Range, n miles: 20,000 at 18 kt
Complement: 110 plus 30 aircrew
Guns: 4 Oerlikon 35 mm/90 Type GDM-C (2 twin); 1,100 rds/min to 6 km (3.2 n miles); weight of shell 1.55 kg
 2 JM-61 MB 20 mm Gatling.
Radars: Air/surface search: Melco Ops 14; D-band
 Surface search: JMA 1576; I-band.
 Navigation: JMA 1596; I-band.
 Helo control: JMA 3000; I-band.
 Tacan: ORN-6 (URN 25)
Helicopters: 2 Aerospatiale A 332 L1.

Comment: Authorised in the FY89 programme in place of the third Mizuho class. Used to escort the plutonium transport ship. SATCOM fitted.



SHIKISHIMA

5/2008, Kazumasa Watanabe / 1353134

2 MIZUHO CLASS (PLH/PSOH)

Name	No	Builders	Launched	Commissioned
MIZUHO	PLH 21	Mitsubishi, Nagasaki	5 June 1985	19 Mar 1986
YASHIMA	PLH 22	Nippon Koukan, Tsurumi	20 Jan 1988	1 Dec 1988

Displacement, tons: 4,900 standard; 5,204 full load
Dimensions, feet (metres): 426.5 × 50.9 × 12.7 (130 × 15.5 × 5.4)
Main machinery: 2 SEMT-Pielstick 14 PC2.5 V 400 diesels; 18,200 hp(m) (13.38 MW) sustained; 2 shafts; cp props; bow thruster
Speed, knots: 23
Range, n miles: 8,500 at 22 kt
Complement: 100 plus 30 aircrew
Guns: 1 Oerlikon 35 mm/90; 550 rds/min to 6 km (3.2 n miles) anti-surface; 5 km (2.7 n miles) anti-aircraft; weight of shell 1.55 kg.
 1 JM-61 MB 20 mm Gatling.
Radars: Surface search: JMA 8303; I-band.
 Navigation/helo control, 2 JMA 3000; I-band.
Helicopters: 2 Fuji-Bell 212.

Comment: PLH 21 ordered under the FY83 programme laid down 27 August 1984. PLH 22 in 1986 estimates, laid down 3 October 1987. Two sets of fixed electric fin stabilisers that have a lift of 26 tons × 2 and reduce rolling by 90 per cent at 18 kt. Employed in search and rescue outside the 200 mile economic zone



MIZUHO

5/2005, Hechiro Nakai / 1143305

1 IZU CLASS (PL/PSOH)

Name	No	Builders	Launched	Commissioned
IZU	PL 31	Kawasaki, Sakaide	7 Feb 1997	25 Sep 1997

Displacement, tons: 3,500 normal
Dimensions, feet (metres): 360.9 × 49.2 × 17.4 (110 × 15 × 5.3)
Main machinery: 2 diesels; 12,000 hp(m) (8.82 MW); 2 shafts; bow thruster
Speed, knots: 20
Complement: 40 plus 70 spare
Guns: 1 Oerlikon 35 mm. 1 JM-61 MB 20 mm Gatling.
Radars: Surface search: I-band
 Navigation: I-band.
Helicopters: Platform for 1 Fuji-Bell 212.

Comment: Authorised in the FY95 programme. Laid down 22 March 1996. Replaced the former Izu in 1998, taking the same name and pennant number. Carries two launches.



IZU

5/2004, Japan Coast Guard / 1153306

438 Japan (COAST GUARD)/Large patrol vessels

10 SOYA CLASS (PLH/PSOH)

Name	No	Builders	Commissioned
SOYA	PLH 01	Nippon Kokan, Tsurumi	22 Nov 1978
TSUGURU	PLH 02	IHI, Tokyo	17 Apr 1979
OOSUMI	PLH 03	Mitsui Tamano	18 Oct 1979
HAYATO (ex-Uraga)	PLH 04	Hitachi, Maizuru	5 Mar 1980
ZAO	PLH 05	Mitsubishi, Nagasaki	19 Mar 1982
CHIKUZEN	PLH 06	Kawasaki, Kobe	28 Sep 1983
SETTSU	PLH 07	Sumitomo, Oppama	27 Sep 1984
ECHIGO	PLH 08	Mitsui Tamano	28 Feb 1990
RYUKYU	PLH 09	Mitsubishi, Nagasaki	31 Mar 2000
DAISEN	PLH 10	Nippon Kokan, Tsurumi	1 Oct 2001

Displacement, tons: 3,200 normal, 4,037 full load
Dimensions, feet (metres): 323.4 × 51.2 × 17.1 (98.6 × 15.6 × 5.2) (PLH 01)
 345.8 × 47.9 × 15.7 (105.4 × 14.6 × 4.8)
Main machinery: 2 SEMT-Pielstick 12 PC2.5 V 400 diesels; 15,604 hp(m) (11.47 MW) sustained; 2 shafts; cp props; bow thruster
Speed, knots: 21 (PLH 01), 22 (others)
Range, n miles: 5,700 at 18 kt
Complement: 71 (PLH 01-04), 69 (others)
Guns: 1 Bofors 40 mm or Oerlikon 35 mm. 1 Oerlikon 20 mm (PLH 01, 02, 05-07) or 1–20 mm JMS1MB Gatling gun.
Radars: Surface search: JMA 1576, I-band
 Navigation JMA 1596, I-band.
 Helo control: JMA 1596; I-band.
Helicopters: 1 Fuji-Bell 212.

Comment: PLH 01 has an icebreaking capability while the other ships are only ice strengthened. Fitted with both fin stabilisers and anti-rolling tanks of 70 tons capacity. The fixed electric hydraulic fins have a lift of 26 tons × 2 at 18 kt which reduces rolling by 90 per cent at that speed. At slow speed the reduction is 50 per cent, using the tanks. PLH 04 name changed on 27 March 1997. PLH 10 laid down 8 March 1999



SOYA 5/2008*, Kazumasa Watanabe / 1353135

1 MIURA CLASS (PL/PSOH)

Name	No	Builders	Launched	Commissioned
MIURA	PL 22	Sumitomo, Uraga	11 Mar 1998	28 Oct 1998

Displacement, tons: 3,000 normal
Dimensions, feet (metres): 377.3 × 45.9 × 15.7 (115 × 14 × 4.8)
Main machinery: 2 diesels; 8,000 hp(m) (5.88 MW); 2 shafts, cp props
Speed, knots: 18
Complement: 40 plus 10 spare
Guns: 1 Oerlikon 35 mm. 1–20 mm JM 61-B Gatling.

Comment: Authorised in FY96 programme. Laid down in October 1996. Has replaced ship of the same name.



MIURA 3/2007, Hachiro Nakai / 1305135

1 KOJIMA CLASS (PL/PSOH)

Name	No	Builders	Commissioned
KOJIMA	PL 21	Hitachi, Maizuru	11 Mar 1993

Displacement, tons: 2,650 normal, 2,950 full load
Dimensions, feet (metres): 377.3 × 45.9 × 23.8 (115 × 14 × 7.3)
Main machinery: 2 diesels; 8,000 hp(m) (5.9 MW); 2 shafts; cp props
Speed, knots: 18
Range, n miles: 7,000 at 15 kt
Complement: 118
Guns: 1 Oerlikon 35 mm/90. 1–20 mm JM-61B Gatling. 1–12.7 mm MG.
Radars: Navigation: Two JMA 1596; I-band.
Helicopters: Platform for 1 medium.

Comment: Authorised in the FY90 programme and ordered in March 1991. Laid down 7 November 1991, launched 10 September 1992. Training ship which has replaced the old ship of the same name and pennant number. SATCOM fitted.



KOJIMA 5/2008*, Kazumasa Watanabe / 1353136

1 NOJIMA CLASS (PL/PSOH)

Name	No	Builders	Commissioned
OKI (ex-Nojima)	PL 01	Ishikawajima Harima, Tokyo	21 Sep 1989

Displacement, tons: 1,500 normal
Dimensions, feet (metres): 285.4 × 34.4 × 11.5 (87 × 10.5 × 3.5)
Main machinery: 2 Fuji 8S40B diesels; 8,120 hp(m) (5.97 MW); 2 shafts
Speed, knots: 19
Complement: 34
Guns: 1 Oerlikon 35 mm/90. 1–20 mm JM-61B Gatling.
Radars: Navigation: 2 JMA 1596, I-band.
Helicopters: Platform for 1 Bell 212.

Comment: Laid down 16 August 1988 and launched 30 May 1989. Equipped as surveillance and rescue command ship. SATCOM fitted. Name changed on 30 November 1997



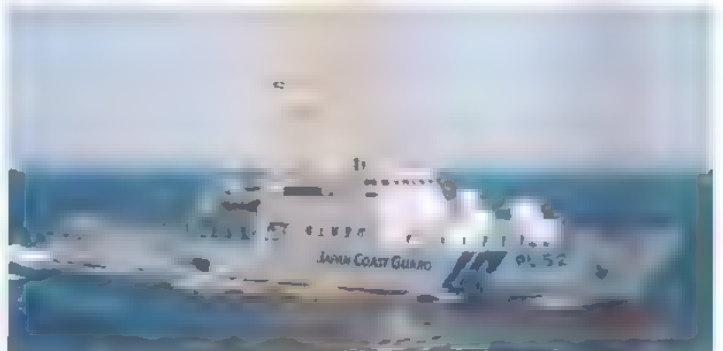
OKI 7/2005, Hachiro Nakai / 1153307

3 HIDA CLASS (PL/PSO)

Name	No	Builders	Launched	Commissioned
HIDA	PL 51	Mitsubishi, Shimonoseki	8 Aug 2005	18 Apr 2006
AKAISHI	PL 52	Mitsubishi, Shimonoseki	21 Oct 2005	18 Apr 2006
KISO	PL 53	IHI Marine United, Yokohama	17 Aug 2007	11 Mar 2008

Displacement, tons: 1,800 standard
Dimensions, feet (metres): 362.6 × 42.7 × 19.7 (95.0 × 13.0 × 6.0)
Main machinery: 4 diesels; waterjet propulsion
Speed, knots: 30
Guns: 1–40 mm Bofors Mk 3. 1–20 mm JM61 Gatling.
Helicopters: Platform for one medium.

Programmes: Two ships authorised in FY03 budget and a third in FY04 budget



AKAISHI 5/2007, Hachiro Nakai / 1305063

7 OJIKI CLASS (PL/PSOH)

Name	No	Builders	Launched	Commissioned
ERIMO (ex-Ojiki)	PL 02	Mitsui, Tamano	23 Apr 1991	31 Oct 1991
KUDAKA	PL 03	Hakodate Dock	10 May 1994	25 Oct 1994
YAHIKO (ex-Satsuma)	PL 04	Sumitomo, Uraga	3 June 1995	26 Oct 1995
DEJIMA (ex-Hakata)	PL 05	Ishikawajima, Tokyo	6 July 1998	26 Nov 1998
KURIKOMA (ex-Dejima)	PL 06	Mitsui, Tamano	28 June 1999	29 Oct 1999
SATAUMA	PL 07	Kawasaki, Kobe	3 June 1999	29 Oct 1999
TOSA (ex-Motobu)	PL 08	Sasebo Heavy Industries	5 June 2000	31 Oct 2000

Displacement, tons: 1,883 normal
Dimensions, feet (metres): 299.9 × 36.1 × 11.5 (91.4 × 11 × 3.5)
Main machinery: 2 Fuji 8S40B diesels; 7,000 hp(m) (5.15 MW); 2 shafts; cp props; 2 bow thrusters
Speed, knots: 18
Range, n miles: 4,400 at 15 kt
Complement: 38
Guns: 1 Oerlikon 35 mm/90. 1–20 mm JM-61B Gatling.
Radars: Navigation: JMA 1596; I-band.
Helicopters: Platform for 1 Bell 212 or Super Puma

Comment: Equipped as SAR command ships. SATCOM fitted 30 ton bollard pull. Stern dock for RIB. PL 04 name changed 28 September 1999. PL 02 name changed 1 October 2000. PL 06 name changed 4 January 2005. PL 05 changed name on 26 December 2008 and PL 08 on 29 January 2009.



KURIKOMA 5/2008*, Hachiro Nakai / 1353138

16 SHIRETOKO CLASS (PL/PSO)

Name	No	Builders	Commissioned
SHIRETOKO	PL 101	Mitsui Tamano	8 Nov 1978
WAKASA	PL 103	Kawasaki, Kobe	29 Nov 1978
KII (ex-Shimanto, ex-Yahiko)	PL 104	Mitsubishi, Shimonoseki	16 Nov 1978
SHIKINE	PL 109	Usuki	20 Sep 1979
SURUGA	PL 110	Kurashima	28 Sep 1979
NOTO	PL 115	Miho	30 Nov 1979
REBUN (ex-Iwami, ex-Kudaka, ex-Daisetsu, ex-Kurikoma)	PL 117	Hakodate	31 Jan 1980
SHIMOKITA	PL 118	Ishikawajima, Kakoki	12 Mar 1980
SUZUKA	PL 119	Kanazashi	7 Mar 1980
KUNISAKI	PL 120	Kouyo	29 Feb 1980
IWAMI (ex-Goto)	PL 122	Onomichi	29 Feb 1980
KOSHIKI	PL 123	Kasado	26 Jan 1980
KATORI	PL 125	Tohoku	21 Oct 1980
KUNIGAMI	PL 126	Kanda	17 Oct 1980
ETOMO	PL 127	Naikai	17 Mar 1982
ESAN (ex-Yonakuni, ex-Amagi, ex-Mashu)	PL 128	Shikoku	12 Mar 1982

Displacement, tons: 974 normal; 1,360 full load
 Dimensions, feet (metres): 255.8 x 31.5 x 10.5 (78 x 9.6 x 3.2)
 Main machinery: 2 Fuji 8S408; 8,120 hp(m) (5.97 MW); or 2 Niigata 8MA40 diesels; 2 shafts; cp props
 Speed, knots: 20
 Range, n miles, 4,400 at 17 kt
 Complement: 41
 Guns: 1 Bofors 40 mm or 1 Oerlikon 35 mm or 1 JM-61 20 mm Gatling (PL 101), 1 Oerlikon 20 mm (PL 101-105, 127 and 128)
 Radars: Surface search: JMA 1576; I-band
 Navigation: JMA 1596; I-band.

Comment: Average time from launch to commissioning was about four to five months. Designed for EEZ patrol duties. PL 117 changed her name on 1 April 1988, on 1 August 1994, on 1 October 2000 and on 12 December 2008. PL 122 changed named on 19 December 2008. PL 128 changed 1 April 1997, on 12 February 2005 and on 19 December 2008. PL 104 changed name on 28 September 1999 and again on 1 October 2004. PL 106 paid off on 20 October 2000 after being involved in a collision. PL 118 paid off on 12 February 2005, PL 108 and 112 on 12 March 2006 and PL 106 and 113 on 18 March 2006. PL 121 paid off on 5 February 2008, PL 124 on 27 February 2008, PL 102 and PL 111 on 12 December 2008. PL 107 paid off on 7 February 2009 and PL 114 on 29 January 2009.



KOSHIKI 5/2008, Hachiro Nakai / 1353137

3 ASO CLASS (PL/PSO)

Name	No	Builders	Laid down	Launched	Commissioned
ASO	PL 41	Mitsubishi, Shimonsaki	18 Dec 2003	28 Oct 2004	15 Mar 2005
DEWA	PL 42	Universal, Keihin	5 Apr 2004	9 May 2005	12 Apr 2006
HAKUSAN	PL 43	Universal, Keihin	5 Apr 2004	5 Oct 2005	12 Apr 2006

Displacement, tons: 770 standard
 Dimensions, feet (metres): 259.2 x 32.8 x 19.7 (79.0 x 10.0 x 6.0)
 Main machinery: 4 diesels, waterjet propulsion
 Speed, knots: 30
 Guns: 1—40 mm

Comment: PL 41 authorised in FY02 budget and PL 42-43 in FY03 budget.



HAKUSAN 5/2007, Hachiro Nakai / 1353137

5 + 4 HATERUMA CLASS (PL/PSO)

Name	No	Builders	Laid down	Launched	Commissioned
HATERUMA	PL 61	Mitsui, Tamano	7 Feb 2007	10 Aug 2007	31 Mar 2008
HAKATA	PL 62	Mitsui, Tamano	20 Nov 2007	19 June 2008	2 Feb 2009
YONAKUNI	PL 63	Mitsui, Tamano	20 Nov 2007	19 June 2008	2 Feb 2009
MOTOBU	PL 64	Mitsui, Tamano	1 Mar 2008	30 Sep 2008	Mar 2009
KUNIGAMI	PL 65	Mitsui, Tamano	1 Mar 2008	30 Sep 2008	Mar 2009
-	PL 66	Mitsui, Tamano	-	-	Mar 2010
-	PL 67	Mitsui, Tamano	-	-	Mar 2010
-	PL 68	Mitsui, Tamano	-	-	Mar 2010
-	PL 69	Mitsui, Tamano	-	-	Mar 2010

Displacement, tons: 1,300 standard
 Dimensions, feet (metres): 292.0 x 36.1 x 16.4 (89.0 x 11.0 x 5.0)
 Main machinery: 4 diesels; waterjet propulsion
 Speed, knots: 30
 Guns: 1 30 mm.
 Helicopters: Platform for 1 medium.

Comment: One authorised in FY05 budget, four in FY06 budget and four in FY07 budget



HATERUMA 3/2008, Hirotohi Yamamoto / 1353139

SHIPBORNE AIRCRAFT

Numbers/Type: 21/8 Bell 212/412.
 Operational speed: 103 kt (191 km/h).
 Service ceiling: 10,000 ft (3,048 m).
 Range: 412 n miles (763 km).
 Role/Weapon systems: Liaison, medium-range support and SAR. Sensors: Search radar. Weapons: Unarmed.



BELL 212 5/2008, Hachiro Nakai / 1353141



BELL 412 5/2005, Mitsuhiro Kadota / 1153338

Numbers/Type: 4 Aerospatiale AS 332L1 Super Puma.
 Operational speed: 125 kt (231 km/h).
 Service ceiling: 15,090 ft (4,600 m).
 Range: 500 n miles (926 km).
 Role/Weapon systems: Medium lift, support and SAR. Sensors: Search radar. Weapons: Unarmed.



AS 332L1 5/2008, Hachiro Nakai / 1353140

Numbers/Type: 4 Sikorsky S-76C.
 Operational speed: 135 kt (250 km/h).
 Service ceiling: 11,800 ft (3,505 m).
 Range: 607 n miles (1,125 km).
 Role/Weapon systems: Utility aircraft acquired in 1994-98. One aircraft lost on 10 January 2005. Up to 20 required to replace Bell 212s. Sensors: Search radar. Weapons: Unarmed.



S-76C 5/2007, Hachiro Nakai / 1305137

440 Japan (COAST GUARD)/Shipborne aircraft – Land-based maritime aircraft

Numbers/Type: 4 Bell 206B Jet Ranger
Operational speed: 115 kt (213 km/h).
Service ceiling: 13,500 ft (4,115 m).
Range: 368 n miles (682 km).
Role/Weapon systems: Support helicopter for reconnaissance and SAR.



Bell 206B

6/2005, Japan Coast Guard / 1154399

Numbers/Type: 2 Eurocopter EC 225
Operational speed: 149 kt (276 km/h).
Service ceiling: 13,120 ft (4,000 m).
Range: 500 n miles (926 km).
Role/Weapon systems: SAR and coastal surveillance helicopter ordered on 5 December 2005 and delivered in September 2007. To replace the AS 332 Super Puma in due course.



EC 225

9/2008*, Hachiro Nakai / 1353147

Numbers/Type: 3 AgustaWestland AW 139.
Operational speed: 167 kt (309 km/h).
Service ceiling: 19,460 ft (5,931 m).
Range: 307 n miles (568 km).
Role/Weapon systems: Medium-range support and SAR helicopter selected in late 2006 as the replacement for the Bell fleet. A total of 24 aircraft is expected.



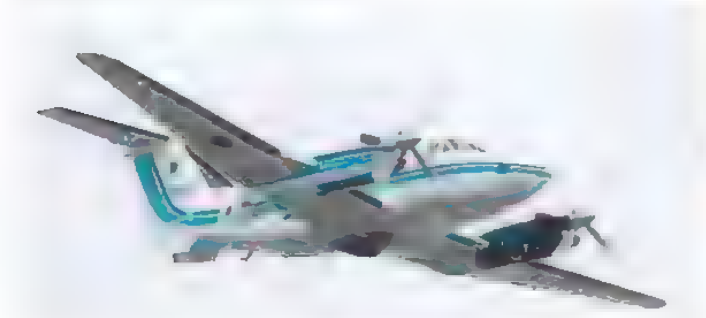
AW 139

5/2008*, Hachiro Nakai / 1353143

LAND-BASED MARITIME AIRCRAFT (FRONT LINE)

Notes: There is also a Cessna U 206G

Numbers/Type: 3/10 Beech Super King Air 200T/Super King Air 350
Operational speed: 200 kt (370 km/h).
Service ceiling: 35,000 ft (10,670 m).
Range: 1,460 n miles (2,703 km).
Role/Weapon systems: Visual reconnaissance in support of EEZ. Two are trainers. Sensors: Weather/search radar. Weapons: Unarmed.



BEECH 350

5/2005, Mitsuhiro Kadota / 1153337

Numbers/Type: 5 NAMCYS-11A
Operational speed: 230 kt (425 km/h).
Service ceiling: 21,600 ft (6,580 m).
Range: 1,960 n miles (3,629 km).
Role/Weapon systems: Maritime surveillance and associated tasks. Sensors: Weather/search radar. Weapons: Unarmed



YS-11A

5/2005, Mitsuhiro Kadota / 1153336

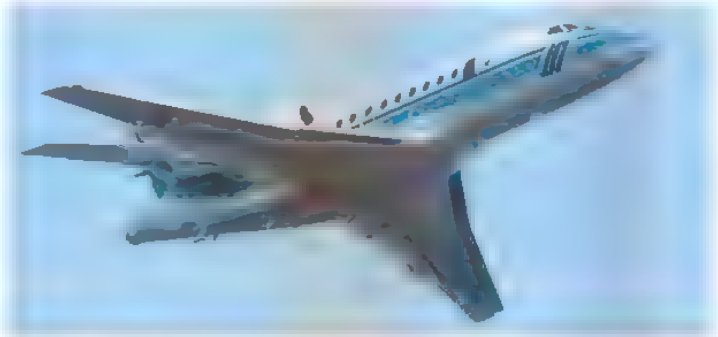
Numbers/Type: 2 Gulfstream Aerospace G-V
Operational speed: 510 kt (945 km/h).
Service ceiling: 41,000 ft (12,500 m).
Range: 6,500 n miles (12,040 km).
Role/Weapon systems: Reconnaissance version of long-range business jet ordered on 14 November 2001 and delivered in 2004. Sensors: Occan Master radar, FLIR, AMASCOS mission system. Can also drop liferafts.



GULFSTREAM G-V

5/2005, Hachiro Nakai / 1153311

Numbers/Type: 2 Dassault Falcon 900.
Operational speed: 428 kt (792 km/h).
Service ceiling: 51,000 ft (15,544 m).
Range: 4,170 n miles (7,722 km).
Role/Weapon systems: Maritime surveillance. Sensors: Weather/search radar. Weapons: Unarmed



FALCON 900

5/2008*, Hachiro Nakai / 1353144

Numbers/Type: 4 SAAB 340B.
Operational speed: 250 kt (463 km/h).
Service ceiling: 25,000 ft (7,620 m).
Range: 570 n miles (1,056 km).
Role/Weapon systems: Patrol aircraft procured in 1997. Two SAR variants were delivered in 2007.



SAAB 340B

10/2008*, Hachiro Nakai / 1353145

Numbers/Type: 3 Bombardier DHC-8 315.
Operational speed: 285 kt (491 km/h).
Service ceiling: 14,775 ft (4,503 m).
Range: 1,630 n miles (3,020 km).
Role/Weapon systems: Maritime surveillance variant of the Dash-8 Q300 regional airliner selected by the Japanese Coast Guard in December 2006 and delivered in 2008. Sensors: not confirmed but likely to include surveillance radar and FLIR.

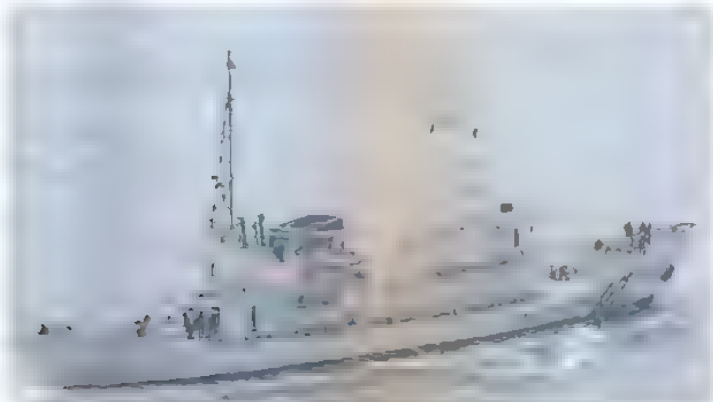
MEDIUM PATROL VESSELS

14 TESHIO CLASS (PM/PSO)

Name	No	Builders	Commissioned
NATSUI (ex-Teshio)	PM 01	Shikoku	30 Sep 1980
KITAKAMI (ex-Oirose)	PM 02	Naikai	29 Aug 1980
BIHORO (ex-Echizen)	PM 03	Usuki	30 Sep 1980
TOKACHI	PM 04	Narazaki	24 Mar 1981
HITACHI	PM 05	Tohoku	19 Mar 1981
OKITSU	PM 06	Usuki	17 Mar 1981
ISAZU	PM 07	Naikai	18 Feb 1982
CHITOSE	PM 08	Shikoku	15 Mar 1983
KUWANO	PM 09	Naikai	10 Mar 1983
SORACHI	PM 10	Tohoku	30 Aug 1984
YUBARI	PM 11	Usuki	28 Nov 1985
MOTOURA	PM 12	Shikoku	21 Nov 1986
KANO	PM 13	Naikai	13 Nov 1986
SENDAI	PM 14	Shikoku	1 June 1988

Displacement, tons: 630 normal, 670 full load
 Dimensions, feet (metres): 222.4 x 25.9 x 6.6 (678 x 79 x 2.7)
 Main machinery: 2 Fuji 6S32F or Arakata 6M31E diesels; 3,650 hp(m) (2.69 MW); 2 shafts
 Speed, knots: 18
 Range, n miles: 3,200 at 16 kt
 Complement: 33
 Guns: 1 JN-61B 20 mm Gatling.
 Radars: Navigation: 2 JMA 159B, I-band.

Comment: First three built under FY79 programme and second three under FY80, seventh under FY81, PM 08-09 under FY82, PM 10 under FY83, PM 11 under FY84, PM 12-13 under FY85, PM 14 under FY87. Isazu has an additional structure aft of the mainmast which is used as a classroom. PM 03 changed name on 30 March 2008.



KUWANO 5/2005, Mitsuhiro Kadota / 1153333

10 BIHORO CLASS (350-M4 TYPE) (PM/PSO)

Name	No	Builders	Commissioned
ISHIKARI	PM 78	Tohoku	13 Mar 1976
ABUKUMA	PM 79	Tohoku	30 Jan 1976
ISUZU	PM 80	Naikai	10 Mar 1976
HOROBETSU	PM 83	Tohoku	27 Jan 1977
SHIRAKAMI	PM 84	Tohoku	24 Mar 1977
MATSUURA (ex-Sagami)	PM 85	Naikai	30 Nov 1976
MISASA (ex-Yoshino)	PM 87	Usuki	28 Jan 1977
CHIKUGO	PM 90	Naikai	27 Jan 1978
YAMAKUNI	PM 91	Usuki	26 Jan 1978
KATSURA	PM 92	Shikoku	15 Feb 1978

Displacement, tons: 615 normal; 636 full load
 Dimensions, feet (metres): 208 x 25.6 x 8.3 (63.4 x 78 x 2.5)
 Main machinery: 2 Niigata 6M31EX diesels, 3,000 hp(m) (2.21 MW); 2 shafts; cp props
 Speed, knots: 18
 Range, n miles: 3,200 at 16 kt
 Complement: 34
 Guns: 1 USN 20 mm/80 Mk 10
 Radars: Navigation: JMA 1596 and JMA 1576, I-band.

Comment: PM 85 and 87 changed names 3 April 2000, PM 93 on 1 April 2001 and PM 88 on 12 March 2006, PM 73 paid off on 30 March 2008, PM 82 on 5 February 2008, PM 93 on 30 March 2008, PM 81 on 23 January 2009 and PM 88 on 22 February 2009.



CHIKUGO 6/2007, Hachiro Nakai / 1305170

2 TAKATORI CLASS (PM/PBO)

Name	No	Builders	Commissioned
TAKATORI	PM 89	Naikai	24 Mar 1978
KUMANO	PM 94	Namura	23 Feb 1979

Displacement, tons: 634 normal
 Dimensions, feet (metres): 152.5 x 30.2 x 9.3 (46.5 x 9.2 x 2.9)
 Main machinery: 2 Niigata 6M31EX diesels; 3,000 hp(m) (2.21 MW); 2 shafts; cp props
 Speed, knots: 15. Range, n miles: 700 at 14 kt
 Complement: 34
 Radars: Navigation: JMA 1596 and JMA 1576; I-band.

Comment: SAR vessels equipped for salvage and firefighting.



TAKATORI 5/2008, Michael Nitz / 1353146

4 AMAMI CLASS (PM/PBO)

Name	No	Builders	Commissioned
AMAMI	PM 95	Hitachi, Kanagawa	28 Sep 1992
KUROKAMI (ex-Matsuura)	PM 96	Hitachi, Kanagawa	24 Nov 1995
KUNASHIRI	PM 97	Mitsubishi, Shimonoseki	26 Aug 1998
MINABE	PM 98	Mitsubishi, Shimonoseki	26 Aug 1998

Displacement, tons: 230 normal
 Dimensions, feet (metres): 183.7 x 24.6 x 6.6 (56 x 7.5 x 2)
 Main machinery: 2 Fuji 8S40B diesels; 8,120 hp(m) (5.97 MW); 2 shafts; cp props
 Speed, knots: 25
 Guns: 1 - 20 mm JM-61B Gatling
 Radars: Navigation: I-band.

Comment: First one authorised in the FY91 programme; laid down 22 October 1991. Second authorised in FY93 programme, laid down 7 October 1994. Last pair authorised in FY96 programme and both laid down 30 September 1997. Stern ramp for launching RiB. PM 96 changed name 3 April 2000. PM 95 damaged in incident with possible North Korean intelligence collection ship on 22 December 2001.



AMAMI 6/2007, Hachiro Nakai / 1305121

1 TESHIO CLASS (ICEBREAKER) (PM/AGOB)

Name	No	Builders	Commissioned
TESHIO	PM 15	Nippon Koukan, Tsurumi	19 Oct 1995

Displacement, tons: 550 normal
 Dimensions, feet (metres): 180.4 x 34.8 x 12.8 (56 x 10.6 x 3.9)
 Main machinery: 2 diesels; 3,800 hp(m) (2.65 MW); 2 shafts; bow thruster
 Speed, knots: 14.5
 Complement: 35
 Guns: 1 - 20 mm JM-61B Gatling.
 Radars: Navigation: 2 sets; I-band.

Comment: Authorised in FY93; laid down 7 October 1994, launched 20 April 1995. Has an icebreaker bow.



TESHIO 6/2002, Japan Coast Guard / 0570891

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9 + 7 TOKARA CLASS (PM/PBO)

Name	No	Builders	Commissioned
TOKARA	PM 21	Universal, Keihin (Tsurumi)	12 Mar 2003
FUKUE	PM 22	Mitsubishi, Shimonoseki	12 Mar 2003
OIRASE	PM 23	Universal, Keihin (Tsurumi)	18 Mar 2004
FUJI	PM 24	Universal, Keihin (Tsurumi)	30 Apr 2008
ECHIZEN	PM 25	Universal, Keihin (Tsurumi)	30 Apr 2008
KIKUCHI	PM 26	Universal, Keihin (Tsurumi)	7 Feb 2009
YOSHINO	PM 27	Universal, Keihin (Tsurumi)	Mar 2009
ISUZU	PM 28	Universal, Keihin (Tsurumi)	Mar 2009
YAMAKUNI	PM 29	Universal, Keihin (Tsurumi)	June 2009
-	PM 30	Universal, Keihin (Tsurumi)	Mar 2010
-	PM 31	Universal, Keihin (Tsurumi)	Mar 2010
-	PM 32	Universal, Keihin (Tsurumi)	Mar 2010
-	PM 33	-	Mar 2011
-	PM 34	-	Mar 2011
-	PM 35	-	July 2011
-	PM 36	-	July 2011

Displacement, tons: 335 standard
 Dimensions, feet (metres): 183.8 x 32.4 x 14.4 (56.0 x 8.5 x 4.4)
 Main machinery: 3 diesels; 3 waterjets
 Speed, knots: 30+
 Guns: 1—20 mm Gatling gun, 1—12.7 mm MG

Comment: First two authorised in FY01, third in FY02, six further in FY06, three in FY07 and four in FY08.



FUJI 5/2008*, Hechiro Nakai / 1353147



TAKATSUKI 5/2005, Mitsuhiro Kadota / 1153329

5 AKAGI CLASS (PS/PB)

Name	No	Builders	Commissioned
KONGOU	PS 103	Ishihara	16 Mar 1987
KATSURAGI	PS 104	Ishihara	24 Mar 1988
BIZAN (ex-Hiramine)	PS 105	Yokohama Yacht Co	24 Mar 1988
SHIZUKI	PS 106	Sumidagawa	24 Mar 1988
TAKACHIHO	PS 107	Sumidagawa	24 Mar 1988

Displacement, tons: 115 full load
 Dimensions, feet (metres): 114.8 x 20.7 x 4.3 (35 x 6.3 x 1.3)
 Main machinery: 2 Pielstick 16 PA4 V 185 diesels; 5,344 hp(m) (3.93 MW) sustained; 2 shafts
 Speed, knots: 28
 Range, n miles: 500 at 20 kt
 Complement: 22
 Guns: 1 Browning 12.7 mm MG
 Radars: Navigation: 1 set, I-band.

Comment: Carry a 25-man inflatable rescue craft. The last four were ordered on 31 August 1987 and commissioned less than seven months later. PS 105 name changed on 1 October 2004. PS 101 and 102 paid off on 6 February 2009.



BIZAN 7/2006, Hechiro Nakai / 1040608

SMALL PATROL VESSELS

12 + (2) MIHASHI AND RAIZAN CLASS (PS/PBF)

Name	No	Builders	Commissioned
SHINZAN (ex-Akiyoshi, ex-Mihashi)	PS 01	Mitsubishi, Shimonoseki	9 Sep 1988
SAROMA	PS 02	Hitachi, Kanagawa	24 Nov 1989
INASA	PS 03	Mitsubishi, Shimonoseki	31 Jan 1990
KIRISHIMA	PS 04	Hitachi, Kanagawa	22 Mar 1991
KAMUI	PS 05	Mitsubishi, Shimonoseki	31 Jan 1994
RAIZAN (ex-Banna, ex-Bizan)	PS 06	Hitachi, Kanagawa	31 Jan 1994
ASHITAKI	PS 07	Mitsui, Tamano	30 Sep 1994
KARIBA (ex-Kurama)	PS 08	Mitsubishi, Shimonoseki	29 Aug 1995
ARASE	PS 09	Mitsubishi, Shimonoseki	29 Jan 1997
SANBE	PS 10	Hitachi, Kanagawa	29 Jan 1997
MIZUKI	PS 11	Mitsui, Tamano	9 June 2000
KOUYA	PS 12	Universal, Keihin	18 Mar 2004
TSUKUBA	PS 13	Mitsubishi, Shimonoseki	2009
AKAGI	PS 14	Mitsubishi, Shimonoseki	2009

Displacement, tons: 195 normal
 Dimensions, feet (metres): 141.1 x 24.6 x 5.6 (43 x 7.5 x 1.7)
 Main machinery: 2 SEMT-Pielstick 16 PA4 V 200 VGA diesels; 7,072 hp(m) (6.2 MW); 2 shafts
 1 SEMT-Pielstick 12 PA4 V 200 VGA diesel; 2,720 hp(m) (2 MW); Kamows 80 water-jet
 Speed, knots: 35. Range, n miles: 650 at 34 kt
 Complement: 34
 Guns: 1—12.7 mm MG or 1—20 mm JM 61 Gatling (being progressively fitted).
 Radars: Navigation: Furuno; I-band.

Comment: Capable of 15 kt on the water-jet alone. PS 01 name changed 28 January 1997 and again on 24 January 2001, PS 06 on 17 April 1999 and again on 1 August 2008. PS 08 on 29 March 2004. PS 11 authorised in FY98 programme and PS 12 in FY02 programme. PS 13-14 authorised in FY07 budget.



KAMUI 5/2008*, Hechiro Nakai / 1353148

6 TSURUUGI CLASS (PS/PBOF)

Name	No	Builders	Commissioned
TSURUUGI	PS 201	Hitachi, Kanagawa	15 Feb 2001
HOTAKA	PS 202	Mitsubishi, Shimonoseki	16 Mar 2001
NORIKURA	PS 203	Mitsui, Tamano	16 Mar 2001
KAIMON	PS 204	Mitsui, Tamano	21 Apr 2004
ASAMA	PS 205	Mitsui, Tamano	21 Apr 2004
HOUOU	PS 208	Mitsui, Tamano	27 Jan 2005

Displacement, tons: 220 standard
 Dimensions, feet (metres): 164.1 x 26.2 x 13.1 (50.0 x 8.0 x 4.0)
 Main machinery: 3 diesels; 3 waterjets
 Speed, knots: 35
 Guns: 1—20 mm JM-61 RFS Gatling.

Comment: First three authorised in FY99 budget, fourth and fifth in FY02 budget and sixth in FY03 budget.



ASAMA 5/2007, Hechiro Nakai / 1355123

2 TAKATSUKI CLASS (PS/PBF)

Name	No	Builders	Commissioned
TAKATSUKI	PS 108	Mitsubishi, Shimonoseki	23 Mar 1992
NOBARU	PS 109	Hitachi, Kanagawa	22 Mar 1993

Displacement, tons: 115 normal; 180 full load
 Dimensions, feet (metres): 114.8 x 22 x 4.3 (35 x 6.7 x 1.3)
 Main machinery: 2 MTU 16V 396TB94 diesels; 5,200 hp(m) (3.82 MW); 2 Kamowa 71 water-jets
 Speed, knots: 35
 Complement: 13
 Guns: 1—12.7 mm MG
 Radars: Navigation: I-band.

Comment: First authorised in the FY91 programme, second in FY92. Aluminium hulls.

COASTAL PATROL CRAFT

4 YODO CLASS (PC/YTR)

Name	No	Builders	Launched	Commissioned
YODO	PC 51	Sumidagawa	2 Oct 2001	29 Mar 2002
KOTOBIKI	PC 52	Sumidagawa	23 Oct 2002	27 Mar 2003
NACHI	PC 53	Ishihara	29 Jan 2003	27 Mar 2003
NUNOBIKI	PC 54	Sumidagawa	4 Dec 2002	27 Mar 2003

Displacement, tons: 125 standard
 Dimensions, feet (metres): 121.4 × 22.0 × 11.2 (37.0 × 6.7 × 3.4)
 Main machinery: 2 diesels; 2 waterjets
 Speed, knots: 25

Comment: The first authorised in FY00 budget, three more in FY01 budget. Also equipped for firefighting and replaced firefighting vessel of the same name.



YODO 5/2008, Hechiro Nakai / 1353149

13 MURAKUMO CLASS (PC/PB)

Name	No	Builders	Commissioned
KITAGUMO	PC 202	Hitachi, Kanagawa	17 Mar 1978
YUKIGUMO	PC 203	Hitachi, Kanagawa	27 Sep 1978
KAWAGIRI	PC 210	Hitachi, Kanagawa	27 July 1979
TOSAGIRI (ex-Bizan, ex-Teruzuki)	PC 211	Mitsubishi, Shimonoseki	26 June 1979
NIJIGUMO	PC 214	Mitsubishi, Shimonoseki	29 Jan 1981
ISEYUKI (ex-Hamayuki)	PC 216	Hitachi, Kanagawa	27 Feb 1981
ISONAMI	PC 217	Mitsubishi, Shimonoseki	19 Mar 1981
NAGOZUKI	PC 218	Hitachi, Kanagawa	29 Jan 1981
YAEZUKI	PC 219	Hitachi, Kanagawa	19 Mar 1981
HAMAYUKI (ex-Yamayuki)	PC 220	Hitachi, Kanagawa	16 Feb 1982
KOMAYUKI	PC 221	Mitsubishi, Shimonoseki	10 Feb 1982
UMIGIRI	PC 222	Hitachi, Kanagawa	17 Feb 1983
ASAGIRI	PC 223	Mitsubishi, Shimonoseki	23 Feb 1983

Displacement, tons: 85 normal
 Dimensions, feet (metres): 98.4 × 20.7 × 7.2 (30 × 6.3 × 2.2)
 Main machinery: 2 Ikegai MTU MB 16V 652 SB70 diesels; 4,400 hp(m) (3.23 MW) sustained, 2 shafts
 Speed, knots: 30
 Range, n miles: 350 at 28 kt
 Complement: 13
 Guns: 1—12.7 mm MG
 Radars: Navigation: I-band.

Comment: PC 211 name changed on 17 April 1999 and again on 1 October 2004. P 216 changed name on 22 February 2001 and PC 220 on 18 March 2006. PC 206 paid off on 21 February 2008, PC 207-208 on 15 February 2008, PC 212 and PC 215 on 20 February 2009.



KAWAGIRI 5/2004, Mitsuhiro Kadota / 1044450



MURAKUMO CLASS 5/2008, Hechiro Nakai / 1353150

12 HAYAGUMO CLASS (PC/PBF)

Name	No	Builders	Commissioned
HAYAGUMO (ex-Hamayuki, ex-Kagayuki)	PC 105	Mitsubishi, Shimonoseki	24 Dec 1999
MURAKUMO	PC 106	Hitachi, Kanagawa	19 Aug 2002
IZUNAMI	PC 107	Mitsui, Tamano	18 Mar 2003
YAMAGUMO	PC 108	Sumidagawa	4 Mar 2008
NATSUGUMO	PC 109	Sumidagawa	4 Mar 2008
AKIGUMO	PC 110	Sumidagawa	10 Mar 2008
TATSUGUMO	PC 111	Sumidagawa	Mar 2009
IKIGUMO	PC 112	Sumidagawa	Mar 2009
NATSUZUKI	PC 113	Sumidagawa	Mar 2009
-	PC 114	Sumidagawa	July 2009
-	PC 115	Sumidagawa	July 2009
-	PC 116	Sumidagawa	July 2009

Displacement, tons: 100 standard
 Dimensions, feet (metres): 105.0 × 21.3 × 10.8 (32.0 × 6.5 × 3.3)
 Main machinery: 2 diesels; 5,200 hp(m) (3.82 MW); 2 waterjets
 Speed, knots: 36
 Complement: 10
 Guns: 1—12.7 mm MG.

Comment: Larger version of Asogiri class with waterjet propulsion and higher top speed. PC 105 changed name on 22 February 2001 and again on 18 March 2006. PC 106 authorised in FY01 budget and PC 107 in FY01 extra budget. PC 108-110 authorised in FY06 budget and PC 111-116 in FY07 budget.



HAYAGUMO 7/2008, Hechiro Nakai / 1353151

9 AKIZUKI CLASS (PC/SAR)

Name	No	Builders	Commissioned
URAYUKI	PC 72	Mitsubishi, Shimonoseki	31 May 1975
HATAGUMO	PC 75	Mitsubishi, Shimonoseki	21 Feb 1976
MAKIGUMO	PC 76	Mitsubishi, Shimonoseki	19 Mar 1976
HAMAZUKI	PC 77	Mitsubishi, Shimonoseki	29 Nov 1976
ISOZUKI	PC 78	Mitsubishi, Shimonoseki	18 Mar 1977
SHIMANAMI	PC 79	Mitsubishi, Shimonoseki	23 Dec 1977
YUZUKI	PC 80	Mitsubishi, Shimonoseki	22 Mar 1979
TAMANAMI (ex-Hamayuki)	PC 81	Mitsubishi, Shimonoseki	27 Mar 1981
AWAGIRI	PC 82	Mitsubishi, Shimonoseki	24 Mar 1983

Displacement, tons: 77 normal
 Dimensions, feet (metres): 85.3 × 20.7 × 6.9 (26 × 6.3 × 2.1)
 Main machinery: 3 Mitsubishi 12DM20MTK diesels; 3,000 hp(m) (2.21 MW); 3 shafts
 Speed, knots: 22. Range, n miles: 220 at 21.5 kt
 Complement: 10
 Radars: Navigation: FRA 10 Mk 2; I-band.

Comment: Aluminium hulls. Used mostly for SAR. Being paid off



AWAGIRI 9/2008, Hechiro Nakai / 1353152

1 MATSUNAMI CLASS (PC/PB)

Name	No	Builders	Commissioned
MATSUNAMI	PC 01	Mitsubishi, Shimonoseki	22 Feb 1995

Displacement, tons: 165 normal
 Dimensions, feet (metres): 114.8 × 26.2 × 10.8 (35 × 8 × 3.3)
 Main machinery: 2 diesels; 5,200 hp(m) (3.82 MW); 2 water-jets
 Speed, knots: 25
 Complement: 30
 Radars: Navigation: I-band.

Comment: Has replaced old craft of the same name. Laid down 10 May 1994. Used for patrol and for VIPs.



MATSUNAMI 5/2007, Hechiro Nakai / 1305178

3 SHIMAGIRI CLASS (PC/PB)

Name	No	Builders	Commissioned
SHIMAGIRI	PC 83	Hitachi, Kanagawa	7 Feb 1985
OKINAMI (ex-Setagiri)	PC 84	Hitachi, Kanagawa	22 Mar 1985
HAYAGIRI	PC 85	Mitsubishi, Shimonoseki	22 Feb 1985

Displacement, tons: 51 normal
 Dimensions, feet (metres): 75.5 x 17.4 x 6.2 (23 x 5.3 x 1.9)
 Main machinery: 2 Ikegai 12V 175 RTC diesels; 3,000 hp(m) (2.21 MW); 2 shafts
 Speed, knots: 30
 Complement: 10
 Guns: 1—12.7 mm MG (not in all).
 Radars: Navigation, FRA 10 Mk 2; I-band.

Comment: Aluminium hulls. PC 84 name changed 1 October 2000



HAYAGIRI 4/2003, Bob Flides / 0570885

1 SHIKINAMI CLASS (PC/PB)

Name	No	Builders	Commissioned
ASOYUKI	PC 74	Hitachi, Kanagawa	16 June 1975

Displacement, tons: 46 normal
 Dimensions, feet (metres): 69 x 17.4 x 3.3 (21 x 5.3 x 1)
 Main machinery: 2 MTU MB 12V 493 TY7 diesels; 2,200 hp(m) (1.62 MW) sustained, 2 shafts
 Speed, knots: 26
 Range, n miles: 230 at 23.8 kt
 Complement: 10
 Radars: Navigation: MD 806, I-band.

Comment: Built completely of light alloy. PC 69 paid off 8 December 1999 and PC 70 on 19 October 2000.



ASOYUKI 9/2008*, Hirotohi Yamamoto / 1353153

2 NATSUGIRI CLASS (PC/PB)

Name	No	Builders	Commissioned
NATSUGIRI	PC 86	Sumidagawa	29 Jan 1990
SUGANAMI	PC 87	Sumidagawa	29 Jan 1990

Displacement, tons: 68 normal
 Dimensions, feet (metres): 88.6 x 18.4 x 3.9 (27 x 5.8 x 1.2)
 Main machinery: 2 diesels; 3,000 hp(m) (2.21 MW); 2 shafts
 Speed, knots: 27
 Complement: 10
 Radars: Navigation: I-band.

Comment: Built under FY88 programme. Steel hulls.



SUGANAMI 5/2008*, Hachiro Nakai / 1353154

15 HAYANAMI CLASS (PC/PB/YTR)

Name	No	Builders	Commissioned
HAYANAMI	PC 11	Sumidagawa	25 Mar 1993
SETOGIRI (ex-Shikinami)	PC 12	Sumidagawa	24 Mar 1994
MIZUNAMI	PC 13	Ishihara	24 Mar 1994
IYONAMI	PC 14	Sumidagawa	30 June 1994
KURINAMI	PC 15	Sumidagawa	30 Jan 1995
HAMANAMI	PC 16	Sumidagawa	28 Mar 1996
SHINONOME	PC 17	Ishihara	29 Feb 1996
HARUNAMI	PC 18	Ishihara	28 Mar 1996
KIYOZUKI	PC 19	Sumidagawa	23 Feb 1998
AYANAMI	PC 20	Yokohama Yacht	28 Mar 1996
TOKINAMI	PC 21	Yokohama Yacht	28 Mar 1996
HAMAGUMO	PC 22	Sumidagawa	27 Aug 1999
AWANAMI	PC 23	Sumidagawa	27 Aug 1999
URANAMI	PC 24	Sumidagawa	24 Jan 2000
SHIKINAMI	PC 25	Ishihara	24 Oct 2000

Displacement, tons: 110 normal, 190 full load
 Dimensions, feet (metres): 114.8 x 20.7 x 7.5 (35 x 6.3 x 2.3)
 Main machinery: 2 diesels; 4,000 hp(m) (2.94 MW); 2 shafts
 Speed, knots: 25
 Complement: 13
 Guns: 1—12.7 mm MG.
 Radars: Navigation: I-band

Comment: One more authorised in FY99 budget. From PC 22 onwards these craft are equipped for firefighting. PC 12 changed name 1 October 2000



AWANAMI 5/2008*, Hachiro Nakai / 1353155

206 + 8 COASTAL PATROL AND RESCUE CRAFT (CL/PB)

CL 01-09	CL 233	CL 244-249	CL 256-257	CL 264
CL 11-158	CL 238-239	CL 251	CL 259	GS 01-02
CL 214	CL 241-242	CL 253-254	CL 261	SS 51-77

Comment: Some have firefighting capability. Built by Shigi, Ishihara, Sumidagawa, Yokohama Yacht Co and Yamaha. For coastal patrol and rescue duties. Built of high tensile steel. Fourteen CL 11 class authorised in FY01 budget, eight in FY05 extra budget, eight in FY06 extra budget and eight in FY07 extra budget. CL 05-09 (ex-LS 231-235) were converted in 2008.



CL 138 5/2008*, Hachiro Nakai / 1353156



SS 59 5/2008*, Hachiro Nakai / 1353157

4 ASOGIRI CLASS (PC/PB)

Name	No	Builders	Commissioned
ASOGIRI	PC 101	Yokohama Yacht	19 Dec 1994
MUROZUKI	PC 102	Ishihara	27 July 1995
WAKAGUMO	PC 103	Ishihara	17 July 1996
KAGAYUKI (ex-Naozuki)	PC 104	Sumidagawa	23 Jan 1997

Displacement, tons: 88 normal
 Dimensions, feet (metres): 108.3 x 20.7 x 4.6 (33 x 6.3 x 1.4)
 Main machinery: 2 diesels; 5,200 hp(m) (3.82 MW); 2 shafts
 Speed, knots: 30
 Complement: 10
 Guns: 1—12.7 mm MG

Comment: First pair authorised in FY93 programme, third and fourth in FY95 PC 104 changed names on 1 April 2006.



MUROZUKI 8/2001, Hachiro Nakai / 0130250



KAIRYU 8/2008, Hachiro Nakai / 1353158

4 NUNOBIKI CLASS (FM/YTR)

Name	No	Builders	Commissioned
SHIRAITO	FM 04	Yokohama Yacht Co	25 Feb 1975
MINOO	FM 08	Sumidagawa	27 Jan 1978
RYUSEI	FM 09	Yokohama Yacht Co	24 Mar 1980
KIYOTAKI	FM 10	Sumidagawa	25 Mar 1981

Displacement, tons: 89 normal
 Dimensions, feet (metres): 75.4 x 19.7 x 5.2 (23 x 6 x 1.6)
 Main machinery: 1 MTU MB 12V 493 TY7 diesel; 1,100 hp(m) (810 kW) sustained; 1 shaft
 2 Nissan diesels, 500 hp(m) (615 kW); 3 shafts
 Speed, knots: 14
 Range, n miles: 180 at 13.5 kt
 Complement: 12
 Radars: Navigation: FRA 10; I-band.

Comment: Equipped for chemical firefighting. FM 01 paid off 31 October 2000 and FM 02 in 2002. FM 05, FM 06 and FM 07 paid off on 11 March 2003



KIYOTAKI 10/2003, Hachiro Nakai / 0570706

FIREFIGHTING VESSELS AND CRAFT**1 MODIFIED HIRYU CLASS (FL/YTR)**

Name	No	Builders	Launched	Commissioned
HIRYU	FL 01	NKK, Tsurumi	5 Sep 1997	24 Dec 1997

Displacement, tons: 280 normal
 Dimensions, feet (metres): 114.8 x 40 x 8.9 (35 x 12.2 x 2.7)
 Main machinery: 2 diesels, 4,000 hp(m) (2.94 MW); 2 shafts
 Speed, knots: 14
 Complement: 15

Comment: Authorised in FY96 programme. Catamaran design. Replaced ship of the same name and pennant number.



HIRYU 5/2007, Hachiro Nakai / 1305130

4 HIRYU CLASS (FL/YTR)

Name	No	Builders	Commissioned
SHORYU	FL 02	Nippon Kokan, Tsurumi	4 Mar 1970
NANRYU	FL 03	Nippon Kokan, Tsurumi	4 Mar 1971
KAIRYU	FL 04	Nippon Kokan, Tsurumi	18 Mar 1977
SUIRYU	FL 05	Yokohama Yacht Co	24 Mar 1978

Displacement, tons: 215 normal
 Dimensions, feet (metres): 90.2 x 34.1 x 7.2 (27.5 x 10.4 x 2.2)
 Main machinery: 2 (kegai) MTU MB 12V 493 TY7 diesels; 2,200 hp(m) (1.62 MW) sustained; 2 shafts
 Speed, knots: 13.2
 Range, n miles: 300 at 13 kt
 Complement: 14

Comment: Catamaran type fire boats designed and built for firefighting services to large tankers.

SURVEY SHIPS**1 SHOYO CLASS (AGS)**

Name	No	Builders	Launched	Commissioned
SHOYO	HL 01	Mitsui, Tamano	23 June 1997	20 Mar 1998

Displacement, tons: 3,000 normal
 Dimensions, feet (metres): 321.5 x 49.9 x 11.8 (98 x 15.2 x 3.6)
 Main machinery: Diesel-electric; 2 diesels; 8,100 hp(m) (5.95 MW); 2 motors; 5,712 hp(m) (4.2 MW); 2 shafts; cp props
 Speed, knots: 17
 Complement: 60

Comment: Authorised in FY95 programme. Laid down 4 October 1996. Has replaced former Shoyo.



SHOYO 5/2008, Hachiro Nakai / 1353159

1 TENYO CLASS (AGS)

Name	No	Builders	Commissioned
TENYO	HL 04	Sumitomo, Oppama	27 Nov 1986

Displacement, tons: 770 normal
 Dimensions, feet (metres): 183.7 × 32.2 × 9.5 (56 × 9.8 × 2.9)
 Main machinery: 2 Akasaka diesels; 1,300 hp(m) (955 kW); 2 shafts
 Speed, knots: 13
 Range, n miles: 5,400 at 12 kt
 Complement: 43 (18 officers)
 Radars: Navigation: 2 JMA 1596, I-band

Comment: Laid down 11 April 1986, launched 5 August 1986 Based at Tokyo.



TENYO 6/2006, Okano Takatoshi / 1040613

1 TAKUYO CLASS (AGS)

Name	No	Builders	Commissioned
TAKUYO	HL 02	Nippon Kokan, Tsurumi	31 Aug 1983

Displacement, tons: 3,000 normal
 Dimensions, feet (metres): 314.9 × 46.6 × 15.1 (96 × 14.2 × 4.6)
 Main machinery: 2 Fuji 6S40B diesels, 6,090 hp(m) (4.47 MW); 2 shafts; cp props
 Speed, knots: 17
 Range, n miles: 12,000 at 16 kt
 Complement: 60 (24 officers)
 Radars: Navigation: 2 sets; I-band.

Comment: Laid down on 14 April 1982, launched on 24 March 1983 Based at Tokyo. Side scan sonar fitted. Two survey launches



TAKUYO 5/2008, Hachiro Nakai / 1353160

2 MEIYO CLASS (AGS)

Name	No	Builders	Commissioned
MEIYO	HL 03	Kawasaki, Kobe	24 Oct 1990
KAIYO	HL 05	Mitsubishi, Shimonoseki	7 Oct 1983

Displacement, tons: 550 normal
 Dimensions, feet (metres): 196.9 × 34.4 × 10.2 (60 × 10.5 × 3.1)
 Main machinery: 2 Daihatsu 6 DLM-24 diesels; 3,000 hp(m) (2.2 MW); 2 shafts; bow thruster
 Speed, knots: 15
 Range, n miles: 5,280 at 11 kt
 Complement: 25 + 13 scientists
 Radars: Navigation: 2 sets; I-band

Comment: *Meiyo* laid down 24 July 1989 and launched 29 June 1990; *Kaiyo* laid down 7 July 1992 and launched 26 April 1993. Have anti-roll tanks and resiliently mounted main machinery. Has a 12 kHz bottom contour sonar. A large survey launch is carried on the port side.



KAIYO 6/2007, Hachiro Nakai / 1305061

7 HAMASHIO CLASS (YGS)

Name	No	Builders	Commissioned
HAMASHIO	HS 21	Yokohama Yacht	25 Mar 1991
ISOSHI	HS 22	Yokohama Yacht	25 Mar 1993
UZUSHIO	HS 23	Yokohama Yacht	22 Dec 1995
OKISHIO	HS 24	Ishihara	4 Mar 1999
ISESHIO	HS 25	Ishihara	10 Mar 1999
HAYASHIO	HS 26	Ishihara	10 Mar 1999
KURUSHIMA	HS 27	Nissui Marine	26 Mar 2003

Displacement, tons: 42 normal
 Dimensions, feet (metres): 66.6 × 14.8 × 3.9 (20.3 × 4.5 × 1.2)
 Main machinery: 3 diesels; 1,015 hp(m) (746 kW); 3 shafts
 Speed, knots: 15
 Complement: 10
 Radars: Navigation: I-band.

Comment: Survey launches. HS 27 authorised in FY01 extra budget.



HAMASHIO 5/2008, Hachiro Nakai / 1353161

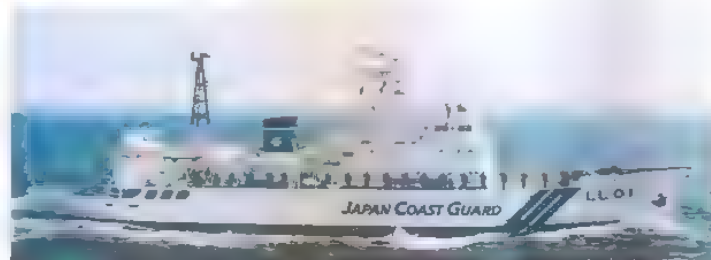
AIDS TO NAVIGATION SERVICE

1 SUPPLY SHIP (AKSL)

Name	No	Builders	Commissioned
TSUSHIMA	LL 01	Mitsui, Tamano	9 Sep 1977

Displacement, tons: 1,950 normal
 Dimensions, feet (metres): 246 × 41 × 13.8 (75 × 12.5 × 4.2)
 Main machinery: 1 Fuji-Sulzer 8S40C diesel; 4,200 hp(m) (3.09 MW); 1 shaft; cp prop; bow thruster
 Speed, knots: 15.5
 Range, n miles: 10,000 at 15 kt
 Complement: 54

Comment: Lighthouse Supply Ship launched 7 April 1977. Fitted with tank stabilisers. Equipped with modern electronic instruments for carrying out research on electronic aids to navigation.



TSUSHIMA 5/2008, Hachiro Nakai / 1353162

2 HOKUTO CLASS (ABU)

Name	No	Builders	Commissioned
HOKUTO	LL 11	Sasebo	29 June 1979
GINGA	LL 13	Kawasaki, Kobe	18 Mar 1980

Displacement, tons: 700 normal
 Dimensions, feet (metres): 180.4 × 34.8 × 8.7 (55 × 10.6 × 2.7)
 Main machinery: 2 Asakasa MH23R diesels; 1,030 hp(m) (757 kW); 2 shafts
 Speed, knots: 12
 Range, n miles: 3,900 at 12 kt
 Complement: 31 (9 officers)

Comment: Used as buoy tenders. LL 12 paid off on 31 March 2008



HOKUTO 5/2004, Hachiro Nakai / 1044459

1 SUPPLY SHIP (AKSL)

Name	No	Builders	Commissioned
ZUIUN	LM 101	Usuki	27 July 1983

Displacement, tons: 370 normal
 Dimensions, feet (metres): 146.3 × 24.6 × 7.2 (44.6 × 7.5 × 2.2)
 Main machinery: 2 Mitsubishi-Asakasa MH23R diesels; 1,030 hp(m) (757 kW); 2 shafts
 Speed, knots: 13.5
 Range, n miles: 1,000 at 13 kt
 Complement: 20

Comment: Classed as a medium tender and used to service lighthouses. Can carry 85 tons of stores.



ZUIUN 6/2003, Japan Coast Guard / 0570701

7 SUPPLY CRAFT (AKSL)

Name	No	Builders	Commissioned
SEIUN	LM 202	Sumidagawa	22 Feb 1989
SEKIUN	LM 203	Ishihara	12 Mar 1991
HOUJUN	LM 204	Ishihara	22 Feb 1991
REIUN	LM 205	Ishihara	28 Feb 1992
GENUN	LM 206	Wakamatsu	19 Mar 1996
AYABANE	LM 207	Ishihara	9 Mar 2000
KOUN	LM 208	Sumidagawa	16 Mar 2001

Displacement, tons: 58 full load
 Dimensions, feet (metres): 75.5 × 19.7 × 3.3 (23 × 6 × 1)
 Main machinery: 2 GM 12V-71TA diesels; 840 hp (627 kW) sustained; 2 shafts
 Speed, knots: 14
 Range, n miles: 250 at 14 kt
 Complement: 9
 Radars: Navigation. FRA 10 Mk III; I-band

Comment: LM 114 decommissioned on 31 March 2006 and LM 201 on 31 March 2007.



KOUN 5/2008, Hachiro Nakai / 1353163

13 SMALL TENDERS (YAG)

LS 168–170 LS 194–195 LS 201 LS 216–223

Displacement, tons: 27 full load
 Dimensions, feet (metres): 65 × 14.7 × 7.5 (20 × 4.5 × 2.3)
 Main machinery: 2 diesels; 1,820 hp(m) (1.34 MW); 2 shafts
 Speed, knots: 25
 Complement: 8

Comment: Details given are for LS 231-233. Others with varying characteristics. LS 161, LS 164-167 and LS 212 decommissioned on 31 March 2006, LS 189 on 8 December 2006, LS 188-193, LS 213-215 converted to coastal patrol craft on 31 March 2007



LS 232 7/2006, Hachiro Nakai / 1040611

ENVIRONMENT MONITORING CRAFT**3 SERVICE CRAFT (YPC)**

Name	No	Builders	Commissioned
KINUGASA	MS 01	Ishihara, Takasago	31 Jan 1992
SAIKAI	MS 02	Ishihara, Takasago	4 Feb 1994
KATSUREN	MS 03	Sumidagawa	18 Dec 1997

Displacement, tons: 39 normal
 Dimensions, feet (metres): 59.1 × 29.5 × 4.3 (18 × 9 × 1.3)
 Main machinery: 2 diesels; 1,000 hp(m) (735 kW); 2 shafts
 Speed, knots: 15
 Complement: 8

Comment: Details given are for Kinugasa which has a catamaran hull. Saikai and Katsuren are monohulls of 26 tons. Used for monitoring pollution.



KINUGASA 10/2007, Mick Prendergast / 1305060



SAIKAI 8/2006, Hachiro Nakai / 1040583

Jordan**Country Overview**

The Hashemite Kingdom of Jordan is situated in the Middle East. With an area of 34,492 square miles, it has borders to the north with Syria, to the east with Iraq, to the west with Israel and the West Bank and to the east and south with Saudi Arabia. It has a 14 n mile coastline with the Gulf of Aqaba (in the northern Red Sea) on which Aqaba, the only seaport, is situated. Amman is the capital and largest city. Territorial seas (3 n miles) are claimed but an Exclusive Economic Zone (EEZ) is not claimed

Headquarters Appointments

Commander Naval Forces:
Major General Dar Al Zaben
Deputy Commander:
Colonel Abdelkareem Fdoul

Organisation

The Royal Jordanian Naval Force comes under the Director of Operations at General Headquarters.

Bases

Aqaba

Personnel

- (a) 2009: 500 officers and men
 (b) Voluntary service

PATROL FORCES

Notes: In addition to the craft listed, there are also four 17 ft launches and four 14 ft GRP boats used by the Underwater Swimmer unit.

3 AL HUSSEIN (HAWK) CLASS (FAST ATTACK CRAFT—GUN) (PB)

AL HUSSEIN 101 AL HASSAN 102 KING ABDULLAH 103

Displacement, tons: 124 full load
Dimensions, feet (metres): 100 × 22.5 × 4.9 (30.5 × 6.9 × 1.5)
Main machinery: 2 MTU 16V 396TB94 diesels; 5,800 hp(m) (4.26 MW) sustained; 2 shafts
Speed, knots: 32
Range, n miles: 750 at 15 kt; 1,500 at 11 kt
Complement: 16 (3 officers)
Guns: 1 Oerlikon GCM-A03 30 mm, 1 Oerlikon GAM B01 20 mm, 2—12.5 mm MGs.
Countermeasures: Decoys, 2 Wallop Stockade chaff launchers.
Combat data systems: Racal Cane 100
Weapons control: Radamec Series 2000 optronic director for 30 mm gun.
Radars: Surface search: Kelvin Hughes 1007, I-band

Comment: Ordered from Vosper Thornycroft in December 1987 GRP structure. First one on trials in May 1989 and completed December 1989. Second completed in March 1990 and the third in early 1991. All transported to Aqaba in September 1991.



AL HUSSEIN

4/2006, M Declerck / 1164802

4 FAYSAL CLASS (INSHORE PATROL CRAFT) (PB)

FAYSAL HUSSEIN (ex-Han) HASSAN (ex-Hasayu) MUHAMMED

Displacement, tons: 8 full load
Dimensions, feet (metres): 38 × 13.1 × 1.6 (11.6 × 4 × 0.5)
Main machinery: 2 BM 8V715 diesels; 600 hp (441 kW); 2 shafts
Speed, knots: 22
Range, n miles: 240 at 20 kt
Complement: 8
Guns: 1—12.7 mm MG, 1—762 mm MG.
Radars: Surface search: Decca, I-band.

Comment: Acquired from Bertram, Miami in 1974. GRP construction. Still operational and no replacements are planned yet.



MUHAMMED

3/2004, Bob Fildes / 0587768

2 HASHIM (ROTORK) CLASS (PB)

HASHIM FAISAL

Displacement, tons: 9 full load
Dimensions, feet (metres): 41.7 × 10.5 × 3 (12.7 × 3.2 × 0.9)
Main machinery: 2 Deutz diesels; 240 hp (179 kW); 2 shafts
Speed, knots: 28
Complement: 5
Military lift: 30 troops
Guns: 1—12.7 mm MG, 1—762 mm MG.
Radars: Surface search: Furuno, I-band

Comment: Delivered in late 1990 for patrolling the Dead Sea. Due to the annual decrease of water depth, the original three craft were moved to Aqaba in 2000. Hamza scrapped in 2006



HASHIM CLASS

3/2004, Bob Fildes / 0587769

4 ABDULLAH (DAUNTLESS) CLASS (PATROL CRAFT) (PB)

68171-68174

Displacement, tons: 14.5 full load
Dimensions, feet (metres): 43.3 × 13.8 × 4.4 (13.2 × 4.2 × 1.35)
Main machinery: 2 Cummins QSM-11 diesels; 1,160 hp (865 kW); 2 shafts
Speed, knots: 35
Complement: 4
Guns: 2—12.5 mm MGs, 2—762 mm MGs
Radars: Navigation: Raymarine RL70C; I-band

Comment: Sea Ark Dauntless design acquired in 2006.



ABDULLAH 68174

4/2006, M Declerck / 1164801

4 FAISAL (COMMANDER) CLASS (PATROL CRAFT) (PB)

FAISAL 1-4

Displacement, tons: 3.4 full load
Dimensions, feet (metres): 26.6 × 10.2 × 1.5 (8.1 × 3.1 × 0.45)
Main machinery: 2 Evinrude outboard motors; 500 hp (375 kW)
Speed, knots: 46
Complement: 3
Guns: 2—12.5 mm MGs
Radars: Navigation: Raymarine RL70C; I-band

Comment: Sea Ark Commander design acquired in 2006



FAISAL CLASS

6/2006, Jordanian Navy / 1164800

Kazakhstan

Country Overview

Formerly part of the USSR, the Republic of Kazakhstan declared its independence in 1991. Situated in Central Asia, it has an area of 1,049,155 square miles and is bordered to the north and west with Russia, to the east with China and to the south with Kyrgyzstan, Uzbekistan, and Turkmenistan. It has a 755 n mile coastline with the Caspian Sea on which Aktau, the principal port, is situated. Astana became the capital city in 1995 while Almaty, the former capital, is

the largest city. Maritime claims in the Caspian Sea are not clear. The naval Flotilla was inaugurated by President Nazarbayev in June 1998. The plan was to absorb about 30 per cent of the former USSR Caspian Flotilla, but many of these craft are derelict.

Headquarters Appointments

Commander, Navy:
 Rear Admiral Ratmir Komratov

Bases

Aktau (Caspian) (HQ)
 Aralsk (Aral Sea), Bautino (Caspian)

Personnel

2009: 3,000

PATROL FORCES

Notes: (1) Plans to expand the Navy were announced by the commander of the navy in July 2003. This was re-affirmed by the Kazakh Ministry of Defence in March 2007 and a Directorate for naval forces was established in January 2008

(2) There is also an ex-trawler *Tyulen II* of 39 m with a single diesel of 578 hp(m) (425 kW) capable of 10 kt. Acquired in 1997

(3) Six Customs cutters acquired from the UAE in 1998. At least one sunk in transit.

(4) Five Guardian class Boston Whalers delivered in November 1995 are reported operational.

(5) Plans to transfer three Yevgenya class from Russia appear to have been abandoned

(6) Three 14 m Sunkar-M class patrol craft were reported in service in 2006. They are capable of 40 kt

(7) There is an undisclosed number of SAFE Boats Archangel class 13 m response craft.

2 TURK (AB 25) CLASS (PB)

Name	No	Builders	Commissioned
– (ex-AB 32)	– (ex-P 132)	Haliç Shipyard	6 June 1969
– (ex-AB 26)	– (ex-P 126)	Haliç Shipyard	6 Feb 1970

Displacement, tons: 170 full load
Dimensions, feet (metres): 132 × 21 × 5.5 (40.2 × 6.4 × 1.7)
Main machinery: 4 SACM-AGO V16 CSHR diesels; 9,600 hp(m) (706 MW); 2 cruise diesels, 300 hp(m) (220 kW); 2 shafts
Speed, knots: 22
Complement: 31
Guns: 1 Bofors 40 mm/70, 1 Oerlikon 20 mm.
Radars: Surface search: Racal Decca; I-band.

Comment: Presented by the Turkish Navy on 3 July 1999 (AB 32) and 25 July 2001 (AB 26) at Geljuk. May have retained active sonar and ASW rocket launcher but this is unlikely.



TURK CLASS (Turkish colours) 10/2000, *Selim San* / 0106636

4 KW 15 (TYPE 369) CLASS (PB)

ALMATY (ex-KW 15) 2013 (ex-201)	ATYRAU (ex-KW 17) 2033 (ex-203)
AKTAU (ex-KW 16) 2023 (ex-202)	SCHAMBYL (ex-KW 20) 2043 (ex-204)

Displacement, tons: 70 full load
Dimensions, feet (metres): 93.5 × 15.4 × 4.9 (28.9 × 4.7 × 1.5)
Main machinery: 2 Mercedes Benz diesels; 2,000 hp(m) (1.47 MW); 2 shafts
Speed, knots: 26
Complement: 17
Guns: 2 – 20 mm can be fitted
Radars: Surface search: Kelvin Hughes 14/9; I-band.

Comment: Transferred from Germany at Wilhelmshaven on 23 August 1996. Built in Germany 1952–53 and paid off in 1994, having been used for river patrols and later as range safety craft. Disarmed on transfer. Reported as being non-operational.



ALMATY (old number) 8/1996, *Michael Nitz* / 0080219

1 ZHUK (PROJECT 1400) CLASS (PB)

BERKUT

Displacement, tons: 39 full load
Dimensions, feet (metres): 78.7 × 16.4 × 3.9 (24 × 5 × 1.2)
Main machinery: 2 Type M401B diesels; 2,200 hp(m) (1.6 MW) sustained; 2 shafts
Speed, knots: 30. Range, n miles: 1,100 at 15 kt
Complement: 11
Guns: 2 – 14.5 mm (twin); 1 – 12.7 mm MG
Radars: Surface search: Spin Trough; I-band

Comment: Built at the Zenith Shipyard, Uralsk, and commissioned 15 July 1998. Reports of a second craft have not been confirmed.



ZHUK (Russian colours) 11/1996, *MoD Bonn* / 0019041

1 DAUNTLESS CLASS (PB)

ABAY

Displacement, tons: 11 full load
Dimensions, feet (metres): 42 × 14 × 4.3 (12.8 × 4.3 × 1.3)
Main machinery: 2 Detroit 8V-92TA diesels; 1,270 hp (935 kW); 2 shafts
Speed, knots: 35
Range, n miles: 600 at 18 kt
Complement: 5
Guns: 1 – 12.7 mm MG. 2 – 7.62 mm MGs.
Radars: Surface search; Furuno; I-band.

Comment: Ordered under US funding in November 1995. Built by SeaArk, Monticello. Used to interdict the smuggling of nuclear materials across the Caspian Sea.



DAUNTLESS CLASS 7/1996, *SeaArk Marine* / 0080220

2 SAYGAK (PROJECT 1408) CLASS (PB)

Displacement, tons: 13 full load
Dimensions, feet (metres): 46.3 × 11.5 × 3 (14.1 × 3.5 × 0.9)
Main machinery: 1 diesel; 980 hp(m) (720 kW); 1 water-jet
Speed, knots: 35
Range, n miles: 135 at 35 kt
Complement: 6
Guns: 2 – 7.62 mm MGs
Radars: Surface search; I-band.

Comment: Russian-built small craft primarily found on the Amur river. Built in 1995 and acquired in early 1996



SAYGAK (Russian colours) 7/1996, *Hartmut Ehlers* / 0052520

Kenya



Country Overview

A former British colony, The Republic of Kenya gained independence in 1963. Located astride the Equator, the country has an area of 224,082 square miles and has borders to the north with Somalia and Ethiopia and to the south with Tanzania. It has a 292 n mile coastline with the Indian Ocean. The country includes almost all of Lake Turkana (Lake Rudolf) and a small portion of Lake Victoria. The capital and largest city is Nairobi and the main seaport is Mombasa. Kisumu is a port on Lake Victoria. Perhaps the first proponent of the Exclusive Economic Zone (EEZ) concept, Kenya claims a 200 n mile EEZ whose limits have been partly defined. Territorial seas (12 n miles) are claimed

Headquarters Appointments

Commander, Navy:
Major General Samson J Mwachethe

Personnel

- (a) 2009: 1,370 plus 120 marines
 (b) Voluntary service

Bases

Mombasa (Mtongwe port), Manda, Maiindi, Lamu, Kisumu (Lake Victoria)

Coast Defence

There are nine Masura coastal radar stations spread along the coast. Each station has 30 ft fast boats to investigate contacts.

Customs/Police

There are some 14 Customs and Police patrol craft of between 12 and 14 m. Mostly built by Cheverton, Performance Workboats and Fassmer in the 1980s. One Cheverton 18 m craft acquired in early 1997

PATROL FORCES

Notes: There are also five Spanish built inshore patrol craft of 16 m armed with 12.7 mm MGs and driven by twin 538 hp diesels for a speed of 16 kt. Acquired in 1995, they have pennant numbers P 943-947.

2 NYAYO CLASS (FAST ATTACK CRAFT—MISSILE) (PGGF)

Name	No	Builders	Launched	Commissioned
NYAYO	P 3128	Vosper Thornycroft	20 Aug 1986	23 July 1987
UMOJA	P 3127	Vosper Thornycroft	5 Mar 1987	16 Sep 1987

Displacement, tons: 310 light; 430 full load
Dimensions, feet (metres): 186 × 26.9 × 7.9 (56.7 × 8.2 × 2.4)
Main machinery: 4 Paxman Valenta 18CM diesels; 15,000 hp (11.19 MW) sustained; 4 shafts; 2 motors (slow speed patrol); 100 hp (74.6 kW)
Speed, knots: 40
Range, n miles: 2,000 at 18 kt
Complement: 40

Missiles: SSM: 4 OTO Melara/Matra Otomat Mk 2 (2 twin), active radar homing to 160 km (86.4 n miles) at 0.9 Mach; warhead 210 kg; sea-skimmer for last 4 km (2.2 n miles).
Guns: 1 OTO Melara 3 in (76 mm)/62, 85 rds/min to 16 km (8.7 n miles) anti-surface; 12 km (6.5 n miles) anti-aircraft; weight of shell 6 kg.
 2 Oerlikon/BMARC 30 mm GCM-A02 (twin); 650 rds/min to 10 km (5.4 n miles) anti-surface; 3 km (1.6 n miles) anti-aircraft; weight of shell 0.36 kg.
 2 Oerlikon/BMARC 20 mm A41A, 800 rds/min to 2 km; weight of shell 0.24 kg.
Countermeasures: Decoys: 2 Wallop Barricade 18-barrelled launchers; Stockade and Palisade rockets.
ESM: Rascal Cutlass; radar warning
ECM: Rascal Cygnus; jammer.
Weapons control: CAAIS 450.
Radars: Surface search Plessey AWS 4; E/F-band; range 101 km (55 n miles).
Navigation: Decca AC 1226; I-band.
Fire control: Marconi ST802; I-band.

Programmes: Ordered in September 1984. Sailed in company from the UK, arriving at Mombasa 30 August 1988. Similar to Ormani Province class.
Operational: First live Otomat firing in February 1989. RIB carried right aft. Form Squadron 86. Both ships awaiting refit.



NYAYO 2/2001, Sattler/Steele / 0114357

1 MAMBA CLASS (LARGE PATROL CRAFT) (PB)

Name	No	Builders	Commissioned
MAMBA	P 3100	Brooke Marine, Lowestoft	7 Feb 1974

Displacement, tons: 125 standard; 160 full load
Dimensions, feet (metres): 123 × 22.5 × 5.2 (37.5 × 6.9 × 1.6)
Main machinery: 2 Paxman 16YJCM diesels; 4,000 hp (2.98 MW) sustained; 2 shafts
Speed, knots: 25
Range, n miles: 3,300 at 13 kt
Complement: 25 (3 officers)

Missiles: SSM: 4 IAI Gabriel II.
Guns: 2 Oerlikon/BMARC 30 mm GCM-A02 (twin); 650 rds/min to 10 km (5.4 n miles) anti-surface; 3 km (1.6 n miles) anti-aircraft; weight of shell 0.36 kg.
Radars: Navigation: Decca AC 1226; I-band.
Fire control: Selenia RTN 10X; VJ-band; range 40 km (22 n miles).

Programmes: Laid down 17 February 1972, launched 6 November 1973.
Modernisation: New missiles, gunnery equipment and optronic director fitted in 1982
Operational: Refitted at Vosper Thornycroft 1989-90. Although still seagoing, operational capability is limited. Gabriel system non-operational.



MAMBA 6/2002 / 0523319

2 SHUPAVU CLASS (LARGE PATROL CRAFT) (PBO)

SHUJAA P 3130	SHUPAVU P 3131
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Displacement, tons: 480 full load
Dimensions, feet (metres): 190.3 × 26.9 × 9.2 (58 × 8.2 × 2.8)
Main machinery: 2 diesels; 2 shafts
Speed, knots: 22
Complement: 24
Guns: 1 OTO Melara 3 in (76 mm)/62, 85 rds/min to 16 km (8.7 n miles) anti-surface; 12 km (6.5 n miles) anti-aircraft; weight of shell 6 kg. 1 Maser 30 mm.
Weapons control: Breda optronic director.
Radars: Surface search: I-band

Comment: Built to civilian standards at Astilleros Gondan, Castropol and delivered in 1997 when they were taken over by the Navy. Armament fitted in Kenya.



SHUJAA 2/2001, Michael Nitz / 0137788

1 ARCHANGEL CLASS (RESPONSE BOAT) (PBF)

Displacement, tons: 12.6 full load
Dimensions, feet (metres): 42.5 × 13.3 × 7.2 (12.9 × 4.1 × 2.3)
Main machinery: 2 Caterpillar C9 diesels; 550 hp (409 kW); 2 Hamilton 322 waterjets
Speed, knots: 36
Range, n miles: 300 at 25 kt
Complement: 6
Guns: 2—7.62 mm MGs
Radars: Navigation; Furuno; I-band.

Comment: High-speed inshore patrol craft of aluminium construction and foam collar built by SAFE Boats International, Port Orchard, Washington. Donated by the US government on 9 October 2006. The new patrol craft is to be used for monitoring the coastline and deterrence of criminal activity including illegal arms and drug running.



ARCHANGEL CLASS 6/2006, SAFE Boats / 116494

5 DEFENDER CLASS (RESPONSE BOATS) (PBF)

PB 211-215

Displacement, tons: 2.7 full load
Dimensions, feet (metres): 25.0 × 8.5 × 3.6 (7.6 × 2.6 × 1.1)
Main machinery: 2 Honda outboard motors; 450 hp (335 kW)
Speed, knots: 46
Range, n miles: 175 at 35 kt
Complement: 4
Guns: 1—12.7 mm MG
Radars: To be announced.

Comment: High-speed inshore patrol craft of aluminium construction and foam collar built by SAFE Boats International, Port Orchard, Washington. Donated by the US government on 9 October 2006. The new patrol craft are to be used for monitoring the coastline and deterrence of criminal activity including illegal arms and drug running.



PB 212 6/2006, SAFE Boats / 1335394

AUXILIARIES

2 GALANA CLASS (LCM)

Name	No	Builders	Commissioned
GALANA	L 38	Astilleros Gondon, Spain	Feb 1994
TANA	L 39	Astilleros Gondon, Spain	Feb 1994

Displacement, tons: 1,400 full load
Dimensions, feet (metres): 208.3 × 43.6 × 7.9 (63.5 × 13.3 × 2.4)
Main machinery: 2 MTU/Bazán diesels; 2,700 hp(m) (1.98 MW) sustained; 2 shafts; bow thruster
Speed, knots: 12.5
Complement: 30
Radars: Navigation: Racal Decca; I-band.

Comment: Acquired by Galway Ltd for civilian use and taken over by the Navy for logistic support. The 4 m wide ramp is capable of taking 70 ton loads. Guns may be fitted in due course.



TANA 2/1999 / 0052523

2 TENDER (LCM)

Dimensions, feet (metres): 60 × 15.7 × 4.9 (18.3 × 4.8 × 1.5)
Main machinery: 2 Caterpillar 3305B-DIT diesels, 880 hp(m) (647 kW); 2 shafts
Speed, knots: 10
Range, n miles: 200 at 10 kt
Complement: 2 plus 136 passengers

Comment: Built by Souters, Cowes and delivered in 1998. Personnel tenders.

0 + 1 SURVEY SHIP (AGS)

JASIRI

Displacement, tons: 1,052 full load
Dimensions, feet (metres): 278.9 × 42.6 × 9.8 (85.0 × 13.0 × 3.0)
Main machinery: 2 MTU 20V 1163 diesels; 7,180 hp (5.35 MW); 2 shafts
Speed, knots: 28
Range, n miles: 5,500 at 12 kt
Complement: 60 (accommodation for 81)
Guns: 1—30 mm, 2—25 mm, 2—12.7 mm MGs.
Weapons control: Optronic director.
Radars: Air/surface search: E/F-band
 Surface search: E/F-band
 Navigation: I-band.

Comment: Contract for the procurement of a new ship signed between the government of Kenya and Euromarine on 15 July 2003. Subsequently, Astilleros Gondon was subcontracted to undertake construction of the vessel. The ship was launched in January 2005. However, following the return of the standby crew to Kenya in July 2005, the future of the ship became uncertain. Although outstanding problems were reportedly resolved on 3 May 2007 the ship had not been delivered by early 2009.



JASIRI 5/2007 / 1335393

Kiribati



Country Overview

The Republic of Kiribati, formerly the Gilbert Islands, is a south Pacific island group which gained independence in 1979 after the other part of the former British colony, the Ellice Islands, became independent as Tuvalu the previous year. Straddling the equator some 1,385 n miles southwest of Hawaii, it comprises from west to east Banaba (Ocean

island) and three detached island groups: the 16 Gilbert Islands, including Tarawa, on which the capital, Bairoki, is located, nine Phoenix Islands and eight of the 11 Line Islands. About 20 of the 34 islands are permanently inhabited. An archipelagic state, territorial seas (12 n miles) are claimed. An Exclusive Economic Zone (EEZ) (200 n miles) is also claimed but limits have not been fully defined by boundary agreements.

Headquarters Appointments

Head of Police Maritime Unit:
Assistant Superintendent John Mote

Bases

Tarawa

PATROL FORCES

1 PACIFIC CLASS (LARGE PATROL CRAFT) (PB)

Name	No	Builders	Commissioned
TEANOAI	301	Transfield Shipbuilding	22 Jan 1994

Displacement, tons: 165 full load
Dimensions, feet (metres): 103.3 × 26.6 × 6.9 (31.5 × 8.1 × 2.1)
Main machinery: 2 Caterpillar 3516TA diesels; 4,400 hp (3.28 MW) sustained; 2 shafts
Speed, knots: 18
Range, n miles: 2,500 at 12 kt
Complement: 18 (3 officers)
Guns: Can carry 1—12.7 mm MG but is unarmed
Radars: Navigation: Furuno 1011; I-band

Comment: The Pacific Patrol Boat programme was started by Australia in 1987. *Teanoai*, the 16th of the class, was handed over to Kiribati in 1994. The Australian government has announced that the programme will be extended so that all 22 boats will be able to operate for 30 years. *Teanoai* completed a half-life refit at Gladstone in 2001 and a life extension refit in 2008.

TEANOAI
9/2008*
Kiribati Marine Police
1335214



Korea, North

PEOPLE'S DEMOCRATIC REPUBLIC

Country Overview

The Democratic People's Republic of Korea (DPRK) was proclaimed in 1948 and occupies the northern part of the Korean peninsula. Located in north-eastern Asia and with an area of 46,540 square miles, it is bordered to the north by China and Russia and to the south by South Korea. It has a 1,350 n mile coastline with the Sea of Japan and the Yellow Sea. The capital and largest city is Pyongyang while the principal ports are Nampo and Haeju on the west coast and Chojin and Wonsan on the east coast. Territorial seas (12 n miles) are claimed. A 200 n mile EEZ has also been claimed but the limits have not been defined. A source of tension at sea is the dispute concerning the status of the *Northern Limit Line* and a number of South Korean islands off the south-west coast of DPRK.

The North Korean Navy is principally a coastal force and is the lowest priority military service. Ships are allocated to East or West Fleet Command. The Navy is manpower intensive and most equipment is technologically outdated and incapable of bluewater operations. Nevertheless, considerable emphasis has been placed on high speed infiltration and assault craft and the ability to conduct special forces operations. Fishing vessels are likely to be converted and/or commandeered for military use while ocean-going merchant vessels are likely to have military roles including arms transfers and intelligence gathering.

Headquarters Appointments

Commander of the Navy:
Admiral Kim Yun-Sim
Commander West Sea Fleet:
Rear Admiral Jyung Myung-Do
Commander East Sea Fleet:
Rear Admiral Park Won-Shik

Bases

Naval Headquarters: Pyongyang.
East Fleet Command (HQ T'oejo-dong (Nagwon-up))
East coast: T'oejo-dong, Ch'aho (submarines), Munch'on-up, Mayang-do (submarines), Najin
Minor bases: Chakto-dong (Chakto-ri), Hodo-ri, Kosong-up (Changjon-ni), Mugye-ri, Ohang-ni, Puam-dong, Sinch'ang-nodongjagu, Chongjin, Songjin (Kimch'aek), Songjon-pardo, Wonsan, Yoho-ri, Yongam-ni and Yukt'aedong-ni.
West Fleet Command. (HQ Namp'o).
West coast: Namp'o (Chinnamp'o), Pipa-got (submarines) and Sagon-ni (Sa-got)
Minor bases: Cho-do, Haeju, Kwangyang-ni, Sunwi-do, Yongdok and Yongamp'o.

Personnel

- (a) 2009: 46,000 officers and other ranks
(b) 5 years' national service

Maritime Security Battalions

In addition to the Navy there is a Coastal and Port Security Police Force which would be subordinate to the Navy in war. It is reported that the strength of this force is 10-15 Chong-Jin patrol craft and 130 patrol boats of various types.

Naval Aviation

There is believed to be a battalion-sized naval support/ASW air unit containing ASW, helicopter and transport elements. The ASW element consists of 10-20 Mi-14PL Haze-A ASW helicopters acquired during the late 1980s and early 1990s. The majority are thought to be subordinated to the East Sea Fleet although there are no details as to how they are organised and deployed. In addition, there are reported to be a small number of Ka-32S Helix although their role is unclear.

Coastal Defence

Considerable emphasis is given to coastal defence. There are believed to be two missile regiments (one in each fleet), a large number of surveillance radar companies and numerous artillery batteries. Missile sites are reported to be located at An-gol, Chakto-dong, Mayang-do, Sinsang-ni, and Unami-ni on the East Sea coast; and Chungsan, Hwajin-ni, Pip'a-got and Tungsan-got on the West Sea coast. Target acquisition is provided by organic target acquisition radar and ESM. There are numerous other sites available for redeployment and truck-mounted mobility is a key feature of the system. Major ports and naval bases are likely to be heavily defended.

Strength of the Fleet

Type	Active
Submarines – Patrol	23
Submarines – Coastal	32
Submarines – Midgets	23
Frigates	3
Corvettes	4
Patrol Forces	400+
Amphibious Craft	129
Hovercraft (LCPA)	135
Minesweepers	24
Depot Ships for Midget Submarines	8
Survey Vessels	4

DELETIONS

Notes: The order of battle and fleet dispositions represent the best estimates that can be made based on incomplete information.

SUBMARINES

- Notes:** (1) There are four obsolete ex-Soviet Whiskey class based at Mayang-do used for training. Probably restricted to periscope depth when dived.
(2) Reports of a sea-based ballistic missile capability have not been substantiated. A surface-ship based system is considered more likely than a submarine-launched missile which would present considerable technical challenges.
(3) It is likely that there are further midget submarines, possibly similar to the Iranian Yono class. Numbers have not been confirmed.

23 (+10 RESERVE) YUGO AND P-4 CLASS (MIDGET SUBMARINES) (SSW)

Displacement, tons: 80 surfaced; 110 dived
Dimensions, feet (metres): 65.6 × 10.2 × 15.1
(20 × 3.1 × 4.6)
Main machinery: 2 diesels; 320 hp(m) (236 kW); 1 shaft
Speed, knots: 12 surfaced; 8 dived
Range, n miles: 550 at 10 kt surfaced, 50 at 4 kt dived
Complement: 4 plus 6-7 divers
Torpedoes: 2–406 mm tubes.
Radars: Navigation: I-band.

Comment: Built at Yukdaeso-ri shipyard since early 1960s. More than one design. Details given are for the latest type, at least one of which has been exported to Iran, and have been building since 1987 to a Yugoslavian design. Some have two short external torpedo tubes and some have a short mast. The conning tower acts as a wet and dry compartment for divers. There is a second and smaller propeller for slow speed manoeuvring while dived. Twelve of the class are designated P-4s and

belong to the KWP. This type has two internal torpedo tubes. Operate from eight merchant mother ships (see *Auxiliaries*). Some have been lost in operations against South Korea, the most recent in June 1998. Two exported to Vietnam in June 1997. There are also about 50 two-man submersibles of Italian design 4.9 × 1.4 m. Overall numbers are approximate due to scrapping of older units.



YUGO P-4

6/1998, *Ships of the World* / 0052525

23 ROMEO (PROJECT 033) CLASS (SS)

Displacement, tons: 1,475 surfaced; 1,830 dived
Dimensions, feet (metres): 251.3 × 22 × 17.1
 (76.6 × 6.7 × 5.2)

Main machinery: Diesel-electric; 2 Type 37-D diesels; 4,000 hp(m) (2.94 MW); 2 motors; 2,700 hp(m) (1.98 MW); 2 creep motors; 2 shafts

Speed, knots: 15 surfaced; 13 dived
Range, n miles: 9,000 at 9 kt surfaced
Complement: 54 (10 officers)

Torpedoes: 8–21 in (533 mm) tubes (6 bow, 2 stern). 14 probably SAET-60; passive homing up to 15 km (8.7 n miles) at 40 kt; warhead 400 kg. Also some 53-56 may be carried

Mines: 28 in lieu of torpedoes

Countermeasures: ESM: China Type 921A Golf Ball (Stop Light); radar warning.

Radars: Surface search Snoop Plate/Tray; I-band.

Sonars: Pike Jaw; hull-mounted; active.
 Feniks; hull-mounted; passive.

Programmes: Two transferred from China 1973, two in 1974 and three in 1975. First three of class built at Sinpo and Mayang-do shipyards in 1976. Programme ran at about



ROMEO (China colours)

3/1995, van Ginderen Collection / 0608277

one every 14 months until 1985 when it stopped in favour of the Sang-O class. One reported sunk in February 1985

Operational: Seventeen are stationed on east coast and have occasionally operated in Sea of Japan.

The remainder, including four ex-Chinese units, are based on the west coast. By modern standards these are basic attack submarines with virtually no anti-submarine performance or potential and their operational status is doubtful.

32 SANG-O CLASS (SSC)

Displacement, tons: 256 surfaced; 277 dived
Dimensions, feet (metres): 116.5 × 12.5 × 12.1
 (35.5 × 3.8 × 3.7)

Main machinery: 1 Russian diesel generator; 1 North Korean motor; 1 shaft; shrouded prop

Speed, knots: 7.6 surfaced; 7.2 snorting; 8.8 dived

Range, n miles: 2,700 at 7 kt

Complement: 19 (2 officers) plus 6 swimmers

Torpedoes: 2 or 4–21 in (533 mm) tubes (in some). Probably Russian Type 53-56

Mines: 16 can be carried (in some)

Radars: Surface search; Furuno; I-band.

Sonars: Russian hull-mounted; passive/active search and attack.

Programmes: Started building in 1995 at Sinpo accelerating up to about four to six a year by 1996. Reported to have been building at about three a year from 1997. One reported delivered in 2002 and one in 2003 and overall numbers reflect an estimated building rate of almost two per year

Structure: A variation of a reverse engineered Yugoslav design. There are at least two types, one with torpedo tubes and one capable of carrying up to 16 externally-fitted bottom mines. There is a single periscope and a VLF radio receiver in the fin. Rocket launchers and a 12.7 mm MG can be carried. Diving depth 180 m (590 ft). A longer (39 m) variant submarine may replace older boats.

Operational: Used extensively for infiltration operations. The submarine can bottom, and swimmer disembarkation is reported as being normally exercised from periscope depth. One of the class grounded and was captured by South Korea on 18 September 1996. Some crew members may be replaced by special forces for short operations
 17 stationed on east coast

SANG-O CLASS
3/1996
0608223

FRIGATES

Notes: The hull of what is probably an ex-Russian Krivak III frigate is at Nampo naval shipyard. All weapons and sensors have been removed from the ship and the future of the vessel is unclear. If the ship were to be re-armed and activated, it would represent a significant increase in the capabilities of the surface fleet.

1 SOHO CLASS (FFGH)

Name	No	Builders	Laid down	Launched	Commissioned
-	823	Najin Shipyard	June 1980	Nov 1981	May 1982

Displacement, tons: 1,640 full load
Dimensions, feet (metres): 242.1 × 50.9 × 12.5
 (73.8 × 15.5 × 3.8)

Main machinery: 2 diesels, 15,000 hp(m) (11.03 MW); 2 shafts
Speed, knots: 23
Complement: 189 (17 officers)

Missiles: SSM: 4 CSS-N-2 ●; active radar or IR homing to 46 km (25 n miles) at 0.9 Mach, warhead 513 kg.

Guns: 1–3.9 in (100 mm) 56 ●, 40° elevation; 15 rds/min to 16 km (8.6 n miles); weight of shell 15.6 kg.

4–37 mm/63 (2 twin) ●.

4–30 mm/65 (2 twin) ●. 4–25 mm/60 (2 twin) ●.

A/S mortars: 2 RBU 1200 5-tubed fixed launchers ●; range 1,200 m, warhead 34 kg.

Countermeasures: ESM: China RW-23 Jug Pair (Watch Dog); intercept.

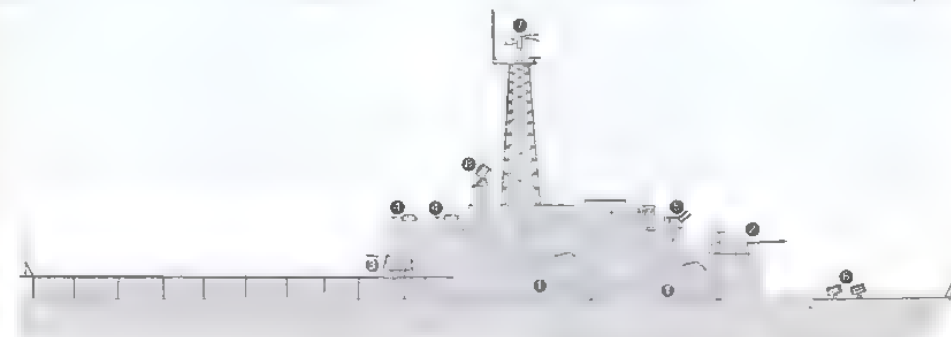
Radars: Surface search: Square Tie ●; I-band.

Fire control: Drum Tilt ●; H/I-band.

Navigation: I-band

Sonars: Stag Horn; hull-mounted; active search and attack; high frequency.

Helicopters: Platform for 1 medium.



SOHO

(Scale 1 : 600), Ian Sturton / 0508237

Programmes: Planned class of six but only one was ordered.
Structure: One of the largest warships built anywhere with a twin hull design and a helicopter deck aft. Has a large central superstructure to carry the heavy gun armament.

Operational: Probably very weather limited like many catamaran designs. Base and operational status not known.

2 NAJIN CLASS (FFG)

531 591

Displacement, tons: 1,500 full load
Dimensions, feet (metres): 334.6 × 32.8 × 8.9
 (102 × 10 × 2.7)
Main machinery: 3 SEMT-Pielstick Type 16 PA6 280 diesels;
 18,000 hp(m) (13.2 MW); 3 shafts
Speed, knots: 24
Range, n miles: 4,000 at 13 kt
Complement: 180 (16 officers)

Missiles: SSM: 2 CSS-N-1 (active radar or IR homing to 48 km (25 n miles) at 0.9 Mach; warhead 513 kg HE. Replaced torpedo tubes on both ships.
Guns: 2—3.9 in (100 mm)/56 (40° elevation; 15 rds/min to 16 km (8.6 n miles); weight of shell 15.6 kg.
 4—57 mm/80 (2 twin), 120 rds/min to 6 km (3.2 n miles); weight of shell 2.8 kg.
 12 or 4—30 mm/60 (6 or 2 twin) (see Structure).
 12—25 mm (6 twin)
A/S mortars: 2 RBU 1200 5-tubed fixed launchers (range 1,200 m; warhead 34 kg (not in 531))
Depth charges: 2 projectors; 2 racks. 30 weapons.

NAJIN

Mines: 30 (estimated)
Countermeasures: Decoys: 6 chaff launchers.
 ESM: China RW-23 Jug Pair (Watch Dog), intercept.
Weapons control: Optical director
Radars: Air search: Square Tie I-band.
 Surface search: Pot Head I-band.
 Navigation: Pot Drum, H/I band.
 Fire control: Drum Tilt, H/I band.
 IFF: High Pole. Square Head.
Sonars: Stag Horn; hull-mounted; active search; high frequency.

(Scale 1 : 900), Ian Sturton / 0506153

Programmes: Built at Najin and Nampo shipyards. First completed 1973, second 1975.

Structure: There is some resemblance to the ex-Soviet Kola class, now deleted. The original torpedo tubes were replaced by CSS-N-1 missile launchers in the mid-1980s and the RBU 1200 mortars have been removed in at least one of the class. Gun armaments differ, one having six twin 30 mm while the other only has one twin 30 mm and six twin 25 mm.

Operational: One based on each coast but seldom seen at sea



NAJIN 531

5/1993, JMSDF / 0080724

CORVETTES

1 TRAL CLASS (FS)

671

Displacement, tons: 580 full load
Dimensions, feet (metres): 203.7 × 23.9 × 7.8
 (62.1 × 7.3 × 2.4)
Main machinery: 2 diesels; 3,000 hp(m) (2.21 MW);
 2 shafts
Speed, knots: 16
Range, n miles: 2,700 at 16 kt
Complement: 60 (7 officers)

Guns: 1—85 mm/52 tank turret
 2—37 mm/6 (single)
 16—14.5 mm, 4 quad
Depth charges: 2 rails.

Mines: 30
Radars: Surface search: Pot Head or Don 2 I-band.
 Navigation: Model 351; I-band.
 IFF: Ski Pole

TRAL 671

Programmes: Two Tral class fleet minesweepers of 1930s vintage were transferred from the USSR in the mid-1950s, were paid off in the early 1980s but one returned to service in the early 1990s.

Structure: Minelaying rails are visible along the whole of upper deck aft of the bridge superstructure.

Operational: Based on the east coast (Najin or Kosong-up).



TRAL 671

5/1993, JMSDF / 0080773

4 SARIWON CLASS (FS)

511-514

Displacement, tons: 650 full load
Dimensions, feet (metres): 203.7 × 23.9 × 7.8
 (62.1 × 7.3 × 2.4)
Main machinery: 2 diesels, 3,000 hp(m) (2.21 MW); 2 shafts
Speed, knots: 16
Range, n miles: 2,700 at 16 kt
Complement: 60 (7 officers)

Guns: 4—57 mm/80 (2 twin), 4—37 mm/6 (2 twin), 16 14.5 mm (4 quad).

A/S mortars: 2 RBU 1200 5-tubed fixed launchers.
Depth charges: 2 rails.

Mines: 30
Radars: Surface search: Pot Head or Don 2; I-band
 Navigation: Model 351; I-band.
 IFF: Ski Pole.

Sonars: Stag Horn; hull-mounted; active; high frequency.

Programmes: Four Sariwon class built in North Korea in the mid-1960s.

Structure: Sariwon design based on the original USSR fleet minelayer Tral or Fugas class which entered service in the 1930s. One Sariwon is reported as having sonar and ASW armament. Minelaying rails are visible along the upper deck aft of the superstructure.

Operational: Based on the east coast at Najin or Kosong-up.

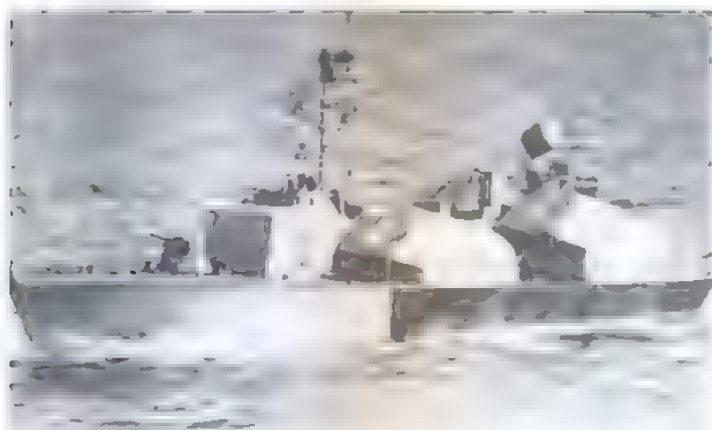
PATROL FORCES

Notes: There is reported to be a new class of hovercraft or Surface Effect Ship (SES) designed for patrol duties. The 38 x 12 m craft have a displacement of 170 tons and are reported to have a speed of 48 kt. They are armed with a 57 mm gun forward and a 39 mm gun aft.

12 OSA CLASS (PROJECT 205) (FAST ATTACK CRAFT—MISSILE) (PTFG)

Displacement, tons: 171 standard, 210 full load
Dimensions, feet (metres): 126.6 x 24.9 x 8.9 (38.8 x 7.6 x 2.7)
Main machinery: 3 Type M 503A diesels; 8,025 hp(m) (5.9 MW) sustained; 3 shafts
Speed, knots: 35
Range, n miles: 800 at 30 kt
Complement: 30
Missiles: SSM: 4 SS-N-2A Styx; active radar or IR homing to 46 km (25 n miles) at 0.9 Mach; warhead 513 kg.
Guns: 4—30 mm/65 (2 twin) AK 230; 500 rds/min to 5 km (2.7 n miles); weight of shell 0.54 kg.
Countermeasures: ESM: China BM/HZ 8610; intercept (Huangfen class).
Radars: Surface search: Square Tie; I-band.
Fire control: Drum Tilt; H/I-band (Osa I).
IFF: High Pole B. Square Head

Programmes: There are eight Osa I class remaining of 12 transferred from the USSR in 1968 and four more in 1972–83. Four are based on each coast. In addition, there are four Huangfen class acquired from China in 1980 and based on the west coast.



OSA I

0506031

10 SOJU CLASS (FAST ATTACK CRAFT—MISSILE) (PTG)

Displacement, tons: 285 full load
Dimensions, feet (metres): 139.4 x 24.6 x 5.6 (42.5 x 7.5 x 1.7)
Main machinery: 3 Type M 503A diesels; 8,025 hp(m) (5.9 MW) sustained; 3 shafts
Speed, knots: 34
Range, n miles: 600 at 30 kt
Complement: 32 (4 officers)
Missiles: SSM: 4 SS-N-2 Styx; active radar or IR homing to 46 km (25 n miles) at 0.9 Mach; warhead 513 kg.
Guns: 4—30 mm/65 (2 twin) AK 230; 500 rds/min to 5 km (2.7 n miles); weight of shell 0.54 kg.
Countermeasures: ESM: China BM/HZ 8610; intercept
Radars: Surface search: Square Tie; I-band
Fire Control: Drum Tilt; H/I-band

Comment: North Korean built and enlarged version of Osa class. First completed in 1981; built at about one per year at Nampo, Najin and Yongampo shipyards, but the programme terminated in 1996. Six based on the east coast and four on the west.

12 KOMAR CLASS (PROJECT 183) (FAST ATTACK CRAFT—MISSILE) (PTFG)

Displacement, tons: 75 standard; 85 full load
Dimensions, feet (metres): 84 x 24 x 5.9 (25.6 x 7.3 x 1.8)
Main machinery: 4 Type M 50 diesels; 4,400 hp(m) (3.3 MW) sustained; 4 shafts
Speed, knots: 40
Range, n miles: 400 at 30 kt
Complement: 19
Missiles: SSM: 2 SS-N-2A Styx or CSS-N-1; active radar or IR homing to 46 km (25 n miles) at 0.9 Mach; warhead 513 kg.
Guns: 2—25 mm/80 (twin); 270 rds/min to 3 km (1.6 n miles); weight of shell 0.34 kg.
 2—14.5 mm (twin) MGs.
Radars: Surface search: Square Tie; I-band.
IFF: Square Head

Programmes: There are six Komar class remaining of 10 transferred from the USSR. Wooden hulls have been replaced by steel. There are also six Sohung class, North Korean copies of the Komar class, first built in 1980–81 and no longer in production. The 'Komars' and four 'Sohung' are based on the east coast.



KOMAR

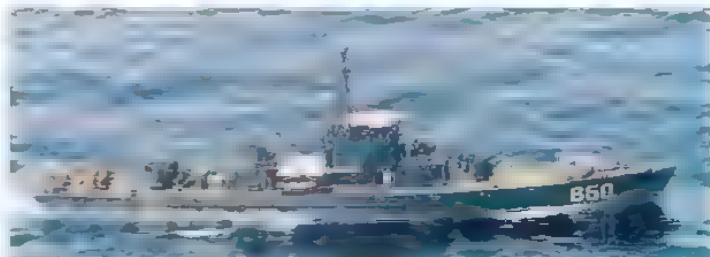
0506032

6 HAINAN CLASS (LARGE PATROL CRAFT) (PC)

201–204 292–293

Displacement, tons: 375 standard; 392 full load
Dimensions, feet (metres): 192.8 x 23.6 x 6.6 (58.8 x 7.2 x 2)
Main machinery: 4 Kolomna/PCR Type 9-D-8 diesels; 4,000 hp(m) (2.94 MW); 4 shafts
Speed, knots: 30.5
Range, n miles: 1,300 at 15 kt
Complement: 69
Guns: 4—57 mm/70 (2 twin); 120 rds/min to 8 km (4.4 n miles); weight of shell 2.8 kg.
 4—25 mm/80 (2 twin); 270 rds/min to 3 km (1.6 n miles); weight of shell 0.34 kg.
A/S mortars: 4 RBU 1200 5-tubed launchers; range 1,200 m; warhead 34 kg.
Depth charges: 2 projectors; 2 racks for 30 DCs.
Mines: Laying capability for 12.
Countermeasures: Decoys: 2 PK 16 chaff launchers.
ESM: China BM/HZ 8610; intercept.
Radars: Surface search: Pot Head (Model 351); I-band.
Sonars: Stag Ear; hull-mounted; active search and attack; high frequency.

Comment: Transferred from China in 1975 (two), 1976 (two), 1978 (two). All based on the west coast.



HAINAN (China colours)

4/1988 / 0080226

19 SO 1 CLASS (LARGE PATROL CRAFT) (PC)

Displacement, tons: 170 light; 215 normal
Dimensions, feet (metres): 137.8 x 19.7 x 5.9 (42 x 6 x 1.8)
Main machinery: 3 Kolomna Type 40-D diesels; 6,600 hp(m) (4.85 MW) sustained; 3 shafts
Speed, knots: 28
Range, n miles: 1,100 at 13 kt
Complement: 31
Guns: 1—85 mm/52, 18 rds/min to 15 km (8 n miles); weight of shell 9.5 kg.
 2—37 mm/63 (twin); 180 rds/min to 9 km (4.9 n miles); weight of shell 0.7 kg.
 4 or 6—25 mm/60 (2 or 3 twin); 270 rds/min to 3 km (1.6 n miles); weight of shell 0.34 kg.
 4—14.5 mm/93 MGs.
A/S mortars: 4 RBU 1200 5-tubed launchers, range 1,200 m; warhead 34 kg.
Radars: Surface search: Pot Head (Model 351); I-band.
Navigation: Don 2; I-band.
IFF: Ski Pole or Dead Duck
Sonars: Stag Ear; hull-mounted, active

Comment: Eight transferred by the USSR in early 1960s, with RBU 1200 ASW rocket launchers and depth charges instead of the 85 mm and 37 mm guns. Remainder built in North Korea to modified design. Twelve are fitted out for ASW with sonar and depth charges, the other seven are used as gunboats. The majority are based on the east coast.



SO 1 (USSR colours)

1988 / 0506030

13 SHANGHAI II CLASS (FAST ATTACK CRAFT—GUN) (PBT)

381–388 391–395

Displacement, tons: 113 standard, 131 full load
Dimensions, feet (metres): 126.3 x 17.7 x 5.8 (38.5 x 5.4 x 1.7)
Main machinery: 2 Type L12-180 diesels; 2,400 hp(m) (1.76 MW) (forward)
 2 Type 12-D-6 diesels; 1,820 hp(m) (1.34 MW) (aft); 4 shafts
Speed, knots: 30
Range, n miles: 700 at 16.5 kt
Complement: 34
Guns: 4—37 mm/63 (2 twin); 160 rds/min to 9 km (4.9 n miles); weight of shell 0.7 kg.
 4—25 mm/60 (2 twin); 270 rds/min to 3 km (1.6 n miles); weight of shell 0.34 kg.
 2—3 in (76 mm) recoilless rifles.
Depth charges: 8.
Mines: Rails can be fitted for 10 mines.
Countermeasures: ESM: China BM/HZ 8610; intercept.
Radars: Surface search: Pot Head (Model 351) or Skin Head; I-band.

Comment: Acquired from China since 1967. Based in the west fleet.



SHANGHAI II

1984 / 0080227

12 TAECHONG CLASS (LARGE PATROL CRAFT) (PC)

Displacement, tons: 385 standard; 410 full load (I); 425 full load (II)
Dimensions, feet (metres): 196.3 (II), 199.5 (II) × 23.6 × 6.6 (59.8; 60.8 × 7.2 × 2)
Main machinery: 4 Kolomna Type 40-D diesels; 8,800 hp(m) (6.4 MW) sustained; 4 shafts
Speed, knots: 25
Range, n miles: 2,000 at 12 kt
Complement: 80
Guns: 1–3.9 in (100 mm)/56 (Taechong II); 15 rds/min to 16 km (8.6 n miles); weight of shell 15.6 kg or 1–85 mm/52.
 2–57 mm/70 (twin), 120 rds/min to 8 km (4.4 n miles); weight of shell 2.8 kg.
 4–30 mm/85 (2 twin) (Taechong II), 2–25 mm/60 (twin) (Taechong I).
 16 or 4–14.5 mm MGs (4 quad (Taechong II); 2 twin (Taechong I)).
A/S mortars: 2 RBU 1200 5-tubed fixed launchers; range 1,200 m; warhead 34 kg.
Depth charges: 2 racks.
Radars: Surface search: Pot Head (Model 351); I-band.
Fire control: Drum Tilt; H/I-band.
IFF: High Pole A. Square Head.
Sonars: Stag Ear; hull-mounted; active attack; high frequency.

Comment: North Korean class of mid-1970s design, slightly larger than the Hainan class. There are seven Taechong I class and five Taechong II. The latter, built at Najin shipyard up to 1995, are slightly longer and more heavily armed. Based in both fleets.



TAECHONG (not to scale) / 0506033



TAECHONG II (with Najin) 1998 / 0506034

6 CHONG-JU CLASS (LARGE PATROL CRAFT) (PC)

Displacement, tons: 205 full load
Dimensions, feet (metres): 138.8 × 23.6 × 6.9 (42.3 × 7.2 × 2.1)
Main machinery: 4 diesels; 4,406 hp(m) (3.24 MW); 4 shafts
Speed, knots: 20
Range, n miles: 1,350 at 12 kt
Complement: 48 (7 officers)
Missiles: SSM: 4 CSS N-1; active radar or IR homing to 46 km (25 n miles) at 0.9 Mach; warhead 613 kg. In three of the class.
Guns: 1–85 mm/52; 18 rds/min to 15 km (8 n miles); weight of shell 9.5 kg.
 4–37 mm/63 (2 twin), 4–25 mm/60 (2 twin)
 4–14.5 mm/93 (2 twin) MGs.
A/S mortars: 2 RBU 1200; 5-tubed launchers; range 1,200 m; warhead 34 kg
Radars: Surface search: Pot Head (Model 351); I-band.
Sonars: Stag Ear; hull-mounted, active attack; high frequency.

Comment: Built between 1975 and 1989. At least one has been converted to fire torpedoes and three others have CSS-N-1 missiles and resemble the Soju class. Based in both fleets.

59 CHAHO CLASS (FAST ATTACK CRAFT—GUN) (PTF)

Displacement, tons: 82 full load
Dimensions, feet (metres): 85.3 × 19 × 6.6 (26 × 5.8 × 2)
Main machinery: 4 Type M 50 diesels; 4,400 hp(m) (3.2 MW) sustained; 4 shafts
Speed, knots: 37
Range, n miles: 1,300 at 18 kt
Complement: 16 (2 officers)
Guns: 1 BM 21 multiple rocket launcher. 2 USSR 23 mm/87 (twin), 2–14.5 mm (twin) MGs.
Radars: Surface search: Pot Head (Model 351); I-band.

Comment: Building in North Korea since 1974. Based on P 6 hull. Three transferred to Iran in April 1987. Still building and new hulls are replacing the old ones. 36 based in the east and 24 in the west.

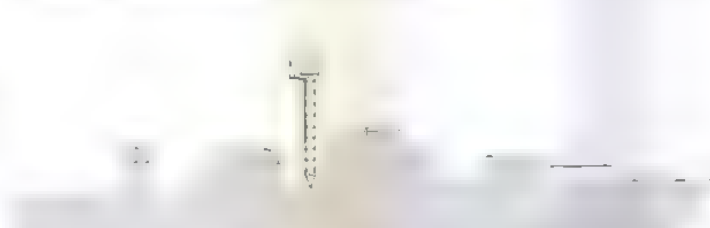


CHAHO (Iranian colours) 4/1998 / 0506035

54 CHONG-JIN CLASS (FAST ATTACK CRAFT—GUN) (PTF/PTK)

Displacement, tons: 80 full load
Dimensions, feet (metres): 85.3 × 19 × 5.9 (26 × 5.8 × 1.8)
Main machinery: 4 Type M 50 diesels; 4,400 hp(m) (3.2 MW) sustained; 4 shafts
Speed, knots: 36. Range, n miles: 450 at 30 kt
Complement: 17 (3 officers)
Guns: 1–85 mm/52; 18 rds/min to 15 km (8 n miles); weight of shell 9.5 kg.
 4 or 8–14.5 mm (2 or 4 twin) MGs.
Radars: Surface search: Skin Head; I-band
IFF: High Pole B; Square Head

Comment: Particulars similar to Chaho class of which this is an improved version. Building began about 1975. About one third reported to be a hydrofoil development. Up to 15 are operated by the Coastal Security Force. Based in both fleets.



CHONG-JIN (not to scale), Ian Sturton / 0506036

33 SINPO CLASS (FAST ATTACK CRAFT—TORPEDO) (PTF/PTK)

Displacement, tons: 64 standard; 73 full load
Dimensions, feet (metres): 85.3 × 20 × 4.9 (26 × 6.1 × 1.5)
Main machinery: 4 Type M 50 diesels; 4,400 hp(m) (3.2 MW) sustained; 4 shafts
Speed, knots: 45. Range, n miles: 450 at 30 kt; 600 at 15 kt
Complement: 15
Guns: 4–25 mm/80 (2 twin) (original), 2–37 mm (others), 6–14.5 mm MGs (Sinpo class).
Torpedoes: 2–21 in (533 mm) tubes (in some). Sinpo class has no tubes.
Depth charges: 8 in some.
Radars: Surface search: Skin Head; I-band (some have Furuno)
IFF: Dead Duck. High Pole

Comment: Thirteen craft remain of the 27 P 6 class transferred from the USSR and 15 Shantou class transferred from China. Some of the P 6s have hydrofoils and one sank in June 1999. The Sinpo (or Sinnam) class are locally built versions of these craft of which 20 now remain. Based in both fleets.



P 6 0506037



SINPO 471 0506038

142 KU SONG, SIN HUNG AND MOD SIN HUNG CLASSES (FAST ATTACK CRAFT—TORPEDO) (PTF/PTK)

Displacement, tons: 42 full load
Dimensions, feet (metres): 75.4 × 16.1 × 5.5 (23 × 4.9 × 1.7)
Main machinery: 2 Type M 50 diesels, 2,200 hp(m) (1.6 MW) sustained, 2 shafts
Speed, knots: 40, 50 (Mod Sin Hung)
Range, n miles: 500 at 20 kt
Complement: 20 (3 officers)
Guns: 4–14.5 mm (2 twin) MGs.
Torpedoes: 2–18 in (457 mm) or 2–21 in (533 mm) tubes (not fitted in all).
Radars: Surface search: Skin Head; I-band.
IFF: Dead Duck

Comment: Ku Song and Sin Hung built in North Korea between mid-1950s and 1970s. Frequently operated on South Korean border. A modified version of Sin Hung with hydrofoils built from 1981–85. Fifty craft, previously thought to have been scrapped, are in various states of repair. Based in both fleets.



SIN HUNG (no torpedo tubes) 1991 / 0506039

MODIFIED FISHING VESSELS (COASTAL PATROL CRAFT) (PB/AGI)

Comment: Approximately 15 fishing vessels have been converted for naval use. Some act as patrol craft, others as AGIs. The vessel sunk by the Japanese Coast Guard on 22 December 2001 carried a 14.5 mm machine gun, two anti-air missile launchers and numerous small arms. The stern was fitted with outward opening doors.



MFV 801

7/1991, G Jacobs / 0506040



Fishing Vessel (being salvaged)

8/2002, P A News / 0522267

HIGH-SPEED AND SEMI-SUBMERSIBLE INFILTRATION CRAFT (HSIC/PBF)

Displacement, tons: 5 full load
Dimensions, feet (metres): 30.5 × 8.2 × 3.1 (9.3 × 2.5 × 1)
Main machinery: 1 diesel; 260 hp(m) (191 kW); 1 shaft
Speed, knots: 35
Complement: 2
Guns: 1—7.62 mm MG
Radars: Navigation: Furuno 701, I-band.

Comment: Up to a hundred built for Agent infiltration and covert operations. These craft have a very low radar cross-section and 'squat' at high speeds. High rate of attrition. A newer version was reported in 1998. This is 12.8 m in length and has a top speed of about 45 kt. It is reported to travel on the surface until submerging to a depth of 3 m using a snort mast. It has a dived speed of 4 kt.



HSIC

1991, J Bermudez / 0506041

15 TB 11PA AND 10 TB 40A CLASSES (INSHORE PATROL CRAFT) (PBF)

Displacement, tons: 8 full load
Dimensions, feet (metres): 38.7 × 8.6 × 3.3 (11.2 × 2.7 × 1)
Main machinery: 2 diesels; 520 hp(m) (382 kW); 2 shafts
Speed, knots: 35 **Range, n miles:** 200 at 15 kt
Complement: 4
Guns: 1—7.62 mm MG
Radars: Surface search: Furuno; I-band.

Comment: High-speed patrol boats. Reinforced fibreglass hull. Design closely resembles a number of UK/Western European commercial craft. Larger hull design, known as 'TB 40A' also built. Both classes being operated by the Coastal Security Force.

AMPHIBIOUS FORCES

18 HUNGNAM CLASS (LCM)

Displacement, tons: 70 full load
Dimensions, feet (metres): 55.8 × 14.4 × 3.9 (17 × 4.4 × 1.2)
Main machinery: 2 diesels; 2 shafts
Speed, knots: 6
Guns: 2—14.5 mm (twin)

Comment: 1980s vintage. Based in both fleets.

10 HANTAE CLASS (LSM)

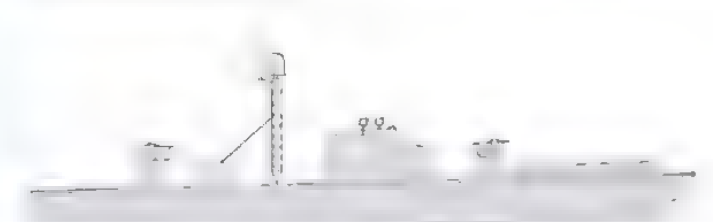
Displacement, tons: 350 full load
Dimensions, feet (metres): 157.6 × 21.3 × 6.6 (48 × 6.5 × 2)
Main machinery: 2 diesels; 4,352 hp(m) (3.2 MW); 2 shafts
Speed, knots: 18. **Range, n miles:** 2,000 at 12 kt
Complement: 36 (4 officers)
Military lift: 350 troops plus 3 MBTs
Guns: 8—25 mm/80 (4 twin)

Comment: Built in the early 1980s. Most are based on the east coast.

96 NAMPO CLASS (LLP)

Displacement, tons: 75 full load
Dimensions, feet (metres): 85.3 × 19 × 5.6 (26 × 5.8 × 1.7)
Main machinery: 4 Type M 50 diesels; 4,400 hp(m) (3.2 MW) sustained; 4 shafts
Speed, knots: 36. **Range, n miles:** 450 at 30 kt
Complement: 19
Military lift: 35 troops
Guns: 4—14.5 mm (2 twin) MGs.
Radars: Surface search: Skin Head; I-band.

Comment: A class of assault landing craft. Similar to the Chong-Jin class but with a smaller forward gun mounting and with retractable ramp in bows. Building began about 1975. Several have been deleted due to damage. There are 18 of the original class and 73 of a modified version which have a covered-in deck. Most have bow doors welded shut. Four sold to Madagascar in 1979 but now deleted. The Nampo D is the latest version with a multihull design. The first of these entered service in 1997 and four further craft have followed. Based in both fleets.



NAMPO

(not to scale), Ian Sturton / 0508042

7 HANCHON CLASS (LCM)

Displacement, tons: 145 full load
Dimensions, feet (metres): 117.1 × 25.9 × 3.9 (35.7 × 7.9 × 1.2)
Main machinery: 2 Type 3-D-12 diesels; 600 hp(m) (443 kW) sustained; 2 shafts
Speed, knots: 10. **Range, n miles:** 600 at 6 kt
Complement: 15 (1 officer)
Military lift: 2 tanks or 300 troops
Guns: 2—14.5 mm/93 (twin) MG.
Radars: Surface search: Skin Head; I-band.

Comment: Built in the 1980s. Based in both fleets.

136 KONGBANG CLASS (HOVERCRAFT) (LCPA)

Comment: Three types: one Type I, 57 Type II and 78 are Type III. Length 25 m (I), 21 m (II) and 18 m (III). A series of high-speed air cushion landing craft first reported in 1987 and building continued until 1996 and then stopped. Use of air cushion technology is an adoption of commercial technology based on the SRN-6. Kongbang II has twin propellers and can carry up to 50 commandos at 50 kt. Kongbang III has a single propeller and can take about 40 troops at 40 kt. All are radar fitted. Some have Styx SSM missiles. Older craft are being replaced continuously in a high priority programme. Divided between both fleets.

MINE WARFARE FORCES

24 YUKTO CLASS (COASTAL MINESWEEPERS) (MSC)

Displacement, tons: 60 full load (I); 52 full load (II)
Dimensions, feet (metres): 78.7 × 13.1 × 5.6 (24 × 4 × 1.7) (Yukto I)
68.9 × 13.1 × 5.6 (21 × 4 × 1.7) (Yukto II)
Main machinery: 2 diesels; 2 shafts
Speed, knots: 18
Complement: 22 (4 officers)
Guns: 1—37 mm/63 or 2—25 mm/80 (twin), 2—14.5 mm/93 (twin) MGs
Mines: 2 rails for 4.
Radars: Surface search: Skin Head; I-band.

Comment: North Korean design built in the 1980s. There are 19 Yukto I and five Yukto II. The Yukto II have no after gun. Wooden construction. Based in both fleets.

SURVEY SHIPS

Notes: The Hydrographic Department has four survey ships but also uses a number of converted fishing vessels.

AUXILIARIES

Notes: (1) Trawlers operate as AGIs on the South Korean border where several have been sunk over the years. In addition many ocean-going commercial vessels are used for carrying weapons and ammunition worldwide in support of international terrorism. (2) There are also eight ocean cargo ships adapted as mother ships for midjet submarines. Their names are *Soo Gun-Ho*, *Dong Geon Ae Gook-Ho*, *Dong Hae-Ho*, *Choong Seong-Ho Number One*, *Choong Seong-Ho Number Two*, *Choong Seong-Ho Number Three*, *Hae Gum Gang-Ho* and the *Song Rim-Ho*.

1 KOWAN CLASS (ASR)

Displacement, tons: 2,010 full load
Dimensions, feet (metres): 275.6 × 46.9 × 12.8 (84 × 14.3 × 3.9)
Main machinery: 4 diesels; 8,160 hp(m) (6 MW); 2 shafts
Speed, knots: 16
Complement: 150
Guns: 12—14.5 mm (6 twin) MGs.
Radars: Navigation: Furuno; I-band.

Comment: Used as a submarine rescue ship. Probable catamaran construction. Based at Ch'aho.



Korea, South REPUBLIC

Country Overview

The Republic of Korea was proclaimed in 1948 and occupies the southern part of the Korean peninsula. Located in northeastern Asia and with an area of 38,375 square miles, it is bordered to the north by North Korea. It has a 1,300 n miles coastline with the Sea of Japan, the Yellow Sea and the Korea Strait, which separates it from Japan. There are numerous offshore islands in the south and west, the largest of which is Cheju. A source of tension at sea is the dispute concerning the status of the *Northern Limit Line* and a number of South Korean islands off the southwest coast of DPRK. The capital and largest city is Seoul. The principal port is Pusan while others include Incheon, the major port on the Yellow Sea, Mokpo and Gunsan. Territorial seas (12 n miles) are claimed. A 200 n mile EEZ has also been claimed but the limits have not been defined.

Headquarters Appointments

Chief of Naval Operations:
Admiral Jung Ok-Keun
Commandant Marine Corps:
Vice Admiral Lee Sang-Ro
Vice Chief of Naval Operations:
Vice Admiral Seo Yang-Won

Operational Commands

Commander-in-Chief Fleet:
Vice Admiral Yoon Yeong
Commander First Fleet:
Rear Admiral Chung Ok-Gaun
Commander Second Fleet:
Rear Admiral Jang Seung-Hak

Operational Commands — continued

Commander Third Fleet:
Rear Admiral Lee Hong-Hee

Personnel

- (a) 2009: Regulars: 35,000 (Navy) and 25,000 (Marines)
Conscripts: 19,000 (Navy and Marines)
(b) 2½ years' national service for conscripts
(c) Reserves: 9,000

Bases

Major: Chinhae (Fleet HQ), Donghae (1st Fleet), Pyongtaek (2nd Fleet), Pusan (3rd Fleet)
Minor: Cheju, Mokpo, Mukho, Pohang
Aviation: Pohang (MPA base), Chinhae, Cheju
Marines: Pohang, Kimp'o, Pongyongdo

A new base is under construction at Hwasun-ni on the south coast of Cheju Island. Completion is expected in 2014.

Organisation

In 1986 the Navy was reorganised into three Fleets, each commanded by a Rear Admiral, whereas the Marines retained two Divisions and one brigade plus smaller and support units. From October 1973 the RoK Marine Force was placed directly under the RoK Navy command with a Vice Chief of Naval Operations for Marine Affairs replacing the Commandant of Marine Corps. The Marine Corps was re-established as an independent service on 1 November 1987.
1st Fleet (East coast): No 11, 12, 13 DD/FF Sqn; No 101, 102 Coastal Defence Sqn; 181, 191, 111, 121 Coastal Defence Units; 121st Minesweeper Sqn.

2nd Fleet (West coast): No 21, 22, 23 DD/FF Sqn; No 201, 202 Coastal Defence Sqn; 211, 212 Coastal Defence Units; 522nd Minesweeper Sqn.
3rd Fleet (Southern peninsula): 301, 302, 303 DD/FF Sqn; 304, 406th Coastal Defence Units.

Coast Defence

Three batteries of Marines with truck-mounted quadruple Harpoon SSM launchers

Pennant Numbers

Numbers ending in 4 are not used as they are considered unlucky

Strength of the Fleet

Type	Active (Reserve)	Building (Proposed)
Submarines (Patrol)	11	7 (9)
Submarines (Midget)	11	—
Destroyers	10	2
Frigates	9	1 (23)
Corvettes	28	—
Fast Attack Craft—Missile	1	8 (11)
Fast Attack Craft—Patrol	81	—
Minehunters	6	—
Minesweepers	3	—
Minelayers	1	—
LPD	1	(2)
LSTs	6	—
LCU/LCMLCF	10	—
Logistic Support Ships	3	—
Salvage/Rescue Ships	3	—

PENNANT LIST

Submarines	Frigates	Corvettes	Destroyers	Patrol Forces	Mine Warfare Forces	Amphibious Forces	Auxiliaries
061 Chang Bogo	951 Ulsan	751 Dong Hae	971 Kwanggaeto Daewang	767 Sun Chon	565 Kim Po	6111 Dokdo	21 Cheong Hae Jin
062 Yi Chon	952 Seoul	752 Su Won	972 Euljimundok	768 Yoo Ree	566 Ko Chang	677 Su Yong	27 Pyong Taek
063 Choi Muson	953 Chung Nam	753 Kang Reung	973 Yangmanchun	769 Won Ju	567 Kum Wha	678 Buk Han	28 Kwang Yang
065 Park Wi	955 Masan	756 An Yang	975 Chungmugong Yi Sun-Shin	771 An Dong	571 Yang Yang	681 Kojoon Bong	57 Chun Jee
066 Lee Jongmu	956 Kyong Buk	757 Po Hang	976 Moonmu Daewang	772 Chon An	572 Ongjin	682 Biro Bong	58 Dae Chung
067 Jung Woon	957 Chon Nam	758 Kun San	977 Daejoyoung	773 Song Nam		683 Hyangro Bong	59 Hwa Chun
068 Lee Sunsin	958 Kyong Buk	759 Kyong Ju	978 Wang Geon	774 Bu Chon		685 Seongin Bong	AGS 11 Sunjin
069 Na Daeyong	959 Chon Nam	761 Mok Po	979 Gang Gam Chon	775 Jae Chon			
071 Lee Eokgi	958 Che Ju	762 Kim Chon	981 Choi Young	776 Dae Chon			
072 Sohn Won-Il	959 Pusan	763 Chung Ju	991 Sojong Daewang	777 Sok Cho			
073 Jeongji	961 Chung Ju	764 Jin Ju	982 Yi i	778 Yong Ju			
075 Ahn Jung-Gaun (bldg)		765 Yo Su		779 Nam Won			
		766 Jin Hae		781 Kwan Myong			
				782 Sin Hung			
				783 Kong Ju			
				785			

SUBMARINES

Notes: (1) The Type 214 programme is to be followed by the KSS-3 programme on which design work began in 2007. Construction of the first hull is expected to start in 2010 or 2011 to meet an in-service date of 2017. Up to nine submarines are planned, probably in batches of three. The new submarines are to be of about 3,000 tons.
(2) Reports of a nuclear submarine programme (SSX) have been officially denied.

11 MIDGET SUBMARINES (SSW)

052 (Dolgorae)

053 (Dolgorae)W

Displacement, tons: 150 surfaced; 175 dived (Dolgorae); 70 surfaced, 83 dived (Cosmos)
Dimensions, feet (metres): 82 × 8.9 (25 × 2.7) (Cosmos)
Main machinery: Diesel-electric; 1 diesel generator; 1 motor; 1 shaft
Speed, knots: 9 surfaced; 6 dived
Complement: 6 + 8 swimmers
Torpedoes: 2—406 mm tubes (Dolgorae), 2—533 mm tubes (Cosmos)
Sonars: Atlas Elektronik; hull-mounted; passive search; high frequency

Comment: Two KSS-1 Dolgorae class which entered service in 1983. Nine Cosmos class type used by Marines. Limited endurance, for use only in coastal waters. Fitted with Pilkington Optronics periscopes (CK 37 in Dolgorae and CK 41 in Cosmos). Numbers of each type confirmed but the Dolgorae class are being replaced by more Cosmos. All are based at Cheju Island.

DOLGORAE
11/1985, G Jacobs
0500044



9 CHANG BOGO (TYPE 209/1200) CLASS (SSK)

Name	No	Builders	Laid down	Launched	Commissioned
CHANG BOGO	061	HDW, Kiel	1989	18 June 1992	2 June 1993
YI CHON	062	Daewoo, Okpo	1990	14 Oct 1992	30 Apr 1994
CHOI MUSON	063	Daewoo, Okpo	1991	25 Aug 1993	27 Feb 1995
PARK WI	065	Daewoo, Okpo	1992	20 May 1994	3 Feb 1996
LEE JONGMU	066	Daewoo, Okpo	1993	17 Apr 1995	29 Aug 1996
JUNG WOON	067	Daewoo, Okpo	1994	7 May 1996	29 Aug 1997
LEE SUNSIN	068	Daewoo, Okpo	1995	21 May 1998	15 June 1999
NA DAEYONG	069	Daewoo, Okpo	1996	15 June 1999	Nov 2000
LEE EOKGI	071	Daewoo, Okpo	1997	26 May 2000	30 Nov 2001

Displacement, tons: 1,100 surfaced; 1,285 dived
Dimensions, feet (metres): 185.0 × 20.3 × 18
 (56.4 × 6.2 × 5.5)

Main machinery: Diesel-electric; 4 MTU 12V 396 SE diesels; 3,800 hp (m) (2.8 MW) sustained; 4 alternators; 1 motor; 4,600 hp (m) (3.38 MW) sustained; 1 shaft
Speed, knots: 11 surfaced/snorting; 22 dived
Range, n miles: 7,500 at 8 kt surfaced
Complement: 33 (8 officers)

Missiles: SSM: McDonnell Douglas UGM-84B Sub Harpoon; active radar homing to 130 km (70 n miles) at 0.9 Mach; warhead 227 kg (fitted to at least three boats)

Torpedoes: 8—21 in (533 mm) bowtubes. 14 System Technik Nord (STN) SUT Mod 2; wire-guided, active/passive homing to 12 km (6.6 n miles) at 35 kt or 28 km (15.1 n miles) at 23 kt; warhead 260 kg. Swim-out discharge
Mines: 28 in lieu of torpedoes.

Countermeasures: ESM: Argo; radar warning
Weapons control: Atlas Elektronik ISUS 83 TFCS.

Radars: Navigation: I-band

Sonars: Atlas Elektronik CSU 83; hull mounted; passive search and attack; medium frequency

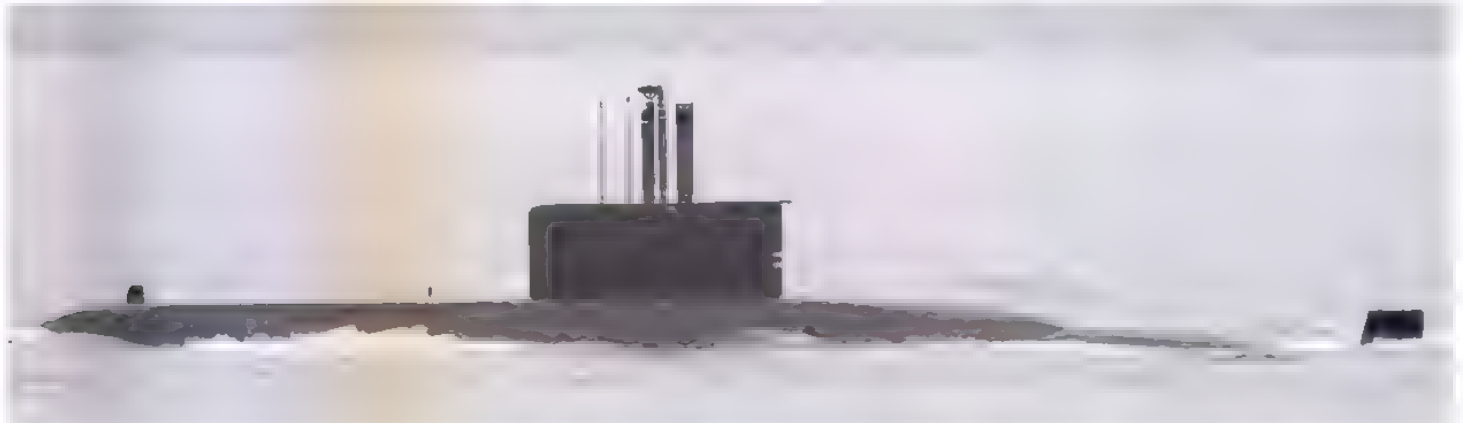
Programmes: First three ordered in late 1987, one built at Kiel by HDW, and two assembled at Okpo by Daewoo from material packages transported from Germany

Second three ordered in October 1989 and a further batch of three in January 1994.

Modernisation: Mid life upgrade of all nine boats is under consideration. It is envisaged that AIP propulsion and Sub-Harpoon SSM may be fitted in stretched hulls.

Structure: Type 1200 similar to those built for the Turkish Navy with a heavy dependence on Atlas Elektronik sensors and STN torpedoes. Diving depth 250 m (820 ft). A passive towed array may be fitted in due course.

Operational: An indigenous torpedo based on the Honeywell NP 37 may be available in due course. The class is split between the three Fleets. Operations conducted off Hawaii from 1997 to improve operating standards.



PARK WI

10/2008*, Guy Toremans / 143189



CHOI MUSON

10/2008*, Michael Nitz / 1353190



CHOI MUSON

10/2008*, Michael Nitz / 1353191

2 + 7 KSS-2 (TYPE 214) CLASS (SSK)

Name	No	Builders	Laid down	Launched	Commissioned
SOHN WON-IL	072	Hyundai, Ulsan	2003	9 June 2006	26 Dec 2007
JEONGJI	073	Hyundai, Ulsan	2004	13 June 2007	2 Dec 2008
AHN JUNG-GEUN	075	Hyundai, Ulsan	2005	4 June 2008	Nov 2009
—	076	Daewoo, Okpo	2010	2013	2014

Displacement, tons: 1,700 surfaced; 1,860 dived

Dimensions, feet (metres): 213.3 x 20.7 x 19.7
(65 x 6.3 x 6)

Main machinery: 1 MTU 16V 396 diesel; 4,243 hp (3.12 MW);
1 Siemens Permasyn motor; 3,875 hp(m) (2.85 MW);
1 shaft; 2 HDW PEM fuel cells; 240 kW; sodium sulphide
high-energy batteries

Speed, knots: 20 dived, 12 surfaced

Complement: 27 (5 officers)

Torpedoes: 8—21 in (533 mm) bow tubes

Countermeasures: Decoys: ESM

Weapons control: STN Atlas

Radars: Surface search: I-band

Sonars: Bow, flank and towed arrays.

Programmes: Decision taken in November 2000 to order three HDW designed Air Independent Propulsion (AIP) submarines. The boats are being built by Hyundai Heavy Industries with the German Submarine Corporation, led by HDW, providing construction plans, materials and other equipment. First steel cut for the first of class in November 2002. A contract for the supply of six further material

packages was signed with HDW in December 2008. Construction of this second batch is expected to start in 2010. The first boat is to be constructed by Daewoo and successor boats are likely to be built at the rate of one per year.

Structure: The Type 214 is a synthesis of the proven Type 209 design with AIP from the Type 212. South Korea is the second customer for the Type 214 after Greece. Details given are mainly for the Type 214 as advertised by HDW but changes may have been made. Diving depth 400 m.



SOHN WON-IL

10/2008*, Guy Toremans / 1353187



SOHN WON-IL

10/2008*, Michael Nitz / 1353188

DESTROYERS

6 KDX-2 CLASS (DDGHM)

Name	No	Builders	Laid down	Launched	Commissioned
CHUNG MUGONG YI SUN-SHIN	975	Daewoo, Okpo	2001	20 May 2002	2 Dec 2003
MOONMU DAEWANG	976	Hyundai, Ulsan	2002	11 Apr 2003	30 Sep 2004
DAEJOYOUNG	977	Daewoo, Okpo	2002	12 Nov 2003	30 June 2005
WANG GEON	978	Hyundai, Ulsan	2003	4 May 2005	2 Oct 2007
GANG GAM CHAN	979	Daewoo, Okpo	2004	16 Mar 2006	10 Nov 2006
CHOI YOUNG	981	Hyundai, Ulsan	2005	20 Oct 2006	5 Sep 2008

Displacement, tons: 4,500 standard, 5,500 full load
Dimensions, feet (metres): 506.6 x 55.5 x 14.1
 (154.4 x 16.9 x 4.3)

Main machinery: CODOG, 2 GE LM 2500 gas turbines; 58,200 hp (43.42 MW) sustained; 2 MTU 20V 956 TB92 diesels, 8,000 hp (5.88 MW); 2 shafts
Speed, knots: 29. **Range, n miles:** 4,000 at 18 kt
Complement: 200 (18 officers)

Missiles: SSM: 8 Harpoon Block 1C (2 quad) ● active radar homing to 124 km (67 n miles) at 0.9 Mach; warhead 227 kg SAM Mk 41 Mod 2 VLS ● 32 cells for Raytheon SM-2MR (Block IIIA); command/inertial guidance; semi-active radar homing to 167 km (90 n miles) at 2.5 Mach.

1 Raytheon RAM M 49 launcher RIM 116 ● 21 rounds per launcher; passive IR/anti-radiation homing to 9.6 km (5.2 n miles) at 2.5 Mach; warhead 9.1 kg.

A/S: ASROC VLS, inertial guidance 1.6-10 km (1-5.4 n miles) at 0.9 Mach, payload Mk 48.

Guns: 1 United Defense 5 in (127 mm) 62 Mk 45 Mod 4 ●; 20 rds/min to 23 km (12.6 n miles); weight of shell 32 kg.

1 Signaal Goalkeeper 30 mm ●; 7 barrels per mounting; 4,200 rds/min to 1.5 km.

Torpedoes: 6 324 mm Mk 32 (2 triple) tubes ●; Alliant techsystems Mk 46 Mod 5, anti-submarine; active/passive homing to 11 km (5.9 n miles) at 40 kt; warhead 44 kg.

Countermeasures: 4 chaff launchers. ESM/ECM.

Combat data systems: BAeSema/Samsung KD COM-2; Link 11.

Weapons control: Marconi Mk 14 weapons direction system.

Radars: Air search: Raytheon SPS-49(V)5 ●; C/D band.

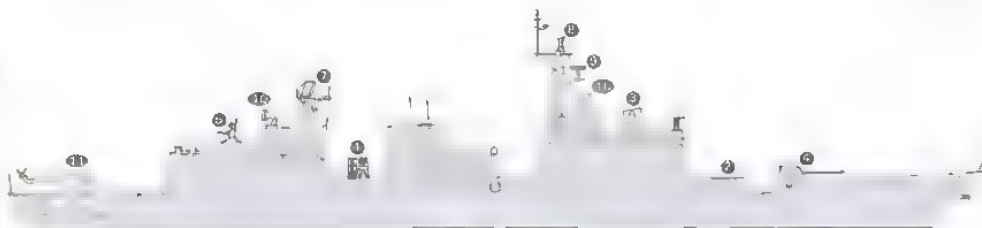
Surface search: Signaal MW08 ●; G-band.

Navigation: I-band ●

Fire control: 2 Signaal STIR 240 ●; I/J/K-band

Sonars: DSQS 23; hull-mounted; active search; medium frequency. Daewoo Telecom towed array; passive low frequency

Helicopters: 1 Westland Super Lynx Mk 99 ●



CHUNG MUGONG YI SUN-SHIN

(Scale 1 : 1,200), Ian Sturton / 1153009



GANG GAM CHAN

10/2008*, Michael Nitz / 1353192

Programmes: Approval for first three given in late 1996 but the final decision was not taken until 1998. Contract to design and build the first of class won by Daewoo in November 1999. The first of a second batch of three was launched at Hyundai in May 2005 and the second

at Daewoo in March 2006. Work on the sixth ship is underway at Hyundai.

Operational: Successful SM-2 firings conducted on the Pacific Missile Range Facility, off Hawaii, in mid-2004.



CHOI YOUNG

10/2008*, Guy Toremans / 1353193



MOONMU DAEWANG

10/2008*, Guy Toremans / 1353194

1 + 2 SEJONG DAEWANG (KDX-3) CLASS (DDGHM)

Name	No	Builders	Laid down	Launched	Commissioned
SEJONG DAEWANG	991	Hyundai, Ulsan	12 Nov 2004	25 May 2007	22 Dec 2008
YII	992	Daewoo, Okpo	26 July 2007	14 Nov 2008	2010
—	993	Hyundai, Ulsan	2008	2011	2012

Displacement, tons: 7,650 standard, 10,290 full load
Dimensions, feet (metres): 544.3 × 68.9 × 34.4
(165.9 × 21.0 × 10.5)

Main machinery: COGAG; 4 GE LM 2500 gas turbines,
105,000 hp (78.33 MW) sustained; 2 shafts; cp props
Speed, knots: 30
Range, n miles: 5,000 at 14 kt

Missiles. SLCM: 32 Cheon Ryong land-attack missiles ①;
inertial/GPS guidance to 1,500 km (810 n miles) at
0.7 Mach; warhead 500 kg

SSM: 8 McDonnell Douglas Harpoon Block 1C ②; active
homing to 124 km (67 n miles); at 0.9 Mach; warhead
227 kg.

SAM: Mk 41 VLS, 80 cells for Standard SM-2 MR Block
IIIB ③; command/inertial guidance; semi-active radar
homing to 187 km (90 n miles) at 2.5 Mach; 2 magazines;
48 missile tubes forward, 32 aft.

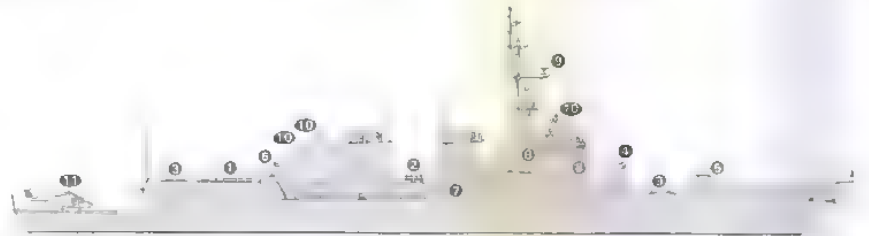
1 GMLS Mk 49 RAM RIM-116 ④; 21 rounds; passive
IR/anti-radiation homing to 9.6 km (5.2 n miles) at 2 Mach;
warhead 9.1 kg

A/S: 16 Loral ASROC VLA ⑤; inertial guidance 1.6-18.6 km
(1-9 n miles).

Guns: 1 United Defence 5 in (127 mm)/54 Mk 45 Mod 4 ⑥;
20 rds/min to 23 km (12.6 n miles); anti-surface; weight
of shell 32 kg

1 Sigaaal/General Electric 30 mm 7-barrelled Goalkeeper
⑦; 4,200 rds/min to 1.5 km.

Torpedoes: 6-324 mm (2 triple) Mk 32 tubes ⑧; K745 LW
(Blue Shark); anti-submarine; active/passive homing to
11 km (5.9 n miles) at 40 kt; warhead 44 kg.



SEJONG DAEWANG

(Scale 1 : 1,500), Ian Sturton / 116/985

Combat data systems: Aegis Baseline 71.

Weapons control: To be announced

Radars: Air search/fire control: SPY 1D(V) phased arrays ⑨;
3D; F-band

Surface search: Norden/DRS SPS-67(V) ⑩; G-band.

Fire control: 3 Raytheon SPG-62 ⑪; I/J-band.

Navigation: To be announced.

Sonars: Lockheed Martin SQG-89(V); underwater combat
system with SQS-53C bow mounted; active search and
attack.

Helicopters: 2 Westland Super Lynx Mk 99 ⑫.

Programmes: The KDX-3 programme is the third phase
of a surface ship modernisation programme that
began with the KDX-1 programme in the early 1990s.

The current programme consists of three ships but a
class of six vessels is expected. Lockheed Martin was
selected on 24 July 2002 to supply the combat data
system and multifunction radar and South Korea is the
fifth nation to operate the AEGIS system. The details of
the Cheon Ryong cruise missile are speculative.

Structure: A development of the Arleigh Burke class, the
South Korean variant also incorporates the AN/SPY-1D
AEGIS system but the design has been enlarged to
accommodate additional weapon systems. The ships
have three magazines: the forward Mk 41 VLS launcher
consists of 48 cells for SM-2 missiles which may also
be launched from a 32-cell Mk 41 VLS aft. A separate,
indigenous 48-cell VLS launcher aft contains 32 Hyunmoo
land attack cruise missiles and 16 ASROC anti-submarine
missiles. There are hangar facilities for two helicopters.



SEJONG DAEWANG

10/2008*, Michael Nitz / 1353198



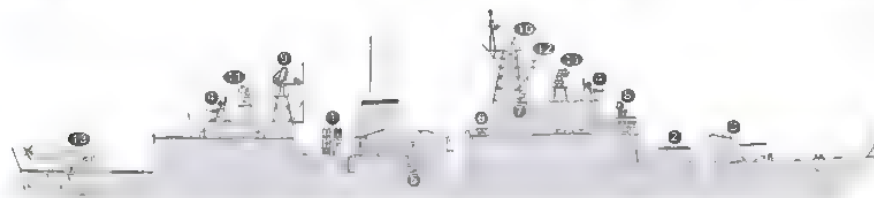
SEJONG DAEWANG

10/2008*, Michael Nitz / 1353198

3 KWANGGAETO DAEWANG (KDX-1) CLASS (DDGHM)

Name	No	Builders	Laid down	Launched	Commissioned
KWANGGAETO DAEWANG	971	Daewoo, Okpo	June 1995	28 Oct 1996	24 July 1998
EULJIMUNDOK	972	Daewoo, Okpo	Jan 1996	16 Oct 1997	20 June 1999
YANGMANCHUN	973	Daewoo, Okpo	Aug 1997	19 Oct 1998	29 June 2000

Displacement, tons: 3,855 full load
 Dimensions, feet (metres). 444.2 x 46.6 x 13.8
 (135.4 x 14.2 x 4.2)
 Main machinery: CODOG; 2 GE LM 2500 gas turbines, 58,200 hp (43.42 MW) sustained; 2 MTU 20V 956 TB92 diesels 8,000 hp(m) (5.88 MW); 2 shafts
 Speed, knots: 30
 Range, n miles: 4,000 at 18 kt
 Complement: 170 (15 officers)



KWANGGAETO DAEWANG

(Scale 1 : 1,200), Ian Sturton / 0572485

Missiles: SSM: 8 McDonnell Douglas Harpoon Block 1C (2 quad) launchers; active radar homing to 130 km (70 n miles) at 0.9 Mach; warhead 227 kg.
 SAM: Raytheon Sea Sparrow; Mk 48 Mod 2 VLS launcher for 16 cells RIM-7P; semi-active radar homing to 18 km (8.5 n miles) at 2.5 Mach; warhead 38 kg.
 Guns: 1 Otobreda 5 In (127 mm)/54; 45 rds/min to 23 km (12.4 n miles); weight of shell 32 kg.
 2 Signaal 30 mm Goalkeeper; 7 barrels per mounting; 4,200 rds/min combined to 2 km
 Torpedoes: 6—324 mm (2 triple) Mk 32 tubes; Alliant Techsystems Mk 48 Mod 5; anti-submarine; active/passive homing to 11 km (5.9 n miles) at 40 kt; warhead 44 kg
 Countermeasures: Decoys. 4 CSEE Dagare Mk 2 chaff launchers; SLQ-25 Nixie towed torpedo decoy.

ESM/ECM: Argo AR 700/APECS II; intercept and jammer.
 Combat data systems: BAeSEMA/Samsung SSCS Mk 7; Litton NTDS (Link 11); SATCOM
 Radars: Air search: Raytheon SPS-49V5; C/D-band
 Surface search: Signaal MW08; G-band.
 Fire control: 2 Signaal STIR 180; I/J/K-band.
 Navigation: Daewoo DTR 92 (SPS 55M); I-band, IFF: UPX-27.
 Sonars: Atlas Elektronik DSQS-21BZ; hull-mounted active search; medium frequency
 Daewoo Telecom towed array; passive low frequency.
 Helicopters: 1 Westland Super Lynx

Programmes: Project KDX-1. A much delayed programme. The first keel was to have been laid down at Daewoo in late 1992 for completion in 1996, but definition studies extended to late 1993, when contracts started to be signed for the weapon systems. First steel cut at Daewoo Okpo in April 1994.
 Structure: Emphasis is on air defence but the design took so long to reach fulfilment that it was overtaken by the KDX-2. McTaggart Scott Trigon 5 helo handling system.
 Operational: The Goalkeepers are also used against close-in surface threats using FAPDS (Frangible Armour Penetrating Discarding Sabot).



KWANGGAETO DAEWANG

10/2008, Michael Nitz / 1353196



KWANGGAETO DAEWANG

10/2008, Guy Toremans / 1353195



YANGMANCHUN

10/2008, Michael Nitz / 1353197

FRIGATES

9 ULSAN CLASS (FFG)

Name	No	Builders	Laid down	Launched	Commissioned
ULSAN	951	Hyundai, Ulsan	1979	8 Apr 1980	1 Jan 1981
SEOUL	952	Hyundai, Ulsan	1982	24 Apr 1984	30 June 1985
CHUNG NAM	953	Korean SEC, Pusan	1984	26 Oct 1984	1 June 1986
MASAN	955	Korea Tacoma	1983	26 Oct 1984	20 July 1985
KYONG BUK	956	Daewoo, Okpo	1984	15 Jan 1986	30 May 1986
CHON NAM	957	Hyundai, Ulsan	1986	19 Apr 1988	17 June 1989
CHE JU	958	Daewoo, Okpo	1986	3 May 1988	1 Jan 1990
PUSAN	959	Hyundai, Ulsan	1990	20 Feb 1992	1 Jan 1993
CHUNG JU	961	Daewoo, Okpo	1990	20 Mar 1992	1 June 1993

Displacement, tons: 1,496 light; 2,180 full load (2,300 for FF 957-961)

Dimensions, feet (metres): 334.6 × 37.7 × 11.5 (102 × 11.5 × 3.5)

Main machinery: CODOG; 2 GE LM 2500 gas turbines; 53,640 hp (40 MW) sustained; 2 MTU 16V 538 TB82 diesels; 5,940 hp(m) (4.37 MW) sustained; 2 shafts, cp props

Speed, knots: 34, 18 on diesels

Range, n miles: 4,000 at 15 kt

Complement: 150 (16 officers)

Missiles: SSM: 8 McDonnell Douglas Harpoon (4 twin) launchers; active radar homing to 130 km (70 n miles) at 0.9 Mach; warhead 227 kg.

Guns: 2–3 in (76 mm) 62 OTO Melara compact; 85 rds/min to 16 km (8.6 n miles) anti-surface; 12 km (6.5 n miles) anti-aircraft; weight of shell 6 kg.

8 Emerson Electric 30 mm (4 twin) (FF 951-955); 6 Breda 40 mm/70 (3 twin) (FF 956-961)

Torpedoes: 6–324 mm Mk 32 (2 triple) tubes; Honeywell Mk 46 Mod 1; anti-submarine; active/passive homing to 11 km (5.9 n miles) at 40 kt; warhead 44 kg

Depth charges: 12.

Countermeasures: Decoys: 4 Loral Hycor SRBOC 6-barrelled Mk 36 launchers; range 4 km (2.2 n miles). SLQ-25 Nixie; towed torpedo decoy.

ESM: ULQ-11K; intercept.

Combat data systems: Samsung/Ferranti WSA 423 action data automation (FF 957-961). Litton systems retrofitted to others. Link 11 in three of the class. WSC-3 SATCOM (F 957).

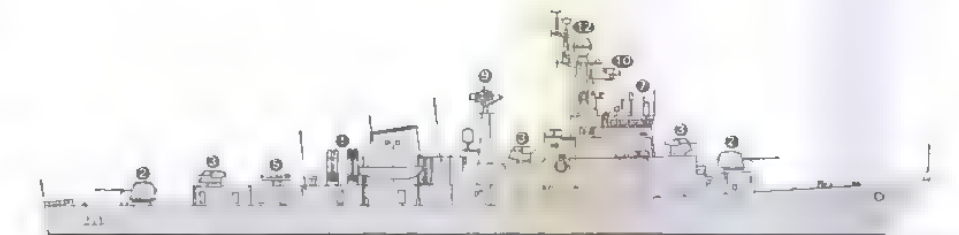
Weapons control: 1 Signaal Lioid optronic director (FF 951-956); 1 Radamec System 2400 optronic director (FF 957-961)

Radars: Air/surface search: Signaal DA05; E/F-band surface search: Signaal ZW06 (FF 951-956); Marconi S 1810 (FF 957-961); I-band.

Fire control: Signaal WM28 (FF 951-956); Marconi ST 1802 (FF 957-961); IJ-band.

Navigation: Raytheon SPS-10C (FF 957-961); I-band.

Tacan: SRN 15.



ULSAN

(Scale 1 : 900), Ian Sturton / 0506154



CHE JU

(Scale 1 : 900), Ian Sturton / 0506155

Sonars: Raytheon DE 1167, hull-mounted; active search and attack; medium frequency.

Modernisation: New sonars fitted. WSC-3 SATCOM fitted in *Chon Nam*.

Structure: Steel hull with aluminum alloy superstructure. There are three versions. The first five ships are the same but *Kyong Buk* has the four Emerson Electric twin 30 mm guns replaced by three Breda twin 40 mm, and the last four of the class have a built-up gun platform aft and a different combination of surface search, target indication

and navigation radars. Weapon systems integration caused earlier concern and a Ferranti combat data system has been installed in the last five, Litton Systems Link 11 fitted in three of the class.

Operational: *Che Ju* and *Chung Nam* conducted the first ever deployment of South Korean warships to Europe during a four month tour from September 1991 to January 1992. Trainees were embarked. Three of the class have a shore datalink and act as local area commanders to control attack craft carrying out coastal protection patrols.



CHE JU

10/2002, Guy Toremans / 0528915



ULSAN

8/2000, van Ginderen Collection / 0104306



CHUNG JU

2/2001, *Ships of the World* / 0130106



CHUNG NAM

10/2008*, *Michael Nitz* / 1353201



CHON NAM

10/2008*, *Michael Nitz* / 1353200

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0 + 1 FUTURE FRIGATES (FFX) (FFGHM)

Name	No	Builders	Laid down	Launched	Commissioned
		Hyundai, Ulsan	20 Jan 2009	2010	2011

Displacement, tons: 2,300 standard, 3,200 full load
Dimensions, feet (metres): To be announced
Main machinery: CODAG to be announced
Speed, knots: 32
Range, n miles: 4,500 at 13 kt
Complement: 170

Missiles: SSM: To be announced.
 SAM 1 Mk 49 RAM RIM-116; 21 rounds, passive IR/anti-radiation homing to 9.6 km (5.2 n miles) at 2 Mach, warhead 9.1 kg.

Guns: 1—127 mm, 1—30 mm 7-barrelled Goalkeeper; 4,200 rds/min to 1.5 km

Torpedoes: 6—324 mm (2 triple) tubes.

Combat data systems: To be announced.

Weapons control: To be announced.

Radars: Air search/fire control: To be announced (3D).

Surface search: To be announced.

Navigation: To be announced.

Sonars: Hull-mounted and towed-array.

FFX

(not to scale), Ian Sturton / 1353186

Helicopters: 1 Westland Super Lynx Mk 99.

class are to replace the Ulsan class by 2015. A further 18 ships are projected to enter service by 2020 to replace the Po Hang and Dong Hae classes.

Programmes: Hyundai Heavy Industries awarded the contract in early 2009 for the construction of the lead ship of a new FFX class of frigates. The first six of the

CORVETTES

24 PO HANG CLASS (FS/FSG)

Name	No	Builders	Commissioned
PO HANG	756	Korea SEC, Pusan	Dec 1984
KUN SAN	757	Korea Tacoma	Dec 1984
KYONG JU	758	Hyundai, Ulsan	Nov 1986
MOK PO	759	Daewoo, Okpo	Aug 1986
KIM CHON	761	Korea SEC, Pusan	May 1985
CHUNG JU	762	Korea Tacoma	May 1985
JIN JU	763	Hyundai, Ulsan	June 1988
YO SU	765	Daewoo, Okpo	Nov 1988
JIN HAE	766	Korea SEC, Pusan	Feb 1989
SUN CHON	767	Korea Tacoma	June 1989
YEE REE	768	Hyundai, Ulsan	June 1989
WON JU	769	Daewoo, Okpo	Aug 1989
AN DONG	771	Korea SEC, Pusan	Nov 1989
CHON AN	772	Korea Tacoma	Nov 1989
SONG NAM	773	Daewoo, Okpo	May 1989
BU CHON	775	Hyundai, Ulsan	Apr 1989
JAE CHON	776	Korea SEC, Pusan	May 1989
DAE CHON	777	Korea Tacoma	Apr 1989
SOK CHO	778	Korea SEC, Pusan	Feb 1990
YONG JU	779	Hyundai, Ulsan	Mar 1990
NAM WON	781	Daewoo, Okpo	Apr 1990
KWAN MYONG	782	Korea Tacoma	July 1990
SIN HUNG	783	Korea SEC, Pusan	Mar 1993
KONG JU	785	Korea Tacoma	July 1993

Displacement, tons: 1,220 full load

Dimensions, feet (metres): 289.7 × 32.8 × 9.5 (88.3 × 10 × 2.9)

Main machinery: CODOG; 1 GE LM 2500 gas turbine; 26,820 hp (20 MW) sustained; 2 MTU 12V 956 TB82 diesels; 6,260 hp (m) (4.6 MW) sustained; 2 shafts; Kamewa cp props

Speed, knots: 32

Range, n miles: 4,000 at 15 kt (diesel)

Complement: 95 (10 officers)

Missiles: SSM. 2 Aerospatiale MM 38 Exocet (756-759) ●; inertial cruise; active radar homing to 42 km (23 n miles) at 0.9 Mach; warhead 165 kg; sea-skimmer
 4 McDonnell Douglas Harpoon (762, 768, 777, 779) (2 twin) launchers ●; active radar homing to 130 km (70 n miles) at 0.9 Mach; warhead 227 kg.

Guns: 1 or 2 OTO Melara 3 in (76 mm)/B2 compact ●; 85 rds/min to 16 km (8.6 n miles) anti-surface; 12 km (6.5 n miles) anti-aircraft; weight of shell 6 kg
 4 Emerson Electric 30 mm (2 twin) (756-759) ●; 4 Breda 40 mm/70 (2 twin) (761 onwards) ●.

Torpedoes: 6—324 mm Mk 32 (2 triple) tubes ●. Honeywell Mk 46; anti-submarine; active/passive homing to 11 km (5.9 n miles) at 40 kt, warhead 44 kg.

Depth charges: 12 (761 onwards).

Countermeasures: Decoys: 4 MEL Protean fixed launchers, 36 grenades.

2 Loral Hycor SRBOC 6-barrelled Mk 36 launchers (in some); range 4 km (2.2 n miles).

ESM/ECM: THORN EMI or NobelTech; intercept/jammer.

Combat data systems: Signaal Sewaco ZK (756-759); Ferranti WSA 423 (761 onwards)

Weapons control: Signaal Lid or Radamec 2400 (766 onwards) optronic director ●.

Radars: Surface search, Marconi 1810 ● and/or Raytheon SPS-64 ●; I-band.

Fire control: Signaal WM28 ● I/J-band, or Marconi 1802 ●, I/J-band

Sonars: Signaal PHS-32; hull-mounted; active search and attack; medium frequency.

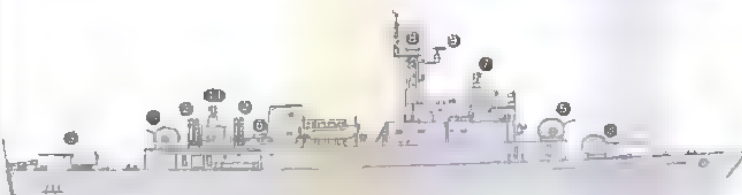
Programmes: First laid down early 1983. The programme terminated in 1993.

Structure: The first four are Exocet fitted and have a different weapon systems arrangement. The remainder have an improved combat data system with Ferranti/Radamec/Marconi fire-control systems and radars as in the later versions of the Ulsan class.



PO HANG

(Scale 1 : 900), Ian Sturton / 05/7484



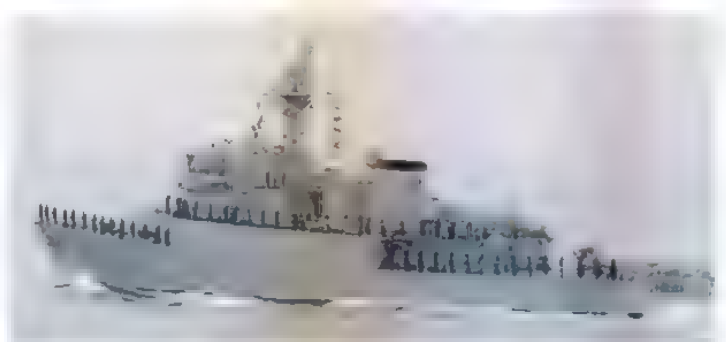
WON JU

(Scale 1 : 900), Ian Sturton / 05/69920



CHUNG JU

10/2008*, Michael Nitz / 1353203



KUN SAN

10/2008*, Guy Toremans / 1353202



YO SU

10/2008*, Michael Nitz / 1353204

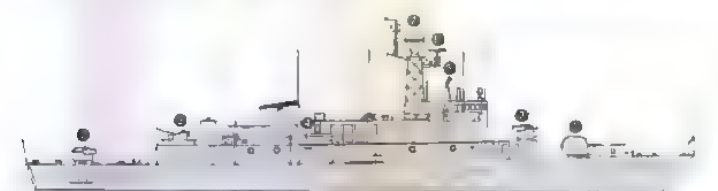
4 DONG HAE CLASS (FS)

Name	No	Builders	Commissioned
DONG HAE	751	Korea SEC, Pusan	Aug 1982
SU WON	752	Korea Tacoma	Oct 1983
KANG REUNG	753	Hyundai, Ulsan	Nov 1983
AN YANG	755	Daewoo, Okpo	Dec 1983

Displacement, tons: 1,076 full load
Dimensions, feet (metres): 256.2 x 31.5 x 8.5 (78.1 x 9.6 x 2.6)
Main machinery: CODAG: 1 GE LM 2500 gas turbine; 26,820 hp (20 MW) sustained; 2 MTU 12V 956 TB82 diesels; 6,260 hp (4.6 MW) sustained; 2 shafts, Kamowva cp props
Speed, knots: 31. **Range, n miles:** 4,000 at 15 kt (diesel)
Complement: 95 (10 officers)

Guns: 1 OTO Melara 3 in (76 mm)/62 compact; 85 rds/min to 16 km (8.6 n miles); weight of shell 6 kg.
 4 Emerson Electric 30 mm (2 twin); 2 Bofors 40 mm/60 (twin)
Torpedoes: 6—324 mm Mk 32 (2 triple) tubes; Honeywell Mk 46; anti-submarine; active/passive homing to 11 km (5.9 n miles) at 40 kt, warhead 44 kg.
Depth charges: 12.
Countermeasures: Decoys. 4 MEL Protean cheff launchers. ESM/ECM. THORN EMI or NobelTech; intercept and jammer.
Combat data systems: Signaal Sewaco ZK.
Weapons control: Signaal Lid optronic director
Radars: Surface search: Raytheon SPS-64; I-band
Fire control: Signaal WM28; I/J-band.
Sonars: Signaal PHS-32, hull-mounted; active search and attack, medium frequency.

Programmes: This was the first version of the corvette series, with four being ordered in 1980, one each from the four major warship building yards.
Structure: The design was too small for the variety of different weapons which were intended to be fitted for different types of warfare and was therefore discontinued in favour of the Po Hang class.



DONG HAE (Scale 1 : 900), Ian Sturton / 0506046



KANG REUNG 10/2008*, Chris Sattler / 1353705

SHIPBORNE AIRCRAFT

Notes: A Request for Proposals for eight mine-hunting helicopters is expected in 2009.

Numbers/Type: 12/13 Westland Lynx Mk 99/Mk 99A
Operational speed: 125 kt (231 km/h)
Service ceiling: 12,000 ft (3,660 m)
Range: 320 n miles (593 km).
Role/Weapon systems: 12 Mk 99 helicopters delivered by 1991; 13 Mk 99A ordered in June 1997 and delivered in 1999/2000. Sensors: Ferranti Sea Spray Mk 3 radar and Racal ESM. Bendix AQS 18(V) dipping sonar and ASQ 504(V) MAD in ASW versions. Weapons: 4 BAe Sea Skua missiles. Mk 46 (Mod 5) torpedo (in ASW version). Sea Skua may be replaced in due course



LYNX MK 99A 10/2008*, Michael Nitz / 1353706

Numbers/Type: 5 Aerospatiale SA 316B/SA 319B Alouette III.
Operational speed: 113 kt (210 km/h).
Service ceiling: 10,500 ft (3,200 m).
Range: 290 n miles (540 km).
Role/Weapon systems: Marine support helicopter; operated by RoK Marine Corps. Sensors: None Weapons: Unarmed



ALOUETTE III 6/2008*, Anneti Collection / 1353207

Numbers/Type: 19 Sikorsky UH-60P Blackhawk.
Operational speed: 145 kt (268 km/h)
Service ceiling: 18,700 ft (5,070 m).
Range: 315 n miles (583 km).
Role/Weapon systems: Korean built variant of Sikorsky UH-60L. Naval version used for SAR and operations from Dokdo



UH-60P 10/2008*, Michael Nitz / 1353208

LAND-BASED MARITIME AIRCRAFT (FRONT LINE)

Notes: (1) F-16 fighters are capable of firing Harpoon ASV missiles.
 (2) There are also 5 UH-1 utility helicopters.
 (3) Eight Lockheed P-3B Orion are to be reactivated and upgraded. KA1 and L-3 Communications selected in December 2004 to undertake the work. The contract is to be completed by 2010
 (4) Additional assault helicopters may be required to augment the UH-60P already in service.

Numbers/Type: 8 Lockheed P-3C Orion Update III.
Operational speed: 411 kt (761 km/h).
Service ceiling: 28,300 ft (8,625 m)
Range: 4,000 n miles (7,410 km).
Role/Weapon systems: Maritime patrol aircraft ordered in December 1990. First pair delivered April 1995, remainder April 1996. To be replaced by eight upgraded P-3B by 2010. The Update III version is fitted with ASQ-212 tactical computer. Sensors: APS-134 or 137(V)6 search radar; AAS-36 IR. Weapons: four Harpoon ASM.



P-3C 8/2008*, Michael Nitz / 1353210

Numbers/Type: 5 Rheims-Cosona F 406 Caravan II.
Operational speed: 229 kt (424 km/h).
Service ceiling: 30,000 ft (9,145 m).
Range: 1,153 m (2,135 km).
Role/Weapon systems: Maritime surveillance version ordered in 1997 with first one delivered in mid-1999. Sensors: APS 134 radar; Litton FLIR. Weapons: none.



F 406 8/2008*, Anneti Collection / 1353709

PATROL FORCES

1 + 8 (11) GUMDOKSURI CLASS (FAST ATTACK CRAFT) (PGGF)

Name	No	Builders	Laid down	Launched	Commissioned
YOON YOUNG-HA	711	Hanjin Heavy Industries, Pusan	2005	28 June 2007	17 Dec 2008

Displacement, tons: 440 standard; 570 full load
Dimensions, feet (metres): 205.7 x 29.5 x 16.4 (63.0 x 9.0 x 5.0)
Main machinery: CODAG: 2 GE LM 500 gas turbines; 10,900 hp (8.1 MW); 2 MTU 18V 1163 diesels; 15,880 hp (11.8 MW)
Speed, knots: 41. **Range, n miles:** 2,000 at 15 kt
Complement: 40
Missiles: SSM 4 Harpoon (2 twin).
Guns: 1—3 in (76 mm). 1—40 mm.
Radars: Air/surface search: Thales MW 08; G-band
Fire control: Saab Cerros 200, J-band
Navigation: I-band.

Comment: A new class of patrol craft to replace Sea Dolphin class. Following construction of the first of class by Hanjin, hulls 2-5 are to be built by STX Shipbuilding, Jinhae, and hulls 6-9 by Hanjin. A class of 20 is projected.



YOON YOUNG-HA 10/2008*, Michael Nitz / 1353214

81 SEA DOLPHIN/WILDCAT CLASS
(FAST ATTACK CRAFT—PATROL) (PBF/PTF)

PKM 212-375 series

Displacement, tons: 148 full load
Dimensions, feet (metres): 121.4 × 22.6 × 5.6 (37 × 6.9 × 1.7)
Main machinery: 2 MTU MD 16V 538 TB90 diesels; 6,000 hp(m) (4.41 MW) sustained; 2 shafts
Speed, knots: 37
Range, n miles: 600 at 20 kt
Complement: 31 (5 officers)
Guns: 2 Emerson Electric 30 mm (twin) or USN 3 in (76 mm)/50 or Bofors 40 mm/60, 2 GE/GD 20 mm Sea Vulcan Gatlings (in most), 2—12.7 mm MGs. Rocket launchers in lieu of after Gatling in some.
Weapons control: Optical director.
Radars: Surface search: Raytheon 1645; I-band.

Comment: Fifty-four Sea Dolphins built by Korea SEC, and 47 Wildcats by Korea Tacoma. First laid down 1978. The class has some gun armament variations and some minor superstructure changes in later ships. These craft form the basis of the coastal patrol effort against incursions by North Korean amphibious units. Five sold to the Philippines in 1985, two transferred to Bangladesh in 2000 and a further two in 2004. Some deleted so far, others are in reserve.



SEA DOLPHIN 281 10/2008*, Guy Toremans / 1353217



SEA DOLPHIN 296 10/2008*, Guy Toremans / 1353211



SEA DOLPHIN 362 10/2008*, Michael Nitz / 1353213

AMPHIBIOUS FORCES

Notes: The LST-2 programme is for four 4,500 ton LSTs to replace the ageing 512-1152 class ships and to augment the Alligator class.

10 LCM 8 CLASS (LCM)

Displacement, tons: 115 full load
Dimensions, feet (metres): 74.5 × 21 × 4.6 (22.7 × 6.4 × 1.4)
Main machinery: 4 GM 6-71 diesels; 696 hp (519 kW) sustained; 2 shafts
Speed, knots: 11
Complement: 11
Military lift: 55 tons

Comment: Previously US Army craft. Transferred in September 1978



LCM 87 10/2008*, Michael Nitz / 1353219

4 ALLIGATOR CLASS (LSTH)

Name	No	Builders	Launched	Commissioned
KOJOON BONG	681	Korea Tacoma, Masan	Sep 1992	June 1993
BIRO BONG	682	Korea Tacoma, Masan	Dec 1996	Nov 1997
HYANGRO BONG	683	Korea Tacoma, Masan	Oct 1998	Aug 1999
SEONGIN BONG	685	Korea Tacoma, Masan	Feb 1999	Nov 1999

Displacement, tons: 1,900 standard; 4,278 full load
Dimensions, feet (metres): 369.1 × 50.2 × 9.8 (112.5 × 15.3 × 3)
Main machinery: 2 SEMT-Pielstick 16 PA6 V 280; 12,800 hp(m) (9.41 MW) sustained; 2 shafts; cp props
Speed, knots: 16
Range, n miles: 4,500 at 12 kt
Complement: 169
Military lift: 200 troops; 15 MBT; 6—3 ton vehicles; 4 LCVPs
Guns: 2 Breda 40 mm/70 (LST 663, 685), 2—30 mm (1 twin) (LST 681), 2 Vulcan 20 mm Gatlings.
Countermeasures: Decoys: 1 RBOC chaff launcher.
ESM: radar intercept
Weapons control: Selonia NA 18. Optronic director. Daeyoung WCS-86.
Radars: Surface search: Raytheon SPS 64, E/F-band.
Navigation: Raytheon SPS 64; I-band
Tacan: SRN 15.
Helicopters: Platform for 1 UH-60A.

Comment: First one ordered in June 1990 from Korea Tacoma, Masan but delayed by financial problems. Korea Tacoma became Hanjin Heavy Industries. Design improvements include stern ramp for underway launching of LVTs, helicopter deck, and a lengthened bow ramp. There are unlikely to be further orders.



KOJOON BONG 10/2008*, Michael Nitz / 1353217



HYANGRO BONG 10/2008*, Michael Nitz / 1353218

2 LST 512-1152 CLASS (LST)

Name	No	Builders	Commissioned
SU YONG (ex-Kana County LST 853)	677	Chicago Bridge	11 Dec 1945
BUK HAN (ex-Lynn County LST 900)	678	Dravo, Pittsburg	28 Dec 1944

Displacement, tons: 1,653 standard; 2,366 beaching; 4,080 full load
Dimensions, feet (metres): 328 × 50 × 14 (screws) (100 × 15.2 × 4.3)
Main machinery: 2 GM 12-567A diesels, 1,800 hp (1.34 MW); 2 shafts
Speed, knots: 10
Complement: 80
Military lift: 2,100 tons including 20 tanks and 2 LCVPs
Guns: 8 Bofors 40 mm (2 twin, 4 single) 2 Oerlikon 20 mm

Comment: Former US Navy tank landing ships. Transferred to South Korea between 1955 and 1959. All purchased 15 November 1974. Planned to be replaced by the Alligator class but two reported as still in service.



BUK HAN 10/1997 008165

1 + (2) AMPHIBIOUS TRANSPORT DOCK (LPD)

Name	No	Builders	Laid down	Launched	Commissioned
DOKDO	6111	Hanjin Heavy Industries, Pusan	2003	12 July 2005	3 July 2007

Displacement, tons: 13,000 standard; 19,000 full load
 Dimensions, feet (metres): 656.3 × 105.0 × 21.33
 (200.0 × 32.0 × 6.5)
 Main machinery: CODAD: 4 SEMT Pielstick 16PC 2.5
 STC diesels; 41,615 hp(m) (30.6 MW) sustained;
 2 shafts
 Speed, knots: 22
 Complement: 400 ship plus 700
 Military lift: 700 troops, 10 tanks and two air-cushion
 landing craft
 Missiles: 1 Raytheon Mk 49 launcher RAM 116 ☉; 21 rds;
 passive IR/anti-radiation homing to 9.6 km (5.2 n miles)
 at 2.5 Mach; warhead 9.1 kg.
 Guns: 2 TNNL Goalkeeper ☉ 30 mm; 4,200 rds/min to
 1.5 km.
 Combat data systems: Based on Tactics.



DOKDO

(Scale 1 : 2,400), Ian Sturton / 118668/

Radars: Air search Thales SMART L ☉; 3D; D-band.
 Surface search: Signal MW 08 ☉; G-band.
 Navigation: To be announced.
 CCA: Galileo Avionica SPN-720, I-band.

Helicopters: 10 UH-60.

Programmes: The contract for an amphibious assault ship
 was placed with Hanjin Heavy Industries on 28 October
 2002. An order for a second ship, possibly to be called
Marado, is expected in 2008 and a third ship is also
 under consideration.

Structure: The design includes a well dock.



DOKDO

10/2008*, Michael Nitz / 1353215



DOKDO

12/2007, Michael Nitz / 1170070



DOKDO

10/2008*, Michael Nitz / 1353216

3TSAPLYA (MURENA E) (PROJECT 12061) CLASS (ACV)

621-623

Displacement, tons: 108 standard; 150 full load
Dimensions, feet (metres): 102.7 x 48.5 x 4.9 (31.3 x 14.8 x 1.5)
Main machinery: 2 PR-77 gas turbines for lift and propulsion; 8,000 hp (5.88 MW)
Speed, knots: 50
Range, n miles: 500 at 50 kt
Complement: 11 (3 officers) + 100 troops
Guns: 2—30 mm AK 306M, 2—30 mm grenade launchers, 2—12.7 mm MGs.

Comment: Ordered on 5 August 2002. Designed by Almaz, all built at Khabarovsk. First laid down on 26 April 2004 and delivered to Inchon on 11 November 2005. The second and third delivered in November and December 2006 respectively. Capable of carrying one medium tank or 130 troops.



TSAPLYA 621

6/2006 / 1104/05

MISCELLANEOUS LANDING CRAFT

Comment: A considerable number of US LCVF type built of GRP in South Korea. In addition there were plans to build up to 20 small hovercraft for special forces; first two reported building in 1994, and one seen on sea trials in May 1995. Also 56 combat support boats of 8 m were ordered from FBM Marina for assembly by Hanjin Heavy Industries.



HOVERCRAFT

5/1995, David Jordan / 0081167

2 LSF-II LANDING CRAFT AIR CUSHION (LCAC)

631-632

Displacement, tons: 100 standard; 155 full load
Dimensions, feet (metres): 88.0 (on cushion) x 47.0 (on cushion) (26.8 x 14.3)
Main machinery: 4 Vericor Power Systems ETF40B gas turbines for propulsion and lift; 15,800 hp (11.8 MW); 2 shrouded reversible-pitch airscrews (propulsion), 4 double-entry centrifugal fans (lift)
Speed, knots: 40
Range, n miles: 300 at 35 kt
Complement: 5
Military lift: 23 troops; 1 main battle tank or 55 tons
Guns: 1—20 mm
Radars: To be announced

Comment: LSF II is a high-speed air-cushion craft of aluminium construction developed and manufactured by Hanjin Heavy Industries for operations in conjunction with the LPD *Dokdo*. The design appears to be based on the US Navy's LCAC design. Both delivered in mid-2007.



LCAC 632

10/2008*, Michael Nitz / 1353270

MINE WARFARE FORCES

6 SWALLOW CLASS (MINEHUNTERS) (MHSC)

Name	No	Builders	Commissioned
KANG KYEONG	561	Kangnam Corporation	Dec 1996
KANG JIN	562	Kangnam Corporation	May 1991
KO RYEONG	563	Kangnam Corporation	Nov 1991
KIM PO	565	Kangnam Corporation	Apr 1993
KO CHANG	566	Kangnam Corporation	Oct 1993
KUM WHA	567	Kangnam Corporation	Apr 1994

Displacement, tons: 470 standard, 520 full load
Dimensions, feet (metres): 164 x 27.2 x 8.6 (50 x 8.3 x 2.6)
Main machinery: 2 MTU diesels; 2,040 hp(m) (1.5 MW) sustained; 2 Voith-Schneider props; bow thruster; 102 hp(m) (75 kW)
Speed, knots: 15
Range, n miles: 2,000 at 10 kt
Complement: 44 (5 officers) plus 4 divers
Guns: 1 Oerlikon 20 mm, 2—7.62 mm MGs
Countermeasures: MCM: 2 Gaymarine Pluto remote-control submersibles (possibly to be replaced by Double Eagle)
Combat data systems: Racal MAINS 500
Radars: Navigation: Raytheon SPS 64, I-band
Sonars: GEC-Marconi 193M Mod 1 or Mod 3; minehunting; high frequency.

Comment: Built to a design developed independently by Kangnam Corporation but similar to the Italian Lerici class. GRP hull. Single sweep gear deployed at 8 kt. Decca/Racal plotting system. First delivered at the end of 1986 for trials. Two more with some modifications ordered in 1988, three more in 1990



KANG KYEONG

10/2008*, Michael Nitz / 1353271

1 WON SAN CLASS (MINELAYER) (MLH)

Name	No	Builders	Launched	Commissioned
WON SAN	560	Hyundai, Ulsan	Sep 1996	Sep 1997

Displacement, tons: 3,300 full load
Dimensions, feet (metres): 340.6 x 49.2 x 11.2 (103.8 x 15 x 3.4)
Main machinery: CODAD; 4 SEMT-Prestick 12 PA6 diesels; 17,200 hp(m) (12.64 MW); 2 shafts
Speed, knots: 22
Range, n miles: 4,500 at 15 kt
Complement: 160
Guns: 1 OTO Melara 3 in (76 mm)/62; 85 rds/min to 16 km (8.6 n miles); weight of shell 6 kg, 2 Breda 40 mm/70
Torpedoes: 6—324 mm Mk 32 (2 triple) launchers.
Mines: 2 stern launchers. Up to 300
Countermeasures: Decoys; 2 chaff launchers. ESM/ECM
Weapons control: Radamec optronic director.
Radars: Air/surface search, E/F-band
Fire control: Marconi 1802; I/J-band
Navigation: I-band.
Sonars: Bow-mounted, active search and attack, medium frequency
Helicopters: Platform only

Comment: Project design contract ordered October 1991 and completed July 1993 by Hyundai. Order to build given in October 1994.



WON SAN

3/2004, Chris Sattler / 1042330

3 YANG YANG CLASS (MSC/MHC)

Name	No	Builders	Commissioned
YANG YANG	571	Kangnam Corporation	Dec 1999
ONGJIN	572	Kangnam Corporation	Feb 2004
HAE NAM	573	Kangnam Corporation	Mar 2005

Displacement, tons: 880 full load
Dimensions, feet (metres): 195 x 34.4 x 9.8 (59.4 x 10.5 x 3.0)
Main machinery: 2 MTU diesels, 4,000 hp(m) (2.98 MW) sustained; 2 Voith-Schneider props; bow thruster; 134 hp(m) (100 kW)
Speed, knots: 15
Range, n miles: 3,000 at 12 kt
Complement: 56 (7 officers) plus 5 divers

Guns: 1—20 mm Sea Vulcan Gatling, 2—7.62 mm MGs.
Countermeasures: MCM. BAE Systems deep mechanical and combined influence sweep system, 2 Gayrobot Pluto GIGAS ROVs.
Combat data systems: Thomson Marconi TSM 2061 Mk 3.
Radars: Navigation: Raytheon; I-band.
Sonars: Thomson Marconi Type 2093 VDS; minehunting, active multifrequency.

Comment: The first one ordered in late 1995 and a second pair delivered by 2005. Further orders are possible. A large version of the Swallow class built to a design developed by Kangnam Corporation. GRP hull. The integrated navigation and dynamic positioning system developed by Kongsberg Simrad.



ONGJIN 10/2008*, Michael Nitz / 1353222

SURVEY SHIPS

18 SURVEY SHIPS (AGOR)

PUSAN 801	PUSAN 806	201-204
PUSAN 802	PUSAN 810	208-209
PUSAN 803	CH'UNGNAM 821	215-217
PUSAN 805	KANGWON 831	220

Comment: All ships are painted white with a distinctive yellow coloured crest on the funnel. Most were commissioned in the 1980s. The Hydrographic Service is responsible to the Ministry of Transport.



201 10/2008*, Guy Toremans / 1353224



202 4/2000, M Declerck / 0105000



217 10/2008*, Guy Toremans / 1353223

RESCUE VEHICLES

1 RESCUE SUBMERSIBLE

DSRV II

Displacement, tons: 26
Dimensions, feet (metres): 31.5 x 8.9 x 12.5 (9.6 x 2.7 x 3.8)
Main machinery: 2 electric motors; 26.8 hp (20 kW); 4 tiltable side thrusters; 18 hp (12 kW)
Speed, knots: 3
Complement: 2 pilots and 1 rescue chamber operator

Comment: James Fisher Defence Limited announced on 13 December 2006 that it had been awarded a contract to deliver a new Submarine Rescue Vehicle (SRV) to the Republic of Korea Navy. It was delivered in November 2008. The new submarine rescue vehicle, DSAR-5, is based on the LR5/DSAR-1, in-service with the Royal Navy until replaced in 2008. Lithium based battery technology enables the underwater endurance to be increased significantly over conventional lead-acid based systems. DSAR-5 has two compartments. The forward compartment houses the pilot and co-pilot while the aft compartment carries the RCO and up to 16 rescues. Capable of operating at a depth of 500 m in currents of up to 3 kt, rescues may be transferred under pressure to the medical and decompression facilities onboard the submarine rescue mothership *Cheong-Hae-Jin*.

AUXILIARIES

Notes: The South Korean Navy also operates nine small harbour tugs (designated YTLs). These include one ex-US Navy craft and five ex-US Army craft. There are also approximately 35 small service craft in addition to the YO-type tankers listed and the harbour tugs. These craft include open lighters, floating cranes, diving tenders, dredgers, ferries, non self-propelled fuel barges, pontoon barges, and sludge removal barges; most are former US Navy craft.

1 CHEONG HAE JIN CLASS (ARS)

Name	No	Builders	Launched	Commissioned
CHEONG HAE JIN	21	Daewoo, Okpo	Oct 1995	30 Nov 1996

Displacement, tons: 4,300 full load
Dimensions, feet (metres): 337.3 x 53.8 x 15.1 (102.8 x 16.4 x 4.6)
Main machinery: Diesel-electric; 4 MAN Burmeister & Wain 16V 28/32 diesels, 11,800 hp(m) (8.67 MW); 2 motors, 5,440 hp(m) (4 MW); 2 shafts; cp props; 3 bow and 2 stern thrusters
Speed, knots: 18
Range, n miles: 9,500 at 15 kt
Complement: 130
Guns: 1 GE/GD 20 mm Vulcan Gatling (can be fitted), 6—12.7 mm MGs.
Radars: Navigation: I-band.
Sonars: Hull-mounted, active search; high frequency.
Helicopters: Platform for 1 light.

Comment: Ordered in 1992. Laid down December 1994. A multipurpose salvage and submarine rescue ship which can carry DSRV II as well as two LCVPs on davits plus a diving bell for nine men and a decompression chamber. Two large hydraulic cranes fore and aft and one towing winch. There are also two salvage ships which belong to the Coast Guard.



CHEONG HAE JIN 9/2003, Hartmut Ehlers / 0570936

2 EDENTON CLASS (SALVAGE SHIPS) (ATS)

Name	No	Builders	Commissioned
PYONGTAEK (ex-Beaufort)	27	Brooke Marine, Lowestoft	22 Jan 1972
KWANG YANG (ex-Brunswick)	28	Brooke Marine, Lowestoft	19 Dec 1972

Displacement, tons: 2,929 full load
Dimensions, feet (metres): 282.6 x 50 x 15.1 (86.1 x 15.2 x 4.6)
Main machinery: 4 Paxman 12YJCM diesels; 6,000 hp (4.48 MW) sustained; 2 shafts, cp props; bow thruster
Speed, knots: 16. **Range, n miles:** 10,000 at 13 kt
Complement: 129 (7 officers)
Guns: 2 Oerlikon 20 mm Mk 68
Radars: Navigation: Sperry SPS-53; I/J-band

Comment: Transferred from USA on 29 August 1996. Capable of (1) ocean towing, (2) supporting diver operations to depths of 850 ft, (3) lifting submerged objects weighing as much as 600,000 lb from a depth of 120 ft by static tidal lift or 30,000 lb by dynamic lift, (4) fighting ship fires. Fitted with 10 ton capacity crane forward and 20 ton capacity crane aft. Both recommissioned 28 February 1997.



PYONGTAEK (US colours) 12/1995, Giorgio Arra / 0506303

3 CHUN JEE CLASS (LOGISTIC SUPPORT SHIPS) (AORH)

Name	No	Builders	Launched	Commissioned
CHUN JEE	57	Hyundai, Ulsan	May 1990	Dec 1990
DAE CHUNG	58	Hyundai, Ulsan	Jan 1997	1 Dec 1997
HWA CHUN	59	Hyundai, Ulsan	July 1997	Mar 1998

Displacement, tons: 4,180 standard; 9,180 full load
Dimensions, feet (metres): 426.5 × 56.4 × 21.3 (130 × 17.8 × 6.5)
Main machinery: 2 SEMT-Pielstick 16 PA6 V 280 (AO 57) or 12 PC2.5 diesels; 12,800 hp(m) (9.4 MW) sustained; 2 shafts
Speed, knots: 20 **Range, n miles:** 4,500 at 15 kt
Cargo capacity: 4,200 tons liquids, 450 tons solids
Guns: 4 Emerlec 30 mm (2 twin) or 2 Breda 40 mm/70. 2 GE/GD 20 mm Vulcan Gatlings.
Radars: Navigation: 2 Racal Decca; I-band.
Helicopters: Platform for 1 medium.

Comment: *Chun Jee* laid down September 1989. Underway replenishment stations on both sides. Helicopter for Vertrep but no hangar. There are three 6 ton lifts. Possibly based on Italian Stromboli class. Second of class was to have followed on but was eventually ordered together with the third in May 1995, to a slightly different design. More may be built when funds are available.



DAE CHUNG

10/2008*, Guy Toremans / 135322b



HWA CHUN

10/2007, Adolfo Ortigueira Gil / 110666b

1 TRIALS SUPPORT SHIP (AGE)

Name	No	Builders	Launched	Commissioned
SUNJIN	AGS 11	Hyundai, Ulsan	Nov 1992	Apr 1993

Displacement, tons: 320 full load
Dimensions, feet (metres): 113.2 × 49.2 × 12.1 (34.5 × 15 × 3.7)
Main machinery: 1 MTU 16V 396 TE74L diesel; 2,680 hpl(m) (2 MW); 1 shaft, cp prop; 2 bow thrusters
Speed, knots: 21 **Range, n miles:** 600 at 16 kt
Complement: 5 plus 20 scientists
Guns: 1—20 mm Gatling
Radars: Navigation: I-band.

Comment: Experimental design built by Hyundai. Ordered June 1991, laid down June 1992. Aluminium SWATH hull with dynamic positioning system. Fitted with various trials equipment including an integrated navigation system and torpedo tracking pingor system VDS and towed arrays. Used by the Defence Development Agency and civilian operated.



SUNJIN

1993, Hyundai / 0081169

TUGS

Notes: In addition to the Edenton class ATS there are a further 10 harbour tugs and numerous port service auxiliaries.



HARBOUR TUG

10/2008*, Guy Toremans / 135322b

COAST GUARD

Notes: (1) The Republic of Korea Coast Guard was originally established as the Maritime Safety Division on 12 December 1953. After becoming the Maritime Police Unit in 1962, it separated from the national police in 1998 and changed its name to the Coast Guard in December 2000. It is responsible for Maritime Security (including maritime counter-terrorism), Search and Rescue, Marine Environmental Protection, Marine Pollution Response and Maritime Safety. With its Headquarters at Songdo, Incheon, it has four regional headquarters at Incheon, Mokpo, Busan and Daenghae. There are 13 coast guard stations at Songdo, Daenghae, Pohang, Ulsan, Busan, Tongyeong, Yeosu, Wando, Cheju, Mokpo, Gunsan, Taean and Incheon. Patrol ships and craft are painted with blue hulls and white superstructure, the word "Police" is painted on the side of the superstructure. Larger salvage ships are painted white with the word "Police" and a red-yellow-blue diagonal stripe on the side of the hull. The Police Coast Guard academy was established in 2004.

(2) Aviation assets include a Bombardier Challenger 604 maritime surveillance aircraft, Kamov Ka-27 Helix and Bell 412 SAR helicopters, and AS 565 MB helicopters.

3 MAZINGER CLASS (PSO)

PC 1001–1003

Displacement, tons: 1,200 full load
Dimensions, feet (metres): 264.1 × 32.2 × 11.5 (80.5 × 9.6 × 3.2)
Main machinery: 2 SEMT-Pielstick 12 PA6 V 280 diesels; 9,600 hp(m) (7.08 MW) sustained; 2 shafts
Speed, knots: 22
Range, n miles: 7,000 at 18 kt
Complement: 69 (11 officers)
Guns: 1 Bofors 40 mm/70. 4 Cerlikon 20 mm (2 twin).
Radars: Surface search: Raytheon; I-band

Comment: Ordered 7 November 1980 from Korea Tacoma and Hyundai. *PC 1001* delivered 29 November 1981. *PC 1002* 31 August 1982 and *PC 1003* on 31 August 1983. All-welded mild steel construction. Used for offshore surveillance and general coast guard duties. *PC 1001* is the Coast Guard Command ship. Only three of this class were completed.



MAZINGER (old colours)

1987, Korea Tacoma / 0506048

1 HAN KANG CLASS (PG)

HAN KANG PC 1005

Displacement, tons: 1,180 full load
Dimensions, feet (metres): 289.7 × 32.8 × 9.5 (88.3 × 10 × 2.9)
Main machinery: CODOG; 1 GE LM 2500 gas turbine; 26,820 hp (20 MW) sustained; 2 MTU 12V 956 TB82 diesels; 6,260 hp(m) (4.6 MW) sustained; 3 shafts
Speed, knots: 32
Range, n miles: 4,000 at 15 kt
Complement: 72 (11 officers)
Guns: 1 OTO Melara 76/62 compact. 1 Bofors 40 mm/70. 2 GE/GD 20 mm Vulcan Gatlings.
Weapons control: Signal L10D optronic director
Radars: Surface search: Raytheon SPS-64(V); I-band.
Fire control: Signal WM28; I/J-band

Comment: Built between May 1984 and December 1985 by Daewoo. Same hull as Po Kang class but much more lightly armed. Only one of the class was completed.



HAN KANG

9/2000 / 0097740

6 430 TON CLASS (PBO)

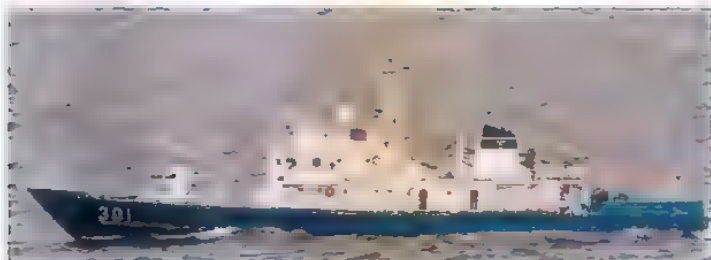
300-303 402-403

Displacement, tons: 430 full load
 Dimensions, feet (metres): 176.2 × 24.3 × 7.9 (53.7 × 7.4 × 2.4)
 Main machinery: 2 MTU 16V 396 TB83 diesels; 1,990 hp(m) (1.49 MW); 2 shafts; cp props
 Speed, knots: 19
 Range, n miles: 2,100 at 17 kt
 Complement: 14
 Guns: 1 or 2 GD/GE 20 mm Vulcan Gatlings. 4–12.7 mm MGs.
 Radars: Surface search; Raytheon, I-band.

Comment: All built between 1990 and 1995 by Hyundai except 301 which was built by Daewoo. Multipurpose patrol ships.



300 3/1996, D Swetnam / 0081177



301 8/2000, van Ginderen Collection / 0087741

23 SEA WOLF/SHARK CLASS (PBO)207 255-259 265-269 276-277
251-253 261-263 271-273

Displacement, tons: 310 full load
 Dimensions, feet (metres): 158.1 × 23.3 × 8.2 (48.2 × 7.1 × 2.5)
 Main machinery: 2 diesels, 7,320 hp(m) (5.38 MW); 2 shafts
 Speed, knots: 25. Range, n miles: 2,400 at 15 kt
 Complement: 35 (3 officers)
 Guns: 4 Oerlikon 20 mm (2 twin or 1 twin, 2 single). Some have a twin Bofors 40 mm/70 vice the twin Oerlikon, 2 Browning 12.7 mm MGs.
 Radars: Surface search; I-band.

Comment: First four ordered in 1979-80 from Korea SEC (Sea Shark), Hyundai and Korea Tacoma (Sea Wolf) Programme terminated in 1988. Pennant numbers in 200 series up to 277.



SEA WOLF 207 5/1997, van Ginderen Collection / 0017111

4 BUKHANSAN CLASS (PBO)

BUKHANSAN 278 CHULMASAN 279 P 281 P 282

Displacement, tons: 380 full load
 Dimensions, feet (metres): 174.2 × 24 × 7.2 (53.1 × 7.3 × 2.2)
 Main machinery: 2 MTU diesels; 8,300 hp(m) (6.1 MW) sustained; 2 shafts
 Speed, knots: 28. Range, n miles: 2,500 at 15 kt
 Complement: 35 (3 officers)
 Guns: 1 Breda 40 mm/70, 1 GE/GD 20 mm Vulcan Gatling, 2–12.7 mm MGs.
 Weapons control: Radamec optronic director
 Radars: Surface search; I-band.

Comment: Follow on to Sea Wolf class developed by Hyundai in 1987. Ordered in 1988 from Hyundai and Daewoo respectively. First pair in service in 1989, and second pair in 1990.



CHULMASAN (old colours) 1989, Daewoo / 0506049

5 HYUNDAI TYPE (PB)

105 113 118 121 125

Displacement, tons: 110 full load
 Dimensions, feet (metres): 105.6 × 19.7 × 4.6 (32.2 × 6 × 1.4)
 Main machinery: 2 diesels; 2 shafts
 Speed, knots: 25
 Complement: 19
 Guns: 1 Rheinmetall 20 mm, 2–12.7 mm MGs.
 Radars: Surface search; Furuno; I-band.

Comment: Ordered in 1996 and delivered from June 1997.



HYUNDAI 125 6/2008, Harald Carstens / 1353227

1 SALVAGE SHIP (ARSH)

Name	No	Builders	Launched	Commissioned
TAE PUNG YANG I	3001	Hyundai, Ulsan	Oct 1991	18 Feb 1993

Displacement, tons: 3,200 standard, 4,300 full load
 Dimensions, feet (metres): 343.5 × 49.2 × 17 (104.7 × 15 × 5.2)
 Main machinery: 4 Ssangyong MAN Burmeister & Wain 16V 28/32 diesels; 4,800 hp(m) (3.53 MW); 2 shafts; cp props; bow and stern thrusters
 Speed, knots: 21
 Range, n miles: 8,500 at 15 kt
 Complement: 121
 Guns: 1 GD/GE 20 mm Vulcan Gatling, 6 12.7 mm MGs.
 Radars: Navigation; I-band.
 Helicopters: 1 light

Comment: Laid down February 1991. Has a helicopter deck and hanger, an ROV capable of diving to 300 m and a firefighting capability. Dynamic positioning system. Can be used for cable laying. Operates for the Marine Police.



TAE PUNG YANG I 10/2008, Guy Toremans / 1353278

1 SALVAGE SHIP (ARSH)

Name	No	Builders	Commissioned
JAEMIN I	1501	Daewoo, Okpo	28 Dec 1992

Displacement, tons: 2,072 full load
 Dimensions, feet (metres): 254.6 × 44.3 × 13.8 (77.6 × 13.5 × 4.2)
 Main machinery: 2 MTU diesels; 8,000 hp(m) (5.88 MW); 2 shafts, cp props
 Speed, knots: 18
 Range, n miles: 4,500 at 12 kt
 Complement: 92
 Guns: 1 GD/GE 20 mm Vulcan Gatling.
 Radars: Navigation; I-band.

Comment: Ordered in 1990. Fitted with diving equipment and has a four point mooring system. Carries two LCVPs.



JAEMIN I 8/2000 / 0091745

474 Korea, South/Coast guard

1 SALVAGE SHIP (ARS)

Name	No	Builders	Launched	Commissioned
JAEMIN II	1502	Hyundai, Ulsan	15 July 1995	Apr 1996

Displacement, tons: 2,500 full load
Dimensions, feet (metres): 288.7 × 47.6 × 15.1 (88 × 14.5 × 4.6)
Main machinery: 2 MTU diesels; 12,662 hp(m) (9.31 MW); 2 shafts; Kamewa cp props; bow and stern thrusters
Speed, knots: 20
Range, n miles: 4,500 at 15 kt
Complement: 81
Guns: 1 GE/GD 20 mm Vulcan Gatling.
Radars: Navigation. I-band

Comment: Ordered in December 1993 for Maritime Police. A general purpose salvage ship capable of towing, firefighting, supply or patrol duties.



JAEMIN II 8/1999, *Ships of the World* / 0081176

1 SALVAGE SHIP (ARSH)

Name	No	Builders	Commissioned
JAEMIN III	1503	Hyundai, Ulsan	Nov 1998

Displacement, tons: 4,200 full load
Dimensions, feet (metres): 362.6 × 50.5 × 16 (110.5 × 15.4 × 4.9)
Main machinery: 2 diesels; 2 shafts
Speed, knots: 18
Complement: 120
Guns: 2 GE 20 mm Vulcan Gatlings. 8—12.7 mm MGs.
Radars: Navigation: I-band.

Comment: Ordered in 1996, from Hyundai, Ulsan. Large helicopter deck but no hangar.



JAEMIN III 10/2008*, *Guy Toremans* / 1353229

1 DAEWOOTYPE (PSO)

SUMJINKANG PC 1006

Displacement, tons: 1,650 full load
Dimensions, feet (metres): 275.6 × 34.1 × 11.8 (84 × 10.4 × 3.6)
Main machinery: 2 Wärtsilä Nohab 16V25 diesels; 10,000 hp(m) (735 MW) sustained; 2 shafts
Speed, knots: 21
Range, n miles: 4,500 at 18 kt
Complement: 57 (7 officers)
Guns: 1—20 mm Sea Vulcan Gatling. 4—12.7 mm MGs.
Radars: Surface search I-band

Comment: Ordered in 1997 from Daewoo. Described as a multipurpose patrol ship. Launched 22 January 1999, and delivered 20 June 1999.



SUMJINKANG 6/2006, *Korea Coast Guard* / 1159985

6 SEA DRAGON/WHALE CLASS (PBO)

PC 501-503	PC 505-507
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Displacement, tons: 640 full load
Dimensions, feet (metres): 199.5 × 26.2 × 8.9 (60.8 × 8 × 2.7)
Main machinery: 2 SEMT-Pielstick 12 PAG V 280 diesels; 9,600 hp(m) (708 MW) sustained; 2 shafts
Speed, knots: 24
Range, n miles: 6,000 at 15 kt
Complement: 40 (7 officers)
Guns: 1 Sofors 40 mm/60. 2 Derlikon 20 mm. 2 Browning 12.7 mm MGs.
Radars: Navigation. Two sets.

Comment: Delivered 1978-1982 by Hyundai, Korea and Korea Tacoma. Fitted with SATNAV. Welded steel hull. Armament varies between ships, one 76 mm gun can be mounted on the forecastle. Variant of this class built for Bangladesh and delivered in October 1997.

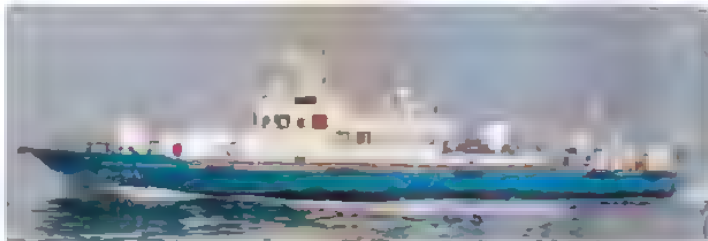


SEA DRAGON 502 6/2006, *Korea Coast Guard* / 1158987

INSHORE PATROL CRAFT (PBR)

Displacement, tons: 47 full load
Dimensions, feet (metres): 69.9 × 17.7 × 4.5 (21.3 × 5.4 × 1.4)
Main machinery: 2 diesels; 1,800 hp(m) (1.32 MW); 2 shafts
Speed, knots: 22
Range, n miles: 400 at 12 kt
Complement: 11
Guns: 1 Rheinmetall 20 mm. 3—12.7 mm MGs.
Radars: Surface search. Furuno; I-band

Comment: Details are for the largest design of patrol craft. There are numbers of this type of vessel used for inshore patrol work. All Police craft have P pennant numbers. Armaments vary.



P 01 10/2008*, *Michael Nitz* / 1353740



P 135 10/2008*, *Guy Toremans* / 1353231

1 + (1) SAMBONGHO CLASS (PATROL SHIP) (PSO)

Name	No	Builders	Commissioned
SAMBONGHO	5001	Hyundai, Ulsan	23 Apr 2002

Displacement, tons: 5,000 (approx) full load
Dimensions, feet (metres): To be announced
Main machinery: To be announced
Speed, knots: To be announced
Guns: 2—20 mm
Radars: Navigation. I-band
Helicopters: 1 large.

Comment: The largest ship in the Coast Guard. A second ship may be under construction.



SAMBONGHO 6/2006, *Korea Coast Guard* / 1159986

1 SALVAGE SHIP (ARSH)

Name	No	Builders	Commissioned
TAE PUNG YANG II	3002	Hyundai, Ulsan	31 Oct 1988

Displacement, tons: 3,900 standard
 Dimensions, feet (metres): 362.5 × 50.5 × 16.1 (110.5 × 15.4 × 4.9)
 Main machinery: 2 diesels; 2 shafts
 Speed, knots: 18
 Complement: 120
 Guns: 2—20 mm Vulcan Gatlings, 6—12.7 mm MGs.
 Radars: Surface search, I-band
 Helicopters: Platform for 1 large

Comment: Ordered from Hyundai in mid-1996. Also used for SAR operations.



TAE PUNG YANG II 6/2006, Korea Coast Guard / 1159984

3 SALVAGE SHIPS (ARSH)

Name	No	Builders	Commissioned
TAE PUNG YANG VI	3006		
TAE PUNG YANG VII	3007	Hanjin Heavy Industries, Pusan	28 Aug 2006
TAE PUNG YANG VIII	3009		

Displacement, tons: 4,000 (approx) full load
 Dimensions, feet (metres): 362.5 × 50.5 × 16.1 (110.5 × 15.4 × 4.9)
 Main machinery: 2 SEMT Pielstick 12PA6B STC diesels; 2 shafts
 Speed, knots: 21
 Range, n miles: 4,500 at 15 kt
 Complement: 120
 Guns: 1 20 mm 2 12.7 mm MGs
 Radars: Navigation, I-band.
 Helicopters: Platform for 1 large.

Comment: Three new multipurpose EEZ patrol and salvage ships believed to be of the same class. Details are based on those of *Tae Pung Yang II* and may be different.



TAE PUNG YANG VI 10/2006, Guy Toremans / 1353232

2 SALVAGE SHIPS (ARSH)

Name	No	Builders	Commissioned
JAEMIN VII	1507	Hanjin Heavy Industries, Pusan	
JAEMIN VIII	1508	Hyundai, Ulsan	20 Oct 2005

Displacement, tons: 2,728 full load
 Dimensions, feet (metres): 320.5 × 45.9 × 14.1 (97.7 × 14.0 × 4.3)
 Main machinery: 2 diesels; 2 shafts
 Speed, knots: To be announced
 Range, n miles: 4,500 at 15 kt
 Guns: 1—20 mm, 2—12.7 mm MGs.
 Radars: Navigation: I-band.

Comment: Two new salvage ships reported to be of the same class. Details are those published for *Jaemin VII*.



JAEMIN VII 6/2006, Korea Coast Guard / 1159983

Kuwait

**Country Overview**

Formerly a British protectorate, the Kingdom of Kuwait gained independence in 1961. Situated on the northwestern coast of the Gulf, it is bordered to the north by Iraq and to the south by Saudi Arabia. The country's total area, including the islands of Bubiyan, Warbah, and Faylakah, is 6,880 square miles. It has a 269 n mile coastline with the Gulf. The capital, largest city and principal port is Kuwait City. The country was annexed by Iraq from August 1990 to February 1991 when the country was liberated. Territorial seas (12 n miles) are claimed. An EEZ has not been claimed.

Headquarters Appointments

Commander of the Navy:
 Major General Ahmed Youssef Al Mulla
 Deputy Commander of the Navy:
 Brigadier Marzouk Hassan al Bader

Personnel

2009: 2,700 (including 500 Coast Guard)

Aviation

The Air Force operates five Eurocopter AS 532C Cougar helicopters armed with Exocet AM 39 ASMs and 40 F/A 18C/D Hornets.

Bases

Navy: Ras Al Qalayah
 Coast Guard: Shuwaikh, Umm Al-Haiyan, Al-Bida

PATROL FORCES

Notes: There is a requirement for two Fast Missile Strike Craft. This programme has superseded plans to acquire offshore patrol vessels armed with SSMs. The outline requirement calls for craft of 57-72 m.

1 TNC 45 TYPE (FAST ATTACK CRAFT—MISSILE) (PGGF)

Name	No	Builders	Commissioned
AL SANBOUK	P 4505	Lürssen, Vegesack	26 Apr 1984

Displacement, tons: 255 full load
 Dimensions, feet (metres): 147.3 × 23 × 7.5
 (44.9 × 7 × 2.3)
 Main machinery: 4 MTU 16V 538TB92 diesels; 13,640 hp(m)
 (10 MW) sustained; 4 shafts
 Speed, knots: 41. Range, n miles: 1,800 at 16 kt
 Complement: 35 (5 officers)

Missiles: SSM: 4 Aerospatiale MM 40 Exocet; inertial cruise, active radar homing to 70 km (40 n miles) at 0.9 Mach, warhead 165 kg; sea-skimmer

Guns: 1 OTO Melara 3 in (76 mm)/62 compact; 85 rds/min to 16 km (8.6 n miles) anti-surface; 12 km (6.5 n miles) anti-aircraft; weight of shell 6 kg.
 2 Breda 40 mm/70 (twin); 300 rds/min to 12.5 km (6.6 n miles); weight of shell 0.96 kg.

Countermeasures: Decoys: CSEE Dagaia; IR flares and chaff, H/J-band
 ESM: Racal Cutless, intercept.

Weapons control: PEAB 9LV 228 system; Link Y; CSEE Lynx optical sight.

Radars: Air/surface search: Ericsson Sea Giraffe 50HC; G/H-band

Fire control: Philips 9LV 200, J-band.
 Navigation: Decca TM 1228C; I-band.



AL SANBOUK 3/2003, A Sharma / 0568872

Programmes: Six ordered from Lürssen in 1980 and delivered in 1983-84.

Operational: *Al Sanbouk* escaped to Bahrain when the Iraqis invaded in August 1990, but the rest of this class

was taken over by the Iraqi Navy, and either sunk or severely damaged by Allied forces in February 1991. The ship was refitted by Lürssen in 1995 and again in 2004.

8 UM ALMARADIM (COMBATTANTE I) CLASS (PBM)

Name	No	Builders	Launched	Commissioned
UM ALMARADIM	P 3711	CMN, Cherbourg	27 Feb 1997	31 July 1998
OUHA	P 3713	CMN, Cherbourg	29 May 1997	31 July 1998
FAILAKA	P 3715	CMN, Cherbourg	29 Aug 1997	19 Dec 1998
MASKAN	P 3717	CMN, Cherbourg	6 Jan 1998	19 Dec 1998
AL-AHMADI	P 3719	CMN, Cherbourg	2 Apr 1998	1 July 1999
ALFAHAHEEL	P 3721	CMN, Cherbourg	16 June 1998	1 July 1999
AL-YARMOUK	P 3723	CMN, Cherbourg	3 Mar 1999	7 June 2000
GAROH	P 3725	CMN, Cherbourg	June 1999	7 June 2000

Displacement, tons: 245 full load
Dimensions, feet (metres): 137.8 oa; 121.4 wl x 26.8 x 8.2 (42; 37 x 8.2 x 1.9)
Main machinery: 2 MTU 16V 538 TB93 diesels; 4,000 hp(m) (2.94 MW); 2 Kamewa waterjets
Speed, knots: 30 **Range, n miles:** 1,350 at 14 kt
Complement: 29 (5 officers)

Missiles: SSM: 4 BAe Sea Skua (2 twin). Semi-active radar homing to 15 km (8.1 n miles) at 0.9 Mach
SAM: Sadral sextuple launcher fitted for only.
Guns: 1 Otobreda 40 mm/70; 120 rds/min to 12.5 km (6.8 n miles); weight of shell 0.96 kg.
 1 Giat 20 mm M 621. 2 – 12.7 mm MGs
Countermeasures: Decoys: 2 Dagaie Mk 2 chaff launchers fitted for only.
ESM: Thomson-CSF DR 3000 S1; intercept.
Combat data systems: Thomson-CSF TAVITAC NT; Link Y.
Weapons control: CS Defence Najir Mk 2 optronic director
Radars: Air/surface search: Thomson-CSF MRR; 3D; G-band.
Fire control: BAe Seaspray Mk 3; I/J-band (for SSM).
Navigation: Litton Marine 20V90, I-band

Programmes: Contract signed with CMN Cherbourg on 27 March 1995. First steel cut 9 June 1995. Names are taken from former Kuwaiti patrol craft.

Structure: Late decisions were made on the missile system which has been fitted in the last pair on build and to the remainder from 2000. Provision is also made for Simbad SAM and Dagaie decoy launchers, which may be fitted later. Positions of smaller guns are uncertain.

Operational: Training done in France. The aim is to have 10 crews capable of manning the eight ships. First four arrived in the Gulf in mid-August 1999, second four arrived in mid-2000.



AL-AHMADI

3/2007, Edward McDonnell / 1170189



OUHA

3/2003, A Sharma / 1133078

1 FPB 57 TYPE (FAST ATTACK CRAFT—MISSILE) (PGGF)

Name	No	Builders	Commissioned
ISTIQLAL	P 5702	Lürssen, Vegesack	9 Aug 1983

Displacement, tons: 410 full load
Dimensions, feet (metres): 190.6 x 24.9 x 8.9 (58.1 x 7.6 x 2.7)
Main machinery: 4 MTU 16V 956 TB91 diesels; 15,000 hp(m) (11 MW) sustained; 4 shafts
Speed, knots: 36
Range, n miles: 1,300 at 30 kt
Complement: 40 (5 officers)

Missiles: SSM: 4 Aerospatiale MM 40 Exocet; inertial cruise; active radar homing to 70 km (40 n miles) at 0.9 Mach; warhead 165 kg; sea-skimmer
Guns: 1 OTO Melara 3 in (76 mm)/62 compact; 85 rds/min to 16 km (8.6 n miles) anti-surface; 12 km (6.5 n miles) anti-aircraft, weight of shell 6 kg.
 2 Breda 40 mm/70 (twin); 300 rds/min to 12.5 km (6.6 n miles); weight of shell 0.96 kg.
Mines: Fitted for minelaying
Countermeasures: Decoys: CSEE Dagaie trainable mounting; automatic dispenser; IR flares and chaff; H/J-band.
ESM: Racal Cutlass; radar intercept.
ECM: Racal Cygnus, jammer.
Weapons control: PEAB 9LV 228 system; Link Y; CSEE Lynx optical sight.
Radars: Surface search: Marconi S 810 (after radome); I-band; range 43 km (25 n miles).
Navigation: Decca TM 1226C; I-band.
Fire control: Philips 9LV 200; J-band

Programmes: Two ordered from Lürssen in 1980

Operational: *Istiqlal* escaped to Bahrain when the Iraqis invaded in August 1990. The second of this class was captured and sunk in February 1991. Having been laid up since 1997 *Istiqlal* was refitted at Lürssen 2003–2005. In addition to operational roles, it is also used as a training ship.



ISTIQLAL

4/2005, Michael Nitz / 1121416

0 + (10) MKV CLASS (INTERCEPTION CRAFT) (PBF)

Displacement, tons: 54 full load
Dimensions, feet (metres): 90.0 x 18.0 x 4.75 (27.4 x 5.5 x 1.5)
Main machinery: 2 MTU 12V 396 TE94 diesels; 4,500 hp (3.36 MW); 2 Kamewa waterjets
Speed, knots: 45
Range, n miles: 600 at 35 kt
Complement: 5 plus 16 troops
Guns: 1 Rheinmetall MLG 27 mm (remotely operated).
Countermeasures: ESM. To be announced
Radars: Navigation: I-band

Comment: The US Congress was advised on 17 December 2005 of the possible sale of 12 (later reduced to 10) interception craft. With a higher superstructure, the craft are to be a modified version of the US MKV Pegasus class and are to be built by US Marine Inc, Gulfport, Mississippi. The keel of the first of class is expected to be laid in 2009.



MKV (US colours)

4/2003, A Sharma / 0512143

AUXILIARIES

1 SAWAHIL CLASS (SUPPORT SHIP)

AL DORRAR (ex-Qaruh, ex-Sawahil 35) S 5509

Measurement, tons: 545 dwt
Dimensions, feet (metres): 181.8 x 65.6 x 6.6 (55.4 x 20 x 2)
Main machinery: 2 diesels; 2,400 hp(m) (1.76 MW); 2 shafts
Speed, knots: 9
Complement: 40
Guns: 2 – 12.7 mm MGs
Radars: Navigation: Racal Decca; I-band

Comment: This is a Sawahil class oil rig replenishment and accommodation ship which was built in South Korea in 1986. She escaped to Bahrain during the Iraqi invasion, and is back in service. High-level helicopter platform aft. Used as a utility transport. Refitted in 1996/97.



AL DORRAR

3/2007, Edward McDonnell / 1170188

COAST GUARD

PATROL FORCES

Headquarters Appointments

Director of Coast Guard:
Brigadier Jassim al Failakia

16 VICTORY TEAM P 46 CLASS (PATROL CRAFT) (PBF)

Displacement, tons: 8.5
Dimensions, feet (metres): 45.9 x 10.6 x 2.6 (14.0 x 3.23 x 0.8)
Main machinery: 2 Yanmar 6CX diesels; 930 hp (690 kW); 2 Amoson ASD 8 surface drives
Speed, knots: 52 Range, n miles: 200 at 50 kt
Complement: 4
Guns: 2—12.7 mm MGs.
Radars: Navigation.

Comment: Contract for 16 craft signed in April 2004 with delivery of the final vessel expected by mid-2006. The Victory Team of Dubai design is a twin-stepped deep-‘vee’ monohull developed from its offshore power boats. The hull, deck and internal assembly are built from a sandwich composite comprising a glass fibre, kevlar and carbon mix to provide structural integrity at a minimum weight. The cockpit is protected by 17 mm Dyneema Ballistic panelling.



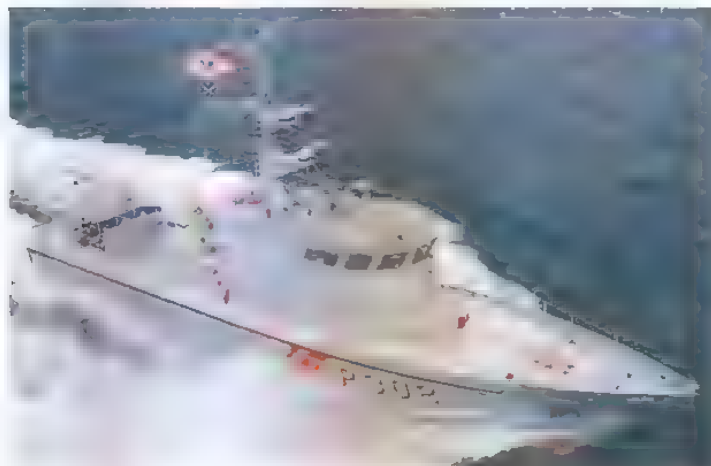
P 46 3/2005, Victory Team / 1127034

4 INTTISAR (OPV 310) CLASS (PB)

Name	No	Builders	Commissioned
INTTISAR	P 301	Australian Shipbuilding Industries	20 Jan 1993
AMAN	P 302	Australian Shipbuilding Industries	20 Jan 1993
MAIMON	P 303	Australian Shipbuilding Industries	7 Aug 1993
MOBARK	P 304	Australian Shipbuilding Industries	7 Aug 1993

Displacement, tons: 150 full load
Dimensions, feet (metres): 103.3 oa; 88.9 wl x 21.3 x 6.6 (31.5, 27.1 x 6.5 x 2)
Main machinery: 2 MTU 16V 396T894 diesels; 5,800 hp(m) (4.26 MW) sustained; 2 shafts, 1 MTU 8V 183TE62 diesel; 750 hp(m) (550 kW) maximum; 1 Hamilton 422 water-jet
Speed, knots: 28. Range, n miles: 300 at 28 kt
Complement: 11 (3 officers)
Guns: 1 Oerlikon 20 mm, 1—12.7 mm MG
Radars: Surface search: 2 Racal Decca, I-band

Comment: First two ordered from Australian Shipbuilding Industries in 1991. Second pair ordered in July 1992. Steel hulls, aluminium superstructure. The third engine drives a small waterjet to provide a loiter capability. Carries an RIB. Used by the Coast Guard.



AMAN 1992, Australian Shipbuilding Industries / 0081178

10 SUBAHI CLASS (PB)

Name	No	Builders	Commissioned
RAYYAN	P 300	OCEA, St Nazaire	23 Aug 2005
SUBAHI	P 308	OCEA, St Nazaire	6 Aug 2003
JABERI	P 309	OCEA, St Nazaire	Dec 2003
SAAD	P 310	OCEA, St Nazaire	Feb 2004
AHMADI	P 311	OCEA, St Nazaire	Mar 2004
NAIF	P 312	OCEA, St Nazaire	May 2004
THAFIR	P 313	OCEA, St Nazaire	July 2004
MARZOUG	P 314	OCEA, St Nazaire	Sep 2004
MASH'NOOR	P 315	OCEA, St Nazaire	Jan 2005
WADAH	P 316	OCEA, St Nazaire	May 2005

Displacement, tons: 116 full load
Dimensions, feet (metres): 115.5 x 22.3 x 4.0 (35.2 x 6.8 x 1.2)
Main machinery: 2 MTU 12V 4000 M70 diesels, 4,600 hp (3.43 MW); 2 Kamewa waterjets
Speed, knots: 32
Range, n miles: 300 at 28 kt
Complement: 11 (3 officers)
Guns: 1 Oerlikon 20 mm, 2—12.7 mm MGs
Radars: Sperry Bridgmaster E; I-band.

Comment: Built by OCEA, France based on Al Shaheed class design. Aluminium construction. Operated by the Coast Guard. P 300 is a VIP variant equipped with three cabins.



MARZOUG 8/2004, B Prézelin / 1133080



RAYYAN 7/2006, B Prézelin / 1040681

3 INSHORE PATROL CRAFT (PBR)

KASSIR T 205 DASTOOR T 210 MAHROOS T 215

Displacement, tons: to be announced
Dimensions, feet (metres): 70.9 x 19.5 x 4.9 (21.6 x 5.96 x 1.5)
Main machinery: 2 MTU 12V 183TE92 diesels; 1,800 hp (1.45 MW); 2 shafts
Speed, knots: 25. Range, n miles: 325 at 25 kt
Complement: 3 + 41 passengers
Radars: Navigation: to be announced.

Comment: Order for three craft for the Coast Guard announced on 7 January 2003. Based on the 22 m craft in service with the New South Wales Police, the vessels were constructed by Austal Ships subsidiary, Image Marine and delivered in June 2004. Aluminium hull.



DASTOOR 6/2004, Austal Ships / 0587772

3 AL SHAHEED CLASS (PB)

Name	No	Builders	Commissioned
AL SHAHEED	P 305	OCEA, Les Sables d'Olonne	July 1997
BAYAN	P 306	OCEA, Les Sables d'Olonne	Apr 1999
DASMAN	P 307	OCEA, Les Sables d'Olonne	2001

Displacement, tons: 104 full load
Dimensions, feet (metres): 109.3 x 23 x 4 (33.3 x 7 x 1.2)
Main machinery: 2 MTU 12V 396TE94; 4,352 hp(m) (3.2 MW) sustained; 2 shafts
Speed, knots: 30 Range, n miles: 360 at 25 kt
Complement: 11 (3 officers)
Guns: 1 Oerlikon 20 mm, 2—12.7 mm MGs
Radars: Surface search: Racal Decca 20V 90 TA, E/F-band
Navigation: Racal Decca Bridgmaster ARPA, I-band.

Comment: Built by OCEA, France to FPB 100K design. Operated by the Coast Guard.



AL SHAHEED 10/1997, Ships of the World / 0012718

33 AL-SHAALI TYPE (INSHORE PATROL CRAFT) (PBF)

Comment: Ten 10 m and 23 8.5 m patrol craft built by Al-Shaali Marine, Dubai, and delivered in June 1992. Also used by UAE Coast Guard. More Rapid Intervention patrol craft are to be acquired in due course.

12 MANTA CLASS (INSHORE PATROL CRAFT) (PBF)

1B 1501–1523 series

Displacement, tons: 10 full load
Dimensions, feet (metres): 45.9 × 12.5 × 2.3 (14 × 3.8 × 0.7)
Main machinery: 2 Caterpillar 3208 diesels; 810 hp(m) (595 kW) sustained, 2 shafts
Speed, knots: 40. **Range, n miles:** 180 at 35 kt
Complement: 4
Guns: 3 Herstal M2HB 12.7 mm MGs.
Radars: Surface search: Furuno; I-band.

Comment: Original craft ordered in September 1992 from Simonneau Marine and delivered in 1993. Aluminium construction. This version has two inboard engines. Pennant numbers are in odd number sequence. All the class reported to be inoperable due to technical problems. An underlying cause may be that the boats were fitted with inboard engines although designed for outboards.



MANTA 1501

11/1996 / 0012719

6 COUGAR ENFORCER 40 CLASS (INSHORE PATROL CRAFT) (PBF)

Displacement, tons: 5.7 full load
Dimensions, feet (metres): 40 × 9 × 2.1 (12.2 × 2.8 × 0.80)
Main machinery: 2 Sabre 380 S diesels; 760 hp(m) (559 kW); 2 Arneson ASD 8 surface drives; 2 shafts
Speed, knots: 45
Range, n miles: 250 at 35 kt
Complement: 4
Guns: 1 – 12.7 mm MG.
Radars: Surface search: Koden, I-band.

Comment: First one completed in July 1996 for the Coastguard by Cougar Marine, Worsash. The craft has a V monohull design.



ENFORCER 40

7/1996, Cougar Marine / 0081179

17 COUGAR TYPE (INSHORE PATROL CRAFT) (PBF)

Comment: Three Cat 900 (32 ft) three Predator 1100 (35 ft) and three Predator 1000 (33 ft) all powered by two Yamaha outboards (400 hp(m) (294 kW)). Four Type 1200 (38 ft) and four Type 1300 (41 ft) all powered by two Sabre diesels (780 hp(m) (569 kW)). All based on the high-performance planing hull developed for racing, and acquired in 1991–92. Most have a 7.62 mm MG and a Kroden I-band radar. Used by the Coast Guard.



COUGAR 1200

1991, Cougar Marine / 0081180

AUXILIARIES

Notes: (1) A 95 m ship of about 2,000 tons is required to act as a support ship for patrol vessels. It would also be equipped to undertake a training role. Revised bids were submitted in June 2001 but there have been no further developments.
 (2) There is a logistic craft P 140.
 (3) There is an ex-oilrig supply vessel *Abdul Jaal* with pennant number B 45.



P 140

10/2002 / 0587770

1 LOADMASTER MK 2 (LOGISTIC SUPPORT CRAFT) (LCU)

SAFFAR (ex-Jalbout) L 403

Displacement, tons: 420 full load
Dimensions, feet (metres): 108.3 × 33.5 × 5.7 (33.0 × 10.2 × 1.75)
Main machinery: 2 Caterpillar V12 diesels; 1,000 hp (745 kW); 2 props
Speed, knots: 10
Complement: 7 (1 officer)
Radars: Navigation I-band.

Comment: Built by Fairley Marine Cowes, UK and entered service in 1985. Captured by Iraqi forces in 1990 and subsequently recovered and reactivated in 1992.



SAFFAR

5/2001 / 0525907

2 AL TAHADDY CLASS (LCU)

Name	No	Builders	Commissioned
AL SOUMOOD	L 401	Singapore SBEC	July 1994
ALTAHADDY	L 402	Singapore SBEC	July 1994

Displacement, tons: 215 full load
Dimensions, feet (metres): 141.1 × 32.8 × 6.2 (43 × 10 × 1.9)
Main machinery: 2 MTU diesels; 2 shafts
Speed, knots: 13
Complement: 12
Military lift: 80 tons
Radars: Navigation: Racal Decca; I-band.

Comment: Ordered in 1993 and launched on 15 April 1994. Multipurpose supply ships with cargo tanks for fuel, fresh water, refrigerated stores and containers on the main deck. Has 3 ton crane. Capable of beaching. Used by the Coast Guard.



AL TAHADDY

1/1999, Maritime Photographic / 0053294

1 LANDING SUPPLY CRAFT (LCU)

L 404

Measurement, tons: 300 dwt
Dimensions, feet (metres): 160.8 × 7 × 7 (49.0 × 7 × 7)
Main machinery: 2 diesels; 2 shafts
Speed, knots: 12
Complement: 12
Radars: Navigation: I-band.

Comment: Contract for the design and build of a landing craft signed with Singapore Technologies Marine Ltd (ST Marine) on 8 October 2004. The multipurpose vessel is to be used for transport and supply operations as well as law enforcement duties in the Arabian Gulf. In addition to carrying roll-on roll-off goods on the main deck, the vessel is also designed to transport liquid, refrigeration and general cargoes. Delivery of the ship was made in late 2005.

1 SAWAHIL CLASS (AGH)**SAWAHIL** (ex-Sawahil 50) B 50

Measurement, tons: 545 dwt
Dimensions, feet (metres): 181.8 × 31.5 × 6.6 (55.4 × 9.0 × 2)
Main machinery: 2 diesels; 2,400 hp(m) (1.76 MW); 2 shafts
Speed, knots: 9
Complement: 40
Guns: 2 – 12.7 mm MGs.
Radars: Navigation Rascal Decca, I-band

Comment: This is a Sawahil class oil rig replenishment and accommodation ship which was built in South Korea in 1986 and taken on by the Coast Guard in 1990. She escaped to Bahrain during the Iraqi invasion, and is back in service. High-level helicopter platform aft. Used as a utility transport. Refitted in 1996/97. A similar vessel, *Al Dorrar*, is operated by the navy.



SAWAHIL CLASS

11/1997, Kuwait Navy / 0012/71

Latvia**LATVIJAS JURAS SPEKI****Country Overview**

The Republic of Latvia regained independence in 1991 after 51 years as a Soviet republic. Situated in northeastern Europe, the country has an area of 24,938 square miles and borders to the north with Estonia, east with Russia and to the south with Belarus and Lithuania. It has a 286 n mile coastline with the Baltic Sea. Riga is the capital, largest city and principal port. Territorial seas (12 n miles) are claimed but while it has claimed a 200 n mile Exclusive Economic Zone (EEZ), its limits have not been fully defined by boundary agreements.

Headquarters Appointments

Commander of the Navy:
 Commander Aleksandrs Pavlovicis

Bases

Liepaja, Ventspils, Riga

Personnel

2009: 600 Navy (including Coast Guard)

Coastal Surveillance

Work began in 2002 on a maritime sea surveillance system which includes Swedish PS2-39 radars at Jumalciens, Liepaja, Paviosta, Ventspils, Ovisi, Mikoltornis, Kolka

and Riga. The system is to become operational in 2010. The Latvian AIS (Automatic Identification System) was commissioned in 2005 and is part of the HELCOM network that links other Baltic and Scandinavian navies. The Maritime Search and Rescue Coordination Centre (MRCC) is based at Riga.

Coast Guard

These ships have a diagonal thick white and thin white line on the hull, and have KA numbers. They operate as part of the Navy.

PATROL FORCES**4 STORM CLASS (PB)**

Name	No	Builders	Commissioned
ZIBENS (ex-Djervi)	P 01 (ex-P 966)	Westermoen, Mandal	1966
LODE (ex-Hvass)	P 02 (ex-P 972)	Westermoen, Mandal	1966
LINGA (ex-Gnist)	P 03 (ex-P 979)	Bergens Mek Verksteder	1967
BULTA (ex-Traust)	P 04 (ex-P 973)	Bergens Mek Verksteder	1967

Displacement, tons: 135 full load
Dimensions, feet (metres): 120 × 20 × 5 (36.5 × 6.1 × 1.5)
Main machinery: 2 MTU MB 872A diesels; 7,200 hp(m) (5.3 MW) sustained; 2 shafts
Speed, knots: 32
Complement: 20 (4 officers)
Guns: 1 Bofors 40 mm/60 (P 04). 1 TAK Bofors 76 mm; 1 Bofors 40 mm/70 (P 01, P 02 and P 03).
Radars: Surface search: Rascal Decca TM 1226; I-band.

Comment: P 04 disarmed and acquired from Norway on 13 December 1994 as a gun patrol craft. Recommissioned 1 February 1995 at Liepaja. 40 mm gun fitted aft in 1998. P 01, P 02 and P 03 transferred from Norway and recommissioned 11 June 2001. Service lives extended to 2010. Other craft given to Lithuania and Estonia.



ZIBENS

7/2007, Michael Nitz / 1166/51



LINGA

6/2006, E & M Laursen / 1166811

0 + 5 SWATH PATROL SHIPS (PB)

Displacement, tons: 125 full load
Dimensions, feet (metres): 84.1 × 46.8 × 8.9 (25.65 × 14.26 × 2.7)
Main machinery: Diesel-electric: 2 MAN diesels, 2 motors; 2 shafts
Speed, knots: 20
Complement: To be announced
Guns: To be announced.
Radars: To be announced.

Comment: Contract signed with Abeking & Rasmussen, Lemwerder, on 23 June 2008 for the construction of five SWATH patrol vessels. The ships are to be constructed at Lemwerder and delivered in co-operation with Riga Shipyard. The vessels are derived from the design of SWATH pilot boats, on which indicative details are based, which have been in operation since 1999. The roles of the ships are to be patrol and surveillance of territorial waters and EEZ and feature a modular mission bay in the forward section. Delivery of the first-of-class is planned in December 2010.



SWATH PATROL VESSEL

4/2007, Guy Toremans / 1335256

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jfs.janes.com

MINE WARFARE FORCES

5 ALKMAAR (TRIPARTITE) CLASS (MINEHUNTERS) (MHC)

Name	No	Laid down	Launched	Commissioned
IMANTA (ex-Harlingen)	M 04 (ex-M 854)	30 Nov 1981	9 July 1983	12 Apr 1984
VIESTURS (ex-Scheveningen)	M 05 (ex-M 855)	24 May 1982	2 Dec 1983	18 July 1984
TALIVALDIS (ex-Dordrecht)	M 06 (ex-M 852)	5 Jan 1981	26 Feb 1983	16 Nov 1983
VISVALDIS (ex-Alkmaar)	M 07 (ex-M 850)	30 Jan 1979	18 May 1982	28 May 1983
RŪSINĀS (ex-Delfzijl)	M 08 (ex-M 851)	29 May 1980	29 Oct 1982	17 Aug 1983

Displacement, tons: 562 standard; 595 full load
Dimensions, feet (metres): 168.9 × 29.2 × 8.5 (51.5 × 8.9 × 2.6)
Main machinery: 1 Stork Wärtsilä A-RUB 215X-12 diesel, 1,860 hp(m) (1.35 MW) sustained; 1 shaft; LIPS cp props; 2 active rudders; 2 motors; 240 hp(m) (179 kW); 2 bow thrusters
Speed, knots: 12 diesel; 7 electric
Range, n miles: 3,000 at 12 kt
Complement: 29-42 depending on task

Guns: 1 Gat 20 mm. 2 – 12.7 mm MGs.
Countermeasures: MCM: 2 PAP 104 remote-controlled submarines.
Combat data systems: Signaal Sowaco IX. SATCOM
Radars: Navigation. Racal Decca TM 1229C or Consilium Selesmar MM 950, I-band.
Sonars: Thomson Sintra DUBM 21A; hull-mounted, minehunting; 100 kHz (±10 kHz).

Programmes. Originally procured for the Royal Netherlands Navy, these ships were part of the Netherlands commitment to a tripartite co-operative plan between Netherlands, Belgium and France for GRP-hulled minehunters. All five ships built by van der Giessen-de Noord. Ex-Alkmaar, Delfzijl and Dordrecht were withdrawn from RNLN service in 2000 and Harlingen and Scheveningen in 2003. Imanta was handed over on 6 March 2007, Viesturs on 5 September 2007 and Talivaldis in January 2008, Visvaldis in October 2008 and Rūsinās in June 2009.

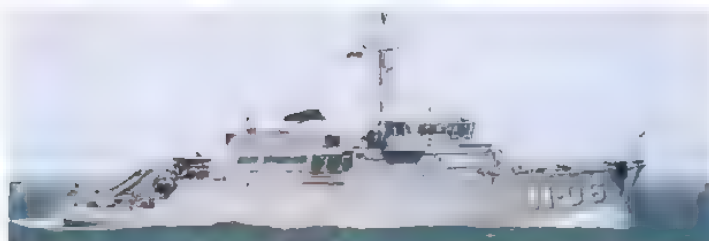
Modernisation: The ships are to be overhauled before entering Latvian service and a mid-life upgrade may also be considered.

Structure: A 5 ton container can be shipped, stored for varying tasks-research; patrol; extended diving, drone control

Operational: Endurance, 15 days. Automatic radar navigation system. Automatic data processing and display. EVEC 20. Decca HI-fix positioning system. Alcatel dynamic positioning system.



IMANTA 2/2007, Michael Nitz / 1190986



TALIVALDIS 5/2008, Frank Findler / 1335255

AUXILIARIES

1 VIDAR CLASS (MCCS/AG)

Name	No	Builders	Launched	Commissioned
VIRSĀITIS (ex-Vale)	A 53 (ex-N 53)	Mjellem and Karlsen, Bergen	5 Aug 1977	10 Feb 1978

Displacement, tons: 1,500 standard; 1,673 full load
Dimensions, feet (metres): 212.6 × 39.4 × 13.1 (64.8 × 12 × 4)
Main machinery: 2 Wichmann 7AX diesels; 4,200 hp(m) (3.1 MW); 2 shafts; auxiliary motor; 425 hp(m) (312 kW); bow thruster
Speed, knots: 14
Complement: 50
Guns: 1 Bofors 40 mm/70; 300 rds/min to 12 km (6.6 n miles); weight of shell 0.96 kg.
Weapons control: TVT optronic director
Radars: Surface search: 2 Racal Decca TM 1226, I-band.
Sonars: Simrad; hull-mounted; search and attack; medium/high frequency

Programmes: Decommissioned from Norwegian Navy in 2001 and transferred to Latvia on 27 January 2003.

Operational: Former minelayer modified to undertake mine countermeasures command and support roles. Additional tasks are likely to include training and support of diving operations.



VIRSĀITIS 9/2007, Maritime Photographics / 1167976

1 GOLIAT CLASS (PROJECT 667R) (ATA)

PERKONS A 18 (ex-H 18)

Displacement, tons: 150 full load
Dimensions, feet (metres): 70.2 × 20 × 8.5 (21.4 × 6.1 × 2.6)
Main machinery: 1 Buckau-Wolf 8NVD diesel, 300 hp(m) (221 kW); 1 shaft
Speed, knots: 9
Complement: 8 (2 officers)

Comment: Built at Gdynia in the 1960s and transferred from Poland 16 November 1993 at Liepāja



PERKONS 4/1995, Hartmut Ehlers / 0506739

1 LOGISTICS VESSEL (AKS/AXL)

Name	No	Builders	Commissioned
VARONIS (ex-Buyskes)	A 90 (ex-A 90A)	Boele's Scheepswerven	9 Mar 1973

Displacement, tons: 967 standard; 1,033 full load
Dimensions, feet (metres): 196.6 × 36.4 × 12 (60 × 11.1 × 3.7)
Main machinery: Diesel-electric; 3 Paxman 12 RPH diesel generators; 2,100 hp (1.57 MW); 1 motor; 1,400 hp(m) (1.03 MW); 1 shaft
Speed, knots: 13.5. **Range, n miles:** 3,000 at 11.5 kt
Complement: 43 (6 officers)
Radars: Navigation; Racal Decca 1229, I-band.
Sonars: Side scanning and wreck search.

Comment: Originally designed and operated as a hydrographic vessel by the Royal Netherlands Navy from which she was decommissioned in 2003. Donated to Latvia on 8 November 2004 for use as a logistic and training vessel. Hydrographic launches were not transferred and the ship is fitted with an inflatable boat



VARONIS 7/2007, Freddy Phillips / 1335254

COAST GUARD

1 LOKKI CLASS (PB)

TIIRA

Displacement, tons: 76 full load
Dimensions, feet (metres): 87.9 × 18 × 6.2 (26.8 × 5.5 × 1.9)
Main machinery: 2 MTU BV 396TB82 diesels; 1,740 hp(m) (1.28 MW) sustained
 2 MTU BV 396TB84 diesels; 2,100 hp(m) (1.54 MW) sustained; 2 shafts
Speed, knots: 25
Complement: 6

Comment: Donated by Finland in 2001. Armament and sonar removed. Operated by the State Border Security Service.



LOKKI class (Finnish colours) 6/2001, Finnish Navy / 0114723

5 KBV 236 CLASS (WPB)

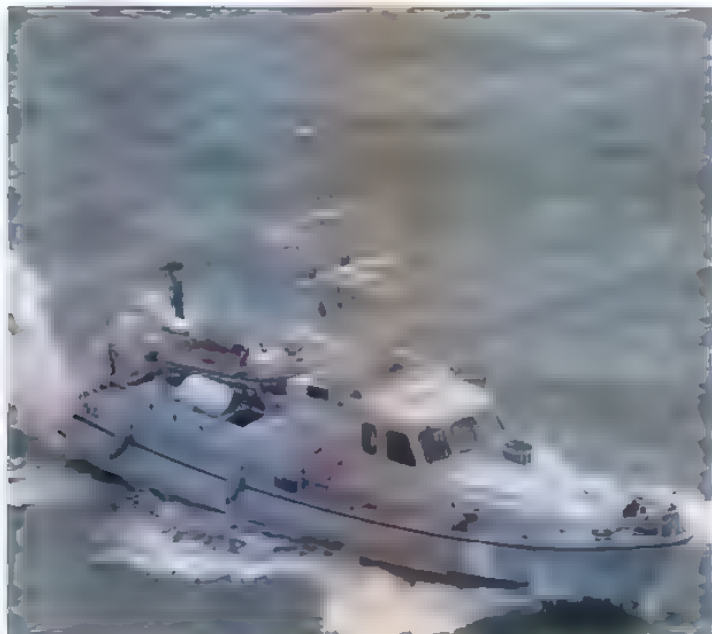
KRISTAPS KA 01 (ex-KBV 244) **AUSMA** KA 07 (ex-KBV 260) **KLINTS** KA 09 (ex-KBV 250)
GAISMA KA 06 (ex-KBV 249) **SAULE** KA 08 (ex-KBV 256)

Displacement, tons: 17 full load
Dimensions, feet (metres): 63 × 13.1 × 4.3 (19.2 × 4 × 1.3)
Main machinery: 2 Volvo Penta TMD 100C diesels, 526 hp(m) (387 kW); 2 shafts
Speed, knots: 20
Complement: 3 (1 officer)
Radars: Navigation: Raytheon or Furuno; I-band.

Comment: Former Swedish Coast Guard vessel built in 1964. First one recommissioned 5 March 1993, second pair 9 November 1993 and last pair 27 April 1994. KA 01, 06 and 09 are based at Bolderaja, 07 at Liepaja and 08 at Ventspils. Not all are identical. All belong to Coast Guard



GAISMA 8/2004, Guy Toremans / 0587773



SAULE 8/2006, Latvian Navy / 1164481

1 PATROL CRAFT (WPB)

ASTRA KA 14

Displacement, tons: 22 full load
Dimensions, feet (metres): 74.8 × 18.4 × 9.2 (22.8 × 5.6 × 2.8)
Main machinery: 3 Scania D91 1467M diesels; 1,850 hp (1.38 MW)
Speed, knots: 25
Range, n miles: 575 at 25 kt
Complement: 4 (1 officer)
Radars: Navigation: Furuno; I-band.

Comment: Built in Finland in 1996. Commissioned on 12 March 2001



ASTRA 4/2007, E & M Laursen / 1166813

2 HARBOUR PATROL CRAFT (WPB)

KA 10 **KA 11**

Displacement, tons: 9.6 full load (KA 10-11); 5.4 full load (KA 12)
Dimensions, feet (metres): 41.3 × 10.5 × 2 (12.6 × 3.2 × 0.6)
Main machinery: 1 3D6C diesel; 150 hp(m) (110 kW); 1 shaft
Speed, knots: 13
Complement: 2
Radars: Navigation: Furuno; I-band.

Comment: Former USSR craft acquired in 1993-94. KA 10 and 11 were Sverdlov class cruiser boats.



KA 11 9/1996, Hartmut Ehlers / 0506304

1 VALPAS CLASS (OFFSHORE PATROL VESSEL) (WPBO)

VALPAS

Displacement, tons: 545 full load
Dimensions, feet (metres): 159.1 × 27.9 × 12.5 (48.5 × 8.5 × 3.8)
Main machinery: 1 Werkspoor diesel; 2,000 hp(m) (1.47 MW); 1 shaft; cp prop
Speed, knots: 15
Complement: 18
Guns: 1 Oerlikon 20 mm.
Sonars: Simrad SS105; active scanning; 14 kHz.

Comment: An improvement on the *Silmā* design. Built by Laivateollisuus, Turku, and commissioned 21 July 1971. Ice strengthened. Donated by Finland on 25 September 2002 and operated by State Border Security Service.



VALPAS 5/2003, J Čížek / 0568321

LAND-BASED MARITIME AIRCRAFT

Numbers/Type: 2 Mi-8 MTV1 Hip H.
Operational speed: 124 kt (230 km/h)
Service ceiling: 16,400 ft (5,000 m)
Range: 324 n miles (600 km).
Role/Weapon systems: SAR aircraft acquired in 1999. Operated by the Air Force.



MI-8 4/2007, Freddy Phillips / 1168117



Lebanon

Country Overview

The Lebanese Republic gained independence from France in 1946 but was devastated by civil war between 1975–1991. Situated on the eastern shore of the Mediterranean Sea, it has an area of 4,015 square miles and is bordered to the north and east by Syria and to the south by Israel. It has a 121 n mile coastline with the Mediterranean Sea.

The capital, largest city and principal port is Beirut. Other important ports include Tripoli and Sidon. Territorial seas (12 n miles) are claimed but an EEZ is not claimed.

Headquarters Appointments

Navy Commander:
Rear Admiral Ali El Moallem

Personnel

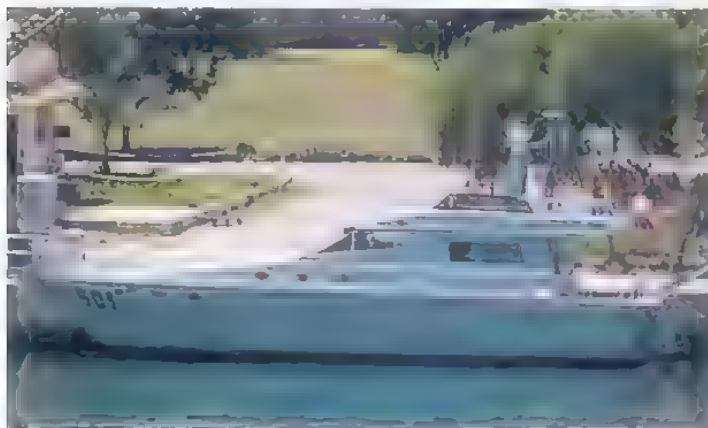
2009: 1,100 (395 officers)

Bases

Beirut (HQ), Jounieh

PATROL FORCES

Notes: (1) There is a patrol craft of unknown type with pennant number 501.
(2) Ten interceptor craft were donated by the UAE in 2008. There are four 14.5 m diesel-engined craft and six 12.5 m petrol-engined craft.



501

5/2006, Marco Ghiglino / 1164962

7 TRACKER MK 2 CLASS (COASTAL PATROL CRAFT) (PB)

TRIPOLI (ex-Attacker) 301 BYBLOS (ex-Chaser) 304 SARAFAND (ex-Swift) 307
JOUNIEH (ex-Fencer) 302 BEIRUT (ex-HunterII) 305
BATROUN (ex-Safeguard) 303 SIDON (ex-Striker) 306

Displacement, tons: 38 full load
Dimensions, feet (metres): 65.6 × 17 × 4.9 (20 × 5.2 × 1.5)
Main machinery: 2 Detroit 12V-71TA diesels; 840 hp (616 kW) sustained; 2 shafts
Speed, knots: 21 **Range, n miles:** 650 at 14 kt
Complement: 13 (1 officer)
Guns: 3 – 12.7 mm MGs
Raders: Surface search: Racal Decca 1216, I-band

Comment: All built at Cowes and Southampton. GRP construction. The ex-Royal Naval Units were originally commissioned in March 1983. Three transferred from UK on 17 July 1992 after serving as patrol craft for British bases in Cyprus. The other two were acquired in 1993. The two ex-UK Customs Craft (*Batroun* and *Sarafand*) were originally commissioned in 1979 and acquired in late 1993.



JOUNIEH

7/2006, Marco Ghiglino / 1164961

25 INSHORE PATROL CRAFT (PBR)

401 403–418 420–427

Displacement, tons: 6 full load
Dimensions, feet (metres): 26.9 × 8.2 × 2 (8.2 × 2.5 × 0.6)
Main machinery: 2 Sabre 212 diesels; 212 hp(m) (156 kW); 2 waterjets
Speed, knots: 22
Range, n miles: 154 at 22 kt
Complement: 4
Guns: 3 – 5.56 mm MGs

Comment: M-boot type used by the US Army on German rivers and 27 were transferred in January 1994. Called Combat Support Boats, there are 20 operational and five laid up. Two were decommissioned in 2002.



403

7/2006, Marco Ghiglino / 1164960

1 PATROL SHIP (PB)

AAMCHIT (ex-Bremen 2)

Measurement, tons: To be announced
Dimensions, feet (metres): 111.5 × 17.1 × 5.9 (34.0 × 5.2 × 1.8)
Main machinery: 2 diesels; 3,900 hp (2.9 MW); 2 shafts
Speed, knots: 28
Range, n miles: To be announced
Complement: To be announced

Comment: Former City of Bremen Maritime Police vessel built by Schiffswerft Ernst Menzer, Hamburg-Bergedorf in 1974 and transferred to Lebanon on 7 June 2007. The contract includes a training package.



AAMCHIT (German police colours)

8/2006, Frank Findler / 1167959

1 PATROL SHIP (PB)

NAQUORA (ex-Bremen 9)

Displacement, tons: 32 full load
Dimensions, feet (metres): 65.6 × 18.4 × 4.8 (20.0 × 5.6 × 1.45)
Main machinery: 2 MTU 12V 183TE92 diesels; 1,970 hp (1.5 MW); 2 shafts
Speed, knots: 32
Range, n miles: 300 at 25 kt
Complement: 6

Comment: Former City of Bremen Maritime Police vessel built by Fassmer Werft in 1992 and transferred to Lebanon on 7 June 2007. Aluminium construction. The contract includes a training package. The design includes space for a 3 m interceptor craft.



NAQUORA (outboard ship)

4/2007, Frank Findler / 1167958

1 PATROL SHIP (PB)

Name	No	Builders	Commissioned
TABARJA (ex-Bergen)	- (ex-Y 838)	Lurssen, Vegesack	19 May 1994

Displacement, tons: 126 full load
Dimensions, feet (metres): 91.2 x 19.7 x 4.6 (27.8 x 6.0 x 1.4)
Main machinery: 2 KHD TBD 234 diesels; 2,054 hp (1.51 MW); 2 shafts
Speed, knots: 16
Complement: 15

Comment: Former German Range Safety Craft donated by the German Navy on 17 June 2008



TABARJA (German colours)

6/2007, Michael Nitz / 1166144

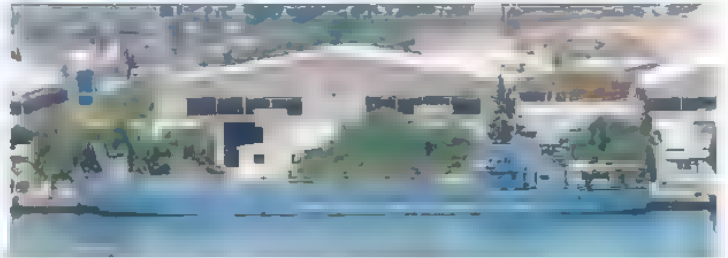
AMPHIBIOUS FORCES

2 FRENCH EDIC CLASS (LCT)

Name	No	Builders	Commissioned
SOUR	21	SFCN, Villeneuve la Garonne	28 Mar 1985
DAMOUR	22	SFCN, Villeneuve la Garonne	28 Mar 1985

Displacement, tons: 870 full load
Dimensions, feet (metres): 193.5 x 39.2 x 4.2 (59 x 12 x 1.3)
Main machinery: 2 SACM MGO 175 V12 M1 diesels; 1,200 hp (m) (882 kW); 2 shafts
Speed, knots: 10. **Range, n miles:** 1,800 at 9 kt
Complement: 20 (2 officers)
Military lift: 96 troops; 11 trucks or 8 APCs
Guns: 2 Oerlikon 20 mm, 1—81 mm mortar, 2—12.7 mm MGs, 1—762 mm MG
Radars: Navigation: Decca; I-band

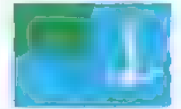
Comment: Both were damaged in early 1990 but repaired in 1991 and are fully operational. Used by the Marine Regiment formed in 1997.



DAMOUR

5/2006, Marco Ghiglini / 1164954

Libya



Country Overview

The Socialist People's Libyan Arab Jamahiriya is situated in north Africa. With an area of 679,362 square miles, it has a 956 n mile coastline with the Mediterranean Sea and is bordered to the east by Egypt, to the south by Sudan, Chad and Niger and to the west by Algeria and Tunisia. The capital and largest city is Tripoli, which, with Benghazi, is a principal port. Territorial seas (12 n miles) are claimed. An EEZ has not been claimed. The status of the Gulf of Sirte, which Libya claims as internal waters, is disputed by numerous states including USA, United Kingdom, France, Italy and Greece.

Headquarters Appointments

Chief of Staff Navy:

Rear Admiral Muhammad al Shaybani Ahmad al Suwahil

Headquarters Appointments—continued

Deputy Chief of Staff Navy
 Captain al-Din Mufti

Personnel

- (a) 2009: 8,000 officers and ratings, including Coast Guard
 (b) Voluntary service

Bases

Naval HQ at Al Khums.
 Operating Ports at Tripoli, Darnah (Derna) and Benghazi.
 Naval bases at Al Khums and Tobruq.
 Submarine base at Ras Hala
 Naval air station at Al Girdabiya.
 Naval infantry battalion at Sidi Bilal

Coast Defence

Batteries of truck-mounted SS-C-3 Styx missiles

General

Specialist teams in unconventional warfare are a threat and most Libyan vessels can lay mines, but overall operational effectiveness is very low, not least because of poor maintenance and stores support. Sanctions imposed by the UN in April 1992 were reported as 'destroying' the Fleet. The situation improved in late 1995 when mostly Ukrainian technicians were hired on maintenance contracts. Further progress was reported in 1998 and the situation could improve following the lifting of UN sanctions on 12 September 2003. The EU arms embargo was lifted on 11 October 2004 although export licences are still required.

SUBMARINES

Notes: Acquisition of up to two Type 836 diesel submarines from Russia is reported to be under consideration.

2 FOXTROT CLASS (PROJECT 641) (SS)

AL KHYBER 315	AL HUNAIN 316
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Displacement, tons: 1,950 surfaced; 2,475 dived
Dimensions, feet (metres): 299.5 x 24.6 x 19.7
 (91.3 x 7.5 x 6)

Main machinery: Diesel-electric; 3 Type 37-D diesels (1 x 2,700 and 2 x 1,350), 6,000 hp (m) (4.4 MW); 3 motors, 5,400 hp (m) (3.97 MW); 3 shafts; 1 auxiliary motor; 140 hp (m) (103 kW)

Speed, knots: 16 surfaced; 15 dived

Range, n miles: 20,000 at 8 kt surfaced, 380 at 2 kt dived

Complement: 75 (8 officers)

Torpedoes: 10—21 in (533 mm) (6 bow, 4 stern) tubes. SAET-60, passive homing to 15 km (8.1 n miles) at 40 kt; warhead 400 kg, and SET-65E, active/passive homing to 15 km (8.1 n miles) at 40 kt; warhead 205 kg or Type 53-56. Total of 22 torpedoes.

Mines: 44 in place of torpedoes.

Countermeasures: ESM Stop Light; radar warning

Radars: Surface search, SnoopTray; I-band.

Sonars: Merkules, hull-mounted, active; medium frequency.

Faniks, hull-mounted; passive

Programmes: Six of the class originally transferred from USSR; this last one in April 1982

Operational: Libyan crews trained in the USSR and much of the maintenance was done by Russian personnel. No routine patrols have been seen since 1984 although both boats have been reported to conduct surface patrols. One submarine was reported to be in dry dock at Tripoli during 2003 and *Al Khyber* reported to be sea-going. However a return to full operational capability remains highly unlikely



FOXTROT

6/1992, van Ginderen Collection / 0081190

FRIGATES

Notes: (1) The *Dar Assawari* F 211 is a training hulk alongside in Tripoli
 (2) Two decommissioned Koni-class frigates may be acquired from Montenegro, possibly as spares.

2 KONI (PROJECT 1159) CLASS (FFGM)

AL HANI PF 212

AL QIRDABIYAH PF 213

Displacement, tons: 1,440 standard; 1,900 full load
 Dimensions, feet (metres): 316.3 × 41.3 × 11.5
 (96.4 × 12.6 × 3.5)

Main machinery: CODAG: 1 SGW, Nikolayev, M88 gas turbine (centre shaft), 18,000 hp(m) (13.26 MW) sustained; 2 Russki B-68 diesels; 15,820 hp(m) (11.63 MW) sustained, 3 shafts

Speed, knots: 27 on gas; 22 on diesel
 Range, n miles: 1,800 at 14 kt
 Complement: 120

Missiles: SSM: 4 Soviet SS-N-2C Styx (2 twin) launchers ●, active radar/IR homing to 83 km (45 n miles) at 0.9 Mach; warhead 513 kg; sea-skimmer at end of run.

SAM: SA-N-4 Gecko twin launcher ●, semi-active radar homing to 15 km (8 n miles) at 2.5 Mach; altitude 9.1-3,048 m (29.5-10,000 ft); warhead 50 kg; 20 missiles.

Guns: 4 USSR 3 in (76 mm)/59 AK 726 (2 twin) ●, 90 rds/min to 16 km (8.5 n miles) anti-surface; weight of shell 5.9 kg

4 USSR 30 mm/65 (2 twin) automatic ●, 500 rds/min to 2 km (1.1 n miles); weight of shell 0.54 kg

Torpedoes: 4—406 mm (2 twin) tubes amidships ● USET-95; active/passive homing to 10 km (5.5 n miles) at 30 kt; warhead 100 kg.

A/S mortars: 1 RBU 6000 12-tubed trainable launcher ●, automatic loading; range 6,000 m; warhead 31 kg.

Depth charges: 2 racks.
 Mines: Capacity for 20

Countermeasures: Decoys: 2—16-barrelled chaff launchers.
 Towed torpedo decoys.

ESM: 2 Watch Dog; radar warning.

Radars: Air search: Strut Curve ●, F-band; range 110 km (60 n miles) for 2 m² target
 Surface search: Plank Shave ●, E/F-band.

Navigation: Don 2, I-band.

Fire control: Drum Tilt ●, H/I-band (for 30 mm).

Hawk Screech ●, I-band; range 27 km (15 n miles) (for 76 mm).

Pop Group ●, F/H/I-band (for SAM).

IFF: High Pole B. Square Head.

Sonars: Hercules (MG 322), hull-mounted; active search and attack; medium frequency.



AL HANI

(Scale 1 : 900), Ian Sturton / 0506050

Programmes: Type III Konis built at Zelenodolsk and transferred from the Black Sea. 212 commissioned 28 June 1986 and 213 on 24 October 1987

Structure: SSMs mounted either side of small deckhouse on forecastle behind gun. A deckhouse amidships contains air conditioning machinery. Changes to the standard Koni include SSM, four torpedo tubes, only one RBU 6000 and Plank Shave surface search; and target indication radar. Camouflage paint applied in 1991

Operational: One of the class fired an exercise Styx missile in September 1999. 213 has been reported active but the operational status of 212 is doubtful



AL HANI

7/1999, van Ginderen Collection / 0081191

CORVETTES

1 NANUCHKA II (PROJECT 1234) CLASS
(MISSILE CORVETTE) (FSGM)

TARIQ IBN ZIYAD (ex-Ean Mara) 416

Displacement, tons: 660 full load
 Dimensions, feet (metres): 194.5 × 38.7 × 8.5 (59.3 × 11.8 × 2.6)
 Main machinery: 6 M 504 diesels; 26,112 hp(m) (19.2 MW); 3 shafts
 Speed, knots: 33. Range, n miles: 2,500 at 12 kt; 900 at 31 kt
 Complement: 42 (7 officers)

Missiles: SSM: 4 Soviet SS-N-2C Styx launchers; auto-pilot; active radar/IR homing to 83 km (45 n miles) at 0.9 Mach; warhead 513 kg HE, sea-skimmer at end of run.

SAM: SA-N-4 Gecko twin launcher; semi-active radar homing to 15 km (8 n miles) at 2.5 Mach; altitude 9.1-3,048 m (29.5-10,000 ft); warhead 50 kg HE, 20 missiles.

Guns: 2 USSR 57 mm/75 AK 725 (twin) automatic; 120 rds/min to 12.7 km (6.8 n miles); weight of shell 2.8 kg.

Countermeasures: Decoys: 2 chaff 16-barrelled launchers.

ESM: Bell Tap; radar warning.

Radars: Surface search: Square Tie; I-band (Bandstand radome)

Navigation: Don 2; I-band.

Fire control: Muff Cob; G/H-band.

Pop Group; F/H/I-band (for SAM)

Programmes: First transferred from USSR in October 1981; second in February 1983; third in February 1984, fourth in September 1985

Structure: Camouflage paint applied in 1991 but have been reported as having blue hulls since 1993

Operational: *Ean Zaqit* (419) sunk on 24 March 1986. *Ean Mara* (416) severely damaged on 25 March 1986 by forces of the US Sixth Fleet; repaired in Leningrad and returned to Libya in early 1991 as the *Tariq Ibn Ziyad*. *Ean Al Gazala* (417) probably in reserve as a source of spares and *Ean Zarah* (418) reported non-operational. Reports of refit plans are doubtful



TARIQ IBN ZIYAD

7/1991, van Ginderen Collection / 0081192

LAND-BASED MARITIME AIRCRAFT

Numbers/Type: 2/5 Aerospatiale SA 321 Frelon/SA 324 Super Frelon.

Operational speed: 134 kt (248 km/h).

Service ceiling: 10,000 ft (3,050 m).

Range: 440 n miles (815 km).

Role/Weapon systems: Obsolescent helicopter; Air Force manned but used for naval support tasks. Most are non-operational due to lack of spares. Sensors: None. Weapons: Fitted for Exocet AM 39.

Numbers/Type: 5 Aerospatiale SA 316B Alouette III.

Operational speed: 113 kt (210 km/h).

Service ceiling: 10,500 ft (3,200 m).

Range: 290 n miles (540 km).

Role/Weapon systems: Support helicopter. Probably non-operational. Another six are used by the Police. Sensors: None. Weapons: Unarmed

PATROL FORCES

Notes: (1) More than 50 remote-control explosive craft acquired from Cyprus. Based on Q-Boats with Q-26 GRP hulls and speed of about 30 kt. Also reported that 15 31 ft craft delivered by Stobrebro, and 60 more built locally are similarly adapted. No reports of recent activity.

(2) There is also a Hamelin 37 m patrol craft *Al Kifah* 206 based at Tripoli.

(3) Six 30 m patrol craft had been acquired for the Libyan Coast Guard by late 2007. The PV30 craft were constructed by Adria-Mar Shipbuilding, Croatia. The vessels are capable of 33 kt.

4 OSA II (PROJECT 205) CLASS
(FAST ATTACK CRAFT—MISSILE) (PTFG)

AL ZUARA 513 AL RUHA 515 AL FIKAH 523 AL MATHUR 525

Displacement, tons: 245 full load
Dimensions, feet (metres): 126.6 × 24.9 × 8.8 (38.6 × 7.6 × 2.7)
Main machinery: 3 Type M 504 diesels; 10,800 hp(m) (794 MW) sustained; 3 shafts
Speed, knots: 37
Range, n miles: 800 at 30 kt; 500 at 35 kt
Complement: 30

Missiles: SSM: 4 Soviet SS-N-2C Styx; active radar or IR homing to 83 km (45 n miles) at 0.9 Mach; warhead 513 kg HE; sea-skimmer at end of run.

Guns: 4 USSR 30 mm/65 (2 twin) automatic; 500 rds/min to 5 km (2.7 n miles); weight of shell 0.54 kg.

Radars: Surface search: Square Tie; I-band; range 73 km (45 n miles).

Fire control: Drum tilt; H/I-band.
IFF: 2 Square Head, High Pole

Programmes: The first craft arrived from USSR in October 1976, four more in August–October 1977, a sixth in July 1978, three in September–October 1979, one in April 1980, one in May 1980 (521) and one in July 1980 (529).

Structure: Some painted with camouflage stripes in 1991 and some were given blue hulls in 1993.

Operational: There have been few sightings of these ships at sea in recent years. One fired an exercise Styx missile in September 1999. The following eight craft are reported non-operational: *Al Katum* 511, *Al Baida* 517, *Al Nabha* 519, *Al Safhra* 521, *Al Masha* 527, *Al Sakab* 529, *Al Bitar* 531 and *Al Saded* 533. Based at Tobruk.



AL MATHUR 1993 / 0506157

7 COMBATTANTE II G CLASS
(FAST ATTACK CRAFT—MISSILE) (PGGF)SHEHAB (ex-Beir Gtifa) 522
WAHAG (ex-Beir Gzir) 524
SHOUAJAI (ex-Beir Algandula) 528
SHOULA (ex-Beir Kttat) 532SHAFAK (ex-Beir Alkranim) 534
RAD (ex-Beir Alkur) 538
LAHEEB (ex-Beir Alkuefat) 542

Displacement, tons: 311 full load
Dimensions, feet (metres): 180.7 × 23.3 × 6.8 (49 × 7.1 × 2)
Main machinery: 4 MTU 20V 538 TB91 diesels; 15,360 hp(m) (11.29 MW) sustained; 4 shafts
Speed, knots: 39. **Range, n miles:** 1,600 at 15 kt
Complement: 27

Missiles: SSM: 4 OTO Melara/Matra Otomat Mk 2 (TG1); active radar homing to 80 km (43.2 n miles) at 0.9 Mach; warhead 210 kg.

Guns: 1 OTO Melara 3 in (76 mm)/62 compact; 85 rds/min to 16 km (8.6 n miles) anti-surface; 12 km (6.8 n miles) anti-aircraft; weight of shell 6 kg.

2 Breda 40 mm/70 (twin); 300 or 450 rds/min to 12.5 km (6.8 n miles) anti-surface; 4 km (2.2 n miles) anti-aircraft; weight of shell 0.96 kg.

Weapons control: CSEE Panda director. Thomson-CSF Vega II system.

Radars: Surface search: Thomson-CSF Triton; G-band; range 33 km (18 n miles) for 2 m² target.

Fire control: Thomson-CSF Castor HB, I-band; range 15 km (8 n miles) (associated with Vega fire-control system).

Programmes: Ordered from CMN Cherbourg in May 1977, 518 completed February 1982; 522 3 April 1982, 524 29 May 1982; 528 5 September 1982; 532 29 October 1982; 534 17 December 1982, 542 29 July 1983.

Structure: Steel hull with alloy superstructure

Operational: *Waheed* (526) sunk on 24 March 1986 and one other severely damaged on 25 March 1986 by forces of the US Sixth Fleet. 524, 534 and 542 visited Malta in late 2001. The following are reported non-operational: *Sharara* 518 and *Bark* 536. *Rad* 538 is reported in poor condition. *Laheeb* refitted by Adria-Mar Shipbuilding, Croatia, in 2008. Further craft expected to follow.



SHAFAK 1993 / 0506156

AMPHIBIOUS FORCES

Notes: (1) Three Polochny D class landing craft (*Ibn Al Hadrami* 112, *Ibn Umayya* 116 and *Ibn Al Farat* 118) are in reserve and are unlikely to be restored to operational status.

(2) Three Turkish Ç 107 class LCTs (*Ibn Al Idrisi* 130, *Ibn Marwan* 131 and *El Kobayat* 132) are non-operational.

2 PS 700 CLASS (LSTH)

Name	No	Builders	Commissioned
IBN OUF	132	CNI de la Mediterranée	11 Mar 1977
IBN HARITHA	134	CNI de la Mediterranée	10 Mar 1978

Displacement, tons: 2,800 full load

Dimensions, feet (metres): 326.4 × 51.2 × 7.9 (99.5 × 15.6 × 2.4)

Main machinery: 2 SEMT-Pielstick 16 PA4 V 185 diesels; 5,344 hp(m) (3.93 MW) sustained; 2 shafts, cp props

Speed, knots: 15.4

Range, n miles: 4,000 at 14 kt

Complement: 35

Military lift: 240 troops; 11 tanks

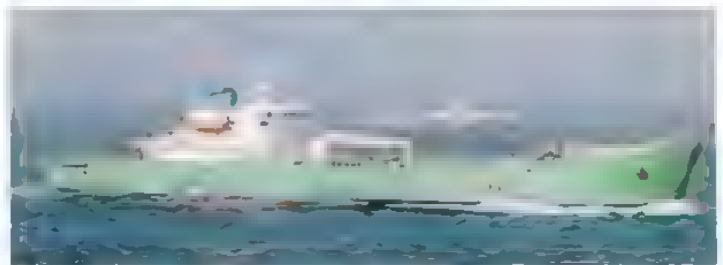
Weapons control: CSEE Panda director.

Radars: Air search: Thomson-CSF Triton; D-band.

Surface search: Decca 1226; I-band

Helicopters: 1 Aerospatiale SA 316B Alouette III.

Comment: 132 laid down 1 April 1976 and 134 laid down 18 April 1977, launched 18 October 1977. Both ships refitted in Croatia in 2008.



IBN HARITHA 5/2004, Italian Navy / 11533/6

2 SLINGSBY SAH 2200 (HOVERCRAFT) (UCAC)

Displacement, tons: 5.5 full load

Dimensions, feet (metres): 34.8 × 13.8 (10.6 × 4.2)

Main machinery: 1 diesel; 300 hp(m) (224 kW)

Speed, knots: 40

Range, n miles: 400 at 30 kt

Complement: 2

Military lift: 2.2 tons

Guns: 1—12.7 mm MG.

Radars: Surface search I-band

Comment: Ordered in September 1999 for delivery to Greece in mid-2000 and subsequently to Libya in 2001.

MINE WARFARE FORCES

4 NATYA (PROJECT 266ME) CLASS
(OCEAN MINESWEEPERS) (MSO)

RAS AL FULAJAH 117 RAS AL QULA 119 RAS AL MASSAD 123 RAS AL HANI 125

Displacement, tons: 804 full load

Dimensions, feet (metres): 200.1 × 33.5 × 10.8 (61 × 10.2 × 3)

Main machinery: 2 Type M 504 diesels; 5,000 hp(m) (3.67 MW) sustained; 2 shafts; cp props

Speed, knots: 16. **Range, n miles:** 3,000 at 12 kt

Complement: 67

Guns: 4 USSR 30 mm/65 (2 twin) automatic; 500 rds/min to 5 km (2.7 n miles); weight of shell 0.54 kg.

4 USSR 25 mm/80 (2 twin); 270 rds/min to 3 km (1.6 n miles); weight of shell 0.34 kg.

A/S mortars: 2 RBU 1200 6-tubed fixed launchers; elevating; range 1,200 m; warhead 34 kg.

Mines: 10.

Countermeasures: MCM: 1 GKT-2 contact sweep; 1 AT-2 acoustic sweep; 1 TEM-3 magnetic sweep

Radars: Surface search: Don 2; I-band

Fire control: Drum Tilt; H/I-band.

IFF: 2 Square Head, 1 High Pole B.

Sonars: Hull-mounted; active search; high frequency.

Comment: Transferred from USSR between 1981 and 1986. At least one of the class painted in green striped camouflage in 1991. Others may have blue hulls. Capable of magnetic, acoustic and mechanical sweeping. Mostly used for coastal patrols and never observed minesweeping. *Ras Al Massad* has been used for training cruises. The following are non-operational: *Al Tiyar* 111, *Al Isar* 113, *Ras Al Hamman* 115 and *Ras Al Madwar* 121.



NATYA 2/1988 / 0506051

AUXILIARIES

Notes: (1) *Zeltin 711* is used as an alongside tender for petrol forces but is no longer capable of going to sea.

(2) The Vosper class *Tobruk* is used for alongside training.

(3) There are about eight 60 m trawlers employed on intelligence collection tasks. They include: *Al Nasim*, *Al Rabat*, *Al Sahfa*, *Al Yakada* and *Zarqa al Yammana*.

10 TRANSPORTS (AG/ML)

GARYOUNIS (ex-*Mashu*)
EL TEMSAH
DERNA
GHAT

GARNATA (ex-*Monte Granada*)
TOLETELA (ex-*Monte Toledo*)
RAHMA (ex-*Kroh*)
LA GRAZIETTA

HANNA
GHARDIA

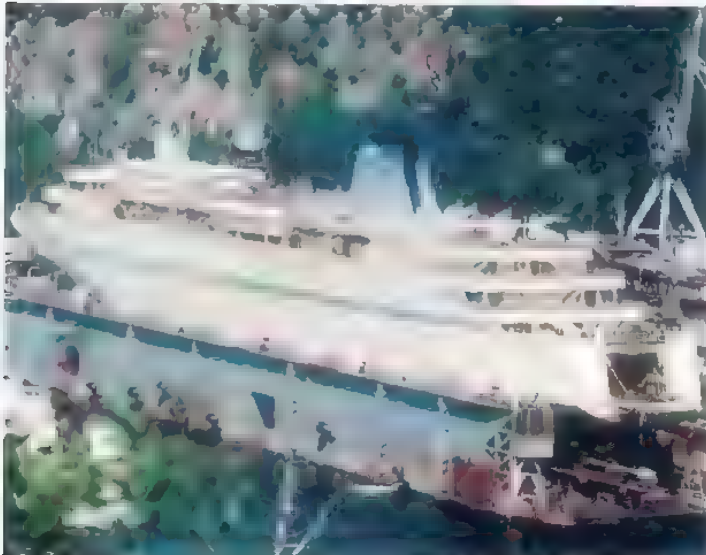
Measurement, tons: 2,412 gross

Dimensions, feet (metres): 546.3 × 80.1 × 21.3 (166.5 × 24.4 × 6.5)

Main machinery: 2 SEMT Pielstick diesels, 20,800 hp(m) (15.29 MW); 2 shafts; bow thruster

Speed, knots: 20

Comment: Details are for *Garyounis*, a converted Ro-Ro passenger/car ferry used as a training vessel in 1989. In addition the 117 m *El Temsah* was refitted and another four of these vessels are of Ro-Ro design. All are in regular civilian service and *Garyounis* is also used by the military. All have minelaying potential.



GARNATA

8/2004, Martin Mokrus / 11533/2

2 FLOATING DOCKS

Comment: One of 5,000 tons capacity at Tripoli. One of 3,200 tons capacity acquired in April 1985

1 SPASILAC CLASS (SALVAGE SHIP) (ARS)

AL MUNJED (ex-*Zlatca*) 722

Displacement, tons: 1,590 full load

Dimensions, feet (metres): 182 × 39.4 × 14.1 (55.5 × 12 × 4.3)

Main machinery: 2 diesels; 4,340 hp(m) (3.19 MW); 2 shafts; cp props, bow thruster

Speed, knots: 13

Range, n miles: 4,000 at 12 kt

Complement: 50

Guns: 4—12.7 mm MGs. Can also be fitted with 8 20 mm (2 quad) and 2—20 mm.

Radars: Surface search: Racal Decca; I-band.

Comment: Transferred from Yugoslavia in 1982. Fitted for firefighting, towing and submarine rescue-carries recompression chamber. Built at Tito SY, Belgrade. Used as the lead vessel for the 1998 training cruise. Refitted in Croatia in 2008.



SPASILAC (Iraqi colours)

1888, Peter Jones / 0506254

1 YELVA (PROJECT 535M) CLASS (DIVING TENDER) (YDT)

AL MANOUD PVM 917

Displacement, tons: 300 full load

Dimensions, feet (metres): 134.2 × 26.2 × 6.6 (40.9 × 8 × 2)

Main machinery: 2 Type 3-D-12A diesels; 630 hp(m) (463 kW) sustained; 2 shafts

Speed, knots: 12.5

Complement: 30

Radars: Navigation; Spin trough; I-band.

IFF: High Pole

Comment: Built in early 1970s. Transferred from USSR December 1977. Carries two 1.5 ton cranes and has a portable decompression chamber. Based at Tripoli but its operational status is unknown.



YELVA (Russian colours)

7/1996, Hartmut Ehlers / 0506306

TUGS

6 COASTAL TUGS (YTB)

RAS EL HILAL A 31

AL AHWEIRIF A 32

AL KERIAT

AL TABKAH

—A 33

—A 34

—A 35

Comment: Three 34.8 m built in Portugal in 1976–78. The other three are 26.6 m built in the Netherlands in 1979–80. All are in service.



Lithuania

KARINES JURU PAJEGOS

Country Overview

The Republic of Lithuania regained independence in 1991 after 51 years as a Soviet republic. Situated in northeastern Europe, the country has an area of 25,175 square miles and borders to the north with Latvia, to the east and south with Belarus, to the southwest with Poland and the Russian enclave of Kaliningrad. It has a 58 n mile coastline with the Baltic Sea. Vilnius is the capital and largest city while Klaipeda is the principal port. Territorial seas (12 n miles) are claimed but while it has claimed a 200 n mile Exclusive Economic Zone (EEZ), its limits have not been fully defined by boundary agreements.

Headquarters Appointments

Commander of the Navy:
Commander Aruras Stank
Chief of Staff:
Commander Eduard Karlonas

Personnel

2009: 643

Bases

Klaipeda

State Border Police (Pakrancliy Apsauga)

Coast Guard Force formed in late 1992. Name changed in 1996 to Border Police. Vessels have one thick and one thin diagonal yellow stripe on the hull.

FRIGATES

1 GRISHA III (ALBATROS) CLASS (PROJECT 1124M) (FFLM)

Name	No	Builders	Commissioned	Decommissioned
AUKŠTAITIS	F 12 (ex-MPK 44)	Kiev Shipyard	15 Aug 1980	6 Nov 1992

Displacement, tons: 950 standard, 1,200 full load
Dimensions, feet (metres): 233.6 × 32.2 × 12.1
 (71.2 × 9.8 × 3.7)
Main machinery: CODAG; 1 gas-turbine, 15,000 hp(m)
 (11 MW); 2 diesels; 18,000 hp(m) (11.8 MW); 3 shafts
Speed, knots: 30
Range, n miles: 2,500 at 14 kt diesels, 950 at 27 kt
Complement: 67 (9 officers)

Missiles: SAM: SA-N-4 Gecko twin launcher ☉; semi-active radar homing to 16 km (8 n miles) at 2.5 Mach; warhead 50 kg; altitude 9.1-3,048 m (30-10,000 ft); 20 missiles.
Guns: 2 -57 mm/75 AK 725 (tw,n) ☉; 120 rds/min to 12.7 km (6.8 n miles); weight of shell 2.8 kg.
 1-30 mm/65 ☉; 6 barrels, 3,000 rds/min combined to 2 km.
 2-12.7 mm MGs.

A/S mortars: 2 RBU 6000 12-tubed trainable ☉; range 6,000 m, warhead 31 kg.
Depth charges: 2 racks (12).
Mines: Capacity for 18 in lieu of depth charges.
Countermeasures: Decoys: 1 PK-16 (F 11) chaff launcher.
ESM: 2 Watch Dog.



AUKŠTAITIS

(Scale 1 : 600), Ian Sturton / 058/1562

Radars: Air/surface search: Strut Curve ☉; F-band.
 Navigation: Terma Scanner; i-band.
Fire control: Pop Group ☉; F/H/I-band (for SA-N-4) Bass
 Tilt ☉; H/I-band (for guns).
Sonars: Bull Nose; hull-mounted; active search and attack;
 high/medium frequency.

Programmes: Transferred from the Russian Baltic Fleet in 1993.
Modernisation: Torpedo tubes removed from F 12 in 1996 and from F 11 in 1997.
Operational: Žemaitis was decommissioned in 2008. Aukštaitis is to be decommissioned in 2009.



GRISHA III CLASS

6/2005, Frank Findler / 11330H/



GRISHA III CLASS

6/2004, Harald Carstens / 0589759

PATROL FORCES

2 STORM CLASS (PB)

Name	No	Builders	Commissioned
SELIS (ex-Skudd)	P 32 (ex-P 967)	Bergens Mek Verkstoder	1966
SKALVIS (ex-Stell)	P 33 (ex-P 969)	Westermoen, Mandal	1967

Displacement, tons: 138 full load
Dimensions, feet (metres): 120 x 20.3 x 5.9 (36.5 x 6.2 x 1.8)
Main machinery: 2 MTU MB 16V 538 TB90 diesels; 6,000 hp(m) (4.41 MW) sustained; 2 shafts
Speed, knots: 32
Range, n miles: 550 at 32 kt
Complement: 23 (4 officers)
Guns: 1 Bofors 3 in (76 mm)/50, 30° elevation; 30 rds/min to 13 km (7 n miles). Surface fire only; weight of shell 5.9 kg.
 1 Bofors 40 mm/70; 90° elevation; 300 rds/min to 12 km (6.6 n miles); weight of shell 0.96 kg
Weapons control: TVT 300 optronic tracker.
Radars: Furuno; I-band.

Comment: P 32 and P 33 transferred from Norway in June 2001. P 31 decommissioned in 2007. Others of the class given to Latvia and Estonia.



SKALVIS

4/2002, Guy Toremans / 0524995

2 + 1 FLYVEFISKEN CLASS (PBO)

Name	No	Builders	Commissioned
ZEMAITIS (ex-Flyvefisken)	P 11 (ex-P 550)	Danyard A/S, Aalborg	19 Dec 1989
DJUKAS (ex-Hajen)	P 12 (ex-P 551)	Danyard A/S, Aalborg	19 July 1990
— (ex-Lommen)	— (ex-P 559)	Danyard A/S, Aalborg	21 Jan 1994

Displacement, tons: 480 full load
Dimensions, feet (metres): 177.2 x 29.5 x 8.2 (54 x 9 x 2.5)
Main machinery: 2 diesels; 5,800 hp(m) (4.26 MW) sustained; 2 shafts; cp props; bow thruster
Speed, knots: 20
Range, n miles: 2,400 at 18 kt
Complement: 29

Guns: 1 OTO Melara 3 in (76 mm)/62 Super Rapid; dual purpose; 120 rds/min to 16 km (8.7 n miles).
 2—12.7 mm MGs

Countermessures: To be announced.

Combat data systems: To be announced.

Weapons control: To be announced.

Radars: Surface search: Terma Scantier Mil; I-band.

Navigation: Furuno, I-band.

Fire control: To be announced.

Programmes: Standard Flex 300 ships built for the Danish Navy to meet requirement for re-role by the interchange of mission-specific containers. Three ships decommissioned in 2005. Following an agreement in March 2007, ex-Flyvefisken and ex-Hajen were handed over on 30 May 2008 and 28 January 2009 respectively. Ex-Lommen is to be transferred in 2009. Of the four container positions, one crane module is to be installed in an aft position while the 76 mm gun is to occupy the forward position. The other two positions are to be covered. The original CODAG propulsion system is to be replaced by two diesel engines powering two of the three shafts.

Operational: Likely to be employed on offshore patrol duties.



DJUKAS

12/2008*, Per Körnefeldt / 1335794

1 COASTAL PATROL CRAFT (PB/YFS)

HK 21 (ex-Vinėla)

Displacement, tons: 88 full load
Dimensions, feet (metres): 75.8 x 19 x 5.9 (23.1 x 5.8 x 1.8)
Main machinery: 2 diesels, 600 hp(m) (441 kW); 2 shafts
Speed, knots: 12
Complement: 5
Guns: 1—12.7 mm MG.

Comment: Acquired in 1992. Used as a hydrographic vessel.



HK 21

6/2004, Lithuanian Navy / 0589751

MINE WARFARE FORCES

2 LINDAU (TYPE 331) CLASS (MINEHUNTERS) (MHC)

Name	No	Builders	Commissioned
SĖDUVIS (ex-Koblenz)	M 52 (ex-M 1071)	Burmester, Bremen	8 July 1958
KURŠIS (ex-Marburg)	M 51 (ex-M 1080)	Burmester, Bremen	11 June 1959

Displacement, tons: 463 full load
Dimensions, feet (metres): 154.5 x 27.2 x 9.8 (9.2 Troika) (47.1 x 8.3 x 3) (2.8)
Main machinery: 2 MTU MD diesels; 4,000 hp(m) (2.94 MW); 2 shafts
Speed, knots: 16.5. **Range, n miles:** 850 at 16.5 kt
Complement: 42 (5 officers)
Guns: 1 Bofors 40 mm/70. 2—12.7 mm MGs.
Radars: Navigation: Raytheon Mariner Pathfinder; I-band.
Sonars: Plessey 193 m; minehunting; high frequency (100/300 kHz).
 EdgeTech DF-1000 sidescan (M 51); high frequency (100/400 kHz).

Comment: M 52 acquired from Germany in June 1999 and recommissioned 2 December 1999. M 51 transferred in November 2000. Converted to minehunters in 1978. Hulls of wooden construction. Full minehunting equipment including PAP 104 ROVs transferred with the vessels.



SĖDUVIS

9/2007, Maritime Photographic / 1335793

0 + 2 HUNT CLASS (MINEHUNTERS—COASTAL) (MHC)

Name	No	Builders	Launched	Commissioned
— (ex-Cottesmore)	— (ex-M 32)	Yarrow Shipbuilders, Glasgow	9 Feb 1982	24 June 1983
— (ex-Dulverton)	— (ex-M 35)	Vosper Thornycroft, Woolston	3 Nov 1982	4 Nov 1983

Displacement, tons: 615 standard; 750 full load
Dimensions, feet (metres): 187.0 wl; 197.0 oa x 32.8 x 11.2 (57.0; 60.0 x 10.0 x 3.4)
Main machinery: To be announced.
Speed, knots: To be announced. **Range, n miles:** To be announced.
Complement: To be announced
Guns: To be announced.
Countermessures: MCM. Expendable mine-disposal system.
Combat data systems: To be announced.
Radars: To be announced.
Sonars: Thales 2193; hull-mounted, minehunting; 100/300 kHz.

Comment: The contract to refit, upgrade and transfer two former Royal Navy mine-countermeasures vessels was announced on 27 November 2008. All minehunting and minesweeping equipment was removed from both ships during conversion in 1997 to undertake patrol duties during their latter days in RN service. Both ships subsequently decommissioned in 2005. Thales UK is to act as prime contractor for the upgrade which is likely to involve a substantial package including a new command system (possibly NAUTIS III as fitted in RN Hunt class), minehunting sonar, propulsion machinery, expendable mine disposal equipment (possibly based on Seafox C) and radars. The re-activation is to be undertaken in a UK shipyard and both ships are expected to enter Lithuanian service in late 2010.



HUNT CLASS

4/2007, Derek Fox / 1305229

AUXILIARIES

Notes: *Victoria 245* is an ex-Swedish Coast Guard vessel now owned by the Fishery Inspection Service

1 HARBOUR TUG (YTL)

H 22 (ex-A 330)

Displacement, tons: 35
 Dimensions, feet (metres): 48 × 14.8 × 8.2 (14.65 × 4.5 × 2.5)
 Main machinery: 1 Scania-Vabis DSI 11R62A diesel; 230 hp (171 kW)
 Speed, knots: 9
 Complement: 4
 Radars: Navigation: Racal Decca; I-band

Comment: Ex-Swedish *Atlas* transferred in 2000



H 22 6/2003, Hartmut Ehlers / 0561507

1 KUTTER CLASS (PB)

LOKYS (ex-Apollo) H 23

Displacement, tons: 35 full load
 Dimensions, feet (metres): 60.4 × 17.1 × 10.5 (18.4 × 5.2 × 3.2)
 Main machinery: 1 diesel; 165 hp(m) (121 kW); 1 shaft
 Speed, knots: 9
 Complement: 5
 Radars: Surface search: Raytheon RM 1290S; I-band.

Comment: Built in the 1930s and served with the Danish Naval Home Guard. Transferred in July 1997. Manned by naval personnel.



LOKYS 6/2005, Lithuanian Navy / 1129957

1 VIDAR CLASS (MCCS/AG)

Name	No	Builders	Launched	Commissioned
JOTVINGIS (ex-Vidar)	N 42 (ex-N 52)	Mjellern and Karlsen, Bergen	18 Mar 1977	21 Oct 1977

Displacement, tons: 1,500 standard; 1,673 full load
 Dimensions, feet (metres): 212.6 × 39.4 × 13.1 (64.8 × 12 × 4)
 Main machinery: 2 Wichmann 7AX diesels; 4,200 hp(m) (3.1 MW); 2 shafts; auxiliary motor, 425 hp(m) (312 kW); bow thruster
 Speed, knots: 15
 Complement: 50

Guns: 2 Bofors 40 mm/70; 300 rds/min to 12 km (6.6 n miles); weight of shell 0.96 kg.
 Mines: 300-400 (depending on type) on three decks
 Weapons control: TVT optronic director
 Radars: Surface search: 2 Racal Decca TM 1226; I-band
 Sonars: Simrad; hull-mounted, search and attack; medium/high frequency

Programmes: Decommissioned from Norwegian Navy in 2005 and transferred to Lithuania on 27 June 2006.

Operational: Former minelayer modified to undertake mine countermeasures command and support roles. Additional tasks include logistic support.



VIDAR CLASS Per Körnfeldt / 1133083

STATE BORDER SECURITY SERVICE

1 LOKKI CLASS (PB)

KIHU 102 (ex-003)

Displacement, tons: 76 full load
 Dimensions, feet (metres): 87.9 × 17 × 6.2 (26.8 × 5.2 × 1.9)
 Main machinery: 2 MTU 8V 396 TBB4 diesels; 2,120 hp(m) (1.58 MW) sustained; 2 shafts
 Speed, knots: 25
 Complement: 6
 Radars: Navigation: Furuno FR 2010 and FCR 1411; I-band.

Comment: Armament and sonar removed on transfer. Donated by Finland in 1998.



KIHU 6/2003, Hartmut Ehlers / 0561506

1 KBV 041 CLASS (PB)

MADELEINE 042 (ex-KBV 041)

Displacement, tons: 69 full load
 Dimensions, feet (metres): 73.5 × 17.72 × 5.6 (22.4 × 5.4 × 1.7)
 Main machinery: 2 diesels; 450 hp(m) (331 kW); 2 shafts
 Speed, knots: 10
 Complement: 4
 Radars: Navigation: Furuno FRS 1000C and FR 1510; I-band.

Comment: Class B sea truck transferred from the Swedish Coast Guard in April 1995. Used for pollution control in Swedish service but now used as patrol craft.



MADELEINE 6/2003, Hartmut Ehlers / 0561504

1 KBV 101 CLASS (PB)

LILIAN 101 (ex-KBV 101)

Displacement, tons: 69 full load
 Dimensions, feet (metres): 82 × 16.4 × 6.5 (25 × 5 × 2)
 Main machinery: 2 Cummins KTA38-M diesels; 2,120 hp(m) (1.56 MW); 2 shafts
 Speed, knots: 18
 Range, n miles: 1,000 at 15 kt
 Complement: 5
 Radars: Navigation: Furuno FR 2010 and FCR 1411; I-band.

Comment: Built in Sweden in 1969. Transferred from Swedish Coast Guard on 24 June 1996. Used in Swedish service as a salvage diving vessel and had a high frequency active hull-mounted sonar.



LILIAN 6/2003, Hartmut Ehlers / 0561503

490 Lithuania/State border security service — Madagascar/Patrol forces

1 CHRISTINA (GRIFFON 2000TD) CLASS HOVERCRAFT (UCAC)

CHRISTINA

Displacement, tons: 5 full load
Dimensions, feet (metres): 41.35 x 20 (12.6 x 6.1)
Main machinery: 1 Deutz BFBL diesel; 355 hp (265 kW)
Speed, knots: 35
Complement: 3
Radars: Furuno 1000C; I-band.

Comment: Built by Griffon UK and delivered in 2000. Similar to crafts supplied to Estonia and Finland

CHRISTINA
6/2001, Lithuanian Navy
0114364



Macedonia, Former Yugoslav Republic of

Country Overview

The Former Yugoslav Republic of Macedonia declared its independence in 1991. A land-locked country with an

area of 9,928 square miles, it is situated in south-eastern Europe and is bordered to the north by Serbia, to the east by Bulgaria, to the south by Greece and to the west by Albania. Parts of the borders with Albania and Greece

pass through the two principal lakes, Ohrid and Prespa. The capital and largest city is Skopje.

PATROL FORCES

Notes: The Macedonian Lake Service (Ezerska služba - EZ) consists of about 400 soldiers and is nominally an independent arm of the Army although in practice it is almost integrated with Land Forces. In addition up to five ex-Yugoslavian Army patrol boats on Lake Ohrid, there are two further small craft on Lake Prespa although their operational status is doubtful.

5 BOTICA CLASS (TYPE 16) (RIVER PATROL CRAFT) (PBR)

303-305 +2

Displacement, tons: 23 full load
Dimensions, feet (metres): 55.8 x 11.8 x 2.8 (17.0 x 3.6 x 0.8)
Main machinery: 2 diesels; 454 hp (340 kW); 2 shafts
Speed, knots: 15. **Range, n miles:** 340 at 14 kt
Complement: 7
Military lift: 3 tons or 30 troops
Guns: 1 Oerlikon 20 mm, 2—762 mm MGs
Radars: Decca 110; I-band

Comment: Former Yugoslavian craft which entered service in the 1970s. Two are reported operational. There is a similar craft in Serbian Navy service.



BOTICA 304

6/2007, Fraivogel Collection / 1167934



Madagascar MALAGASY REPUBLIC MARINE

Country Overview

Formerly a French Protectorate, the Malagasy Republic became self-governing in 1958 and fully independent in 1960. It adopted the name Democratic Republic of Madagascar in 1975. Situated in the Indian Ocean and separated from the southeastern coast of Africa by the Mozambique Channel, it comprises Madagascar Island, the fourth largest island in the world, and several small islands. The country's total area is 226,658 square miles and it has a coastline of 2,608 n miles. Antananarivo is the capital

while Toamasina is the principal commercial port. There are further ports at Antsiranana, Mahajanga and Toliara. Territorial seas (12 n miles) are claimed. An Exclusive Economic Zone (EEZ) has been claimed but boundaries have not been agreed.

Personnel

2009: 430 officers and men (including Marine Company of 120 men)

Headquarters Appointments

Head of Navy:
Rear Admiral Retsimitetra

Bases

Antsiranana (main), Toamasina, Mahajanga, Toliara, Nosy Bé, Tolanoro, Manakara

PATROL FORCES

1 CHAMOIS CLASS (SUPPLY TENDER) (AG/PB)

MATSILO (ex-Chamois) (ex-A 767)

Displacement, tons: 495 full load
Dimensions, feet (metres): 136.1 x 24.8 x 10.5 (41.5 x 7.5 x 3.2)
Main machinery: 2 SACM AGO 175 V16 diesels; 2,700 hp (m) (1.98 MW); 2 shafts; cp props; bow thruster
Speed, knots: 14
Range, n miles: 6,000 at 12 kt
Complement: 13 plus 7 spare
Cargo capacity: 100 tons cargo, 165 tons of fuel or water
Radars: Navigation: Racal Decca 1226; I band

Comment: Built by La Perrière, Lorient and commissioned in the French Navy 24 September 1976. Paid off in 1995 and transferred from France in May 1996. Can act as a tug (bollard pull 25 tons) or for SAR and supply tasks but is mostly used as a patrol craft. There are two 30 ton winches and up to 100 tons of stores can be carried on deck.

MATSILO
6/1999, Madagascar Navy
0081203



6 PATROL CRAFT (PB)

Displacement, tons: 17.7 full load
Dimensions, feet (metres): 44.0 × 12.5 × 3.9 (13.4 × 3.8 × 1.2)
Main machinery: 2 General Motors Detroit 6V53 diesels; 2 shafts
Speed, knots: 13
Range, n miles: 200 at 11 kt
Complement: 3
Radars: Furuno; I-band.

Comment: Former US Coast Guard lifeboats (MLB) constructed in the 1960s. Formally donated on 12 February 2003 for use as coastal surveillance and SAR vessels. All six craft refitted at Galveston, Texas, before transfer and a further unit was transferred as spares.



MLBs (Seychelles colours)

9/2003, Seychelles Coast Guard / 0660334

AMPHIBIOUS FORCES

1 EDIC CLASS

AINA VAO VAO (ex-L9082)

Displacement, tons: 250 standard, 670 full load
Dimensions, feet (metres): 193.5 × 39.2 × 4.5 (59 × 12 × 1.3)
Main machinery: 2 SACM MGO diesels, 1,000 hp(m) (753 kW); 2 shafts
Speed, knots: 8. **Range, n miles:** 1,800 at 8 kt
Complement: 32 (3 officers)
Military lift: 250 tons
Guns: 2 Giat 20 mm.

Comment: Built in 1964 by Chantier Naval Franco-Belge. Transferred from France 28 September 1985 having been paid off by the French Navy in 1981. Repaired by the French Navy in 1996 and now back in service.



AINA VAO VAO

6/1999, Madagascar Navy / 0081202

AUXILIARIES

Notes: (1) There are three Algrette class harbour tugs, *Tourterelle*, was acquired from France in 1975 and *Engoulevant* and *Martin Pêcheur* May 1996.
 (2) There is also a 400 ton coastal tug *Trozona*.
 (3) A former trawler, *Daikannon Maru*, is employed on fishery protection duties.

Malawi



Country Overview

Formerly the British Protectorate of Nyasaland, the Republic of Malawi gained independence in 1964. A landlocked country situated in east Central Africa, it is bordered to the north by Tanzania, to the west by Zambia and to the south and east by Mozambique. The country's total area is 45,747 square miles, nearly a quarter of which is water. The principal lake is Lake Malawi (formerly Lake Nyasa).

with which there is a shoreline of some 475 n miles. The largest city is Blantyre and the capital, since 1975, is Lilongwe. The naval base at Monkey Bay is situated on a peninsula at the south of the lake.

Bases

Monkey Bay, Lake Malawi

Headquarters Appointments

Commander of the Malawi Army Marine Unit:
 Colonel G A Ziyabu

Personnel

2009 225

PATROL FORCES

Notes: One survey craft built in France in 1988 is operated on Lake Malawi by Department of Surveys.

1 ANTARES CLASS (PB)

KASUNGU (ex-Chikala) P 703

Displacement, tons: 41 full load
Dimensions, feet (metres): 68.9 × 16.1 × 4.9 (21 × 4.9 × 1.5)
Main machinery: 2 Poyaud 520 V12 M2 diesels, 1,300 hp(m) (956 kW); 2 shafts
Speed, knots: 22. **Range, n miles:** 650 at 15 kt
Complement: 16
Guns: 1 MG 21 20 mm. 2—7.62 mm MGs
Radars: Surface search. Decca; I-band.

Comment: Built in prefabricated sections by SFCN Villeneuve-la-Garenne and shipped to Malawi for assembly on 17 December 1984. Commissioned May 1985. Operational status doubtful.



KASUNGU

6/1996, Malawi Navy / 0012737

2 NAMACURRA CLASS (PB)

KANING'A (ex-Y 1520) P 704 +1

Displacement, tons: 5 full load
Dimensions, feet (metres): 29.5 × 9 × 2.8 (9 × 2.7 × 0.8)
Main machinery: 2 BMW 3.3 outboards; 380 hp(m) (279 kW)
Speed, knots: 32. **Range, n miles:** 180 at 20 kt
Complement: 4
Guns: 1—12.7 mm MG. 2—7.62 mm MGs
Radars: Surface search. Decca; I-band.

Comment: First craft donated by South Africa on 29 October 1988. A second was donated in February 2008.



KANING'A

6/1997, Malawi Navy / 0012736

1 ROTORK CLASS (LCU)

CHIKOKO I L 702

Displacement, tons: 9 full load
Dimensions, feet (metres): 41.5 × 10.5 × 1.5 (12.7 × 3.2 × 0.5)
Main machinery: 2 Volvo diesels, 260 hp(m) (191 kW); 2 shafts
Speed, knots: 24
Range, n miles: 3,000 at 15 kt
Complement: 8
Guns: 3—7.62 mm MGs.

Comment: Built by Rotork Marine. Needs a refit but no funds are available.



CHIKOKO I

6/1996, Malawi Navy / 0012738



Malaysia

TENTERA LAUT DIRAJA

Country Overview

The Federation of Malaysia was formed in 1963. Situated in south-east Asia, its two regions are separated by some 350 n miles of the South China Sea. Peninsular Malaysia (formerly West Malaysia) is bordered to the north by Thailand and to the south by Singapore (which left the federation in 1965) and includes 11 states occupying the southern half of the Malay Peninsula. To the east, the states (former British colonies) of Sabah and Sarawak (which surrounds the sultanate of Brunei) occupy the northern third of the island of Borneo, the remainder of which forms the Indonesian province of Kalimantan. With an overall land area of 127,320 square miles, Malaysia has a coastline of 2,527 n miles with the Strait of Malacca, the South China Sea, the Sulu and Celebes Seas. Kuala Lumpur is the capital and largest city while the principal ports are Penang, Port Klang, Tanjung Pelepas, Kuantan, Kota Kinabalu and Kuching. Territorial seas (12 n miles) are claimed. An EEZ (200 n miles) is claimed but the limits have not been fully defined.

Headquarters Appointments

Chief of Navy:

Admiral Datuk Abdul Aziz bin Haji Jaafar

Deputy Chief of Navy:

Vice Admiral Dato' Hj Mohammed Noordin bin Ali

Fleet Commander:

Vice Admiral Dato' Ahmad Kamarulzaman bin Hj Ahmad Badaruddin

Commander Naval Area I (Kuantan):

Captain Abdul Aziz bin Hj Mohd Dom

Headquarters Appointments -- continued

Commander Naval Area II (Sabah and Sarawak):

Commodore Syed Zahiruddin Putra

Commander Naval Area III (Langkawi):

Commodore Abdul Ghani bin Othman

Personnel

- (a) 2009: 19,561 (2,385 officers)
 (b) Voluntary service: Royal Malaysian Navy Voluntary Reserve (RMNVR); Total: 3,202 (872 officers)

Coastal Defence

Procurement of a coastal surveillance system is under consideration.

Bases

- (a) Lumut Naval Base comprises HQ Fleet Operations, HQ Fleet System, HQ Support, HQ Air, Mine Warfare and Diving Centre (KD *Duyong*) and HQ Special Forces (*Paskal*)
 (b) Naval Area 1 HQ - Kuantan (West of longitude 109E)
 (c) Naval Area 2 HQ - Kota Kinabalu (East of longitude 109E). Comprises HQ Submarine Force, Kota Kinabalu Naval Base, Sandakan Naval Base (KD *Sri Sandakan*), Semporna Naval Base (KD *Sri Semporna*) and KD *Sri Tawau*
 (d) Naval Area 3 HQ - Langkawi Island
 (e) Naval Area 4 HQ (Designated) - Kuching, Sarawak
 (f) Others - Naval Education Training Command, Kuala Lumpur (ex-KD *Sri Klang*), National Hydrographic

Centre, Kuala Lumpur, and Tanjung Pengelih, Johor (KD *Sultan Ismail*).

- (g) Bases for regular reserve forces situated in Penang, Perak, Selangor, Kuala Lumpur, Labuan Federal Territory, Pahang, Johor, Terengganu, Sabah and Sarawak.

Prefix to Ships' Names

The names of Malaysian warships are prefixed by KD (Kapal Diraja meaning His Majesty's Ship)

Maritime Patrol Craft

There are large numbers of armed patrol craft belonging to the Police, Customs and Fisheries Departments. Details at the end of the section

Strength of the Fleet

Type	Active	Building (Planned)
Submarines	-	2
Frigates	2	(2)
Corvettes	7	5
Logistic Support Vessels	2	-
Fast Attack Craft--Missile	8	-
Fast Attack Craft--Gun	6	-
Patrol Craft	18	-
Minehunters	4	-
Survey Ships	2	1
LSTs	1	-
Training Ships	2	-

PENNANT LIST

Frigates	175	Kelantan (bldg)	3511	Hendelan	1504	Mahawangsa	
29	Jebat	176	Selangor (bldg)	3512	Perkasa	1505	Sri Inderapura
30	Lekiu	Patrol Forces		3513	Pendekar	Training Ships	
Corvettes		47	Sri Perlis	3514	Gempita	76	Hang Tuah
25	Kesturi	49	Sri Johor	Mine Warfare Forces		A 13	Tunas Samudera
26	Lakir	3501	Perdana	11	Mahamiru	Survey Ships	
134	Laksamana Hang Nadim	3502	Serang	12	Jeral	151	Perantau
135	Laksamana Tun Abdul Jamil	3503	Genas	13	Ledang	255	Mutiara
136	Laksamana Muhammad Amin	3504	Ganyang	14	Kinebalu	Auxiliaries	
137	Laksamana Tan Pasmah	3505	Jerong	Amphibious Forces		4	Penyu
171	Kedah	3506	Todak	331	Sri Gaya		
172	Pahang	3507	Paus	322	Sri Tiga		
173	Perak	3508	Yu	1503	Sri Indera Sakti		
174	Terengganu (bldg)	3509	Baung				
		3510	Pari				

SUBMARINES

Notes: (1) There are no plans to procure mini-submarines as has been previously reported.

(2) The French Agosta class submarine *Quessant* is on loan to Malaysia to provide initial training which started in early 2005. The boat continues to belong to the French Navy and is based at Brest. The submarine may go to Malaysia on completion of training in 2009.

(3) The full details of the future submarine rescue capability are yet to be announced. The capability is likely to be based around the ships *Mahsuri* and *Setia Sekel*.

1 + 1 SCORPENE CLASS (SSK)

Name	No	Builders	Laid down	Launched	Commissioned
TUNKU ABDUL RAHMAN	-	DCN, Cherbourg	26 Apr 2004	23 Oct 2007	28 Jan 2009
TUN RAZAK	-	Navantia, Cartagena	25 Apr 2005	8 Oct 2008	Oct 2009

Displacement, tons: 1,559 surfaced; 1,758 dived
Dimensions, feet (metres): 221.6 x 20.3 x 17.7 (67.56 x 6.2 x 5.4)
Main machinery: Diesel electric; 2 SEMT-Pielstick 12 PA4 200 SM DS diesels; 1 Jeumont Industrie motor; 4,290 hp (3.2 MW), 1 shaft
Speed, knots: 20.5 dived; 12 surfaced
Range, n miles: 360 at 4 kt dived; 6,000 at 8 kt surfaced
Complement: 31 (7 officers)

Missiles: SSM. Aerospatiale SM39 Exocet; launched from 21 in (533 mm) torpedo tubes; inertial cruise; active radar homing to 50 km (27 n miles) at 0.9 Mach; warhead 165 kg.

Torpedoes: 6-21 in (533 mm) tubes. WASS Black Shark torpedoes; wire (fibre-optic cable) guided; active and passive homing to 50 km (27 n miles) at 50 kt, warhead 250 kg. Total of 18 weapons.
Countermeasures: ESM: Thales DR 3000; intercept.
Weapons control: UDS International SUBTICS.
Radars: Navigation: I-band.
Sonars: Hull mounted; active/passive search and attack, medium frequency.

Programmes: Contract for the construction of two submarines awarded to Armaris and IZAR on 5 June 2002. A four-year training programme aboard an Agosta-70

(ex-*Quessant*) is included in the package. First steel cut for first of class 2 December 2003. The two forward modules were constructed by DCN and the two aft modules by Navantia.
Structure: Similar in design to the Chilean boats. Diving depth more than 300 m (984 ft). Option to retrofit AIP at a later date.
Operational: Following sea trials, the first boat is to arrive in Malaysia in August 2009 and the second in 2010. To be based in Naval Area 2 at Sepanggar Naval Base, Sabah.



TUNKU ABDUL RAHMAN

3/2008, B Prézélin / 1305321



TUNKU ABDUL RAHMAN

5/2008*, B Przewin / 1335485



TUNKU ABDUL RAHMAN

5/2008*, B Przewin / 1335486

For details of the latest updates to *Jane's Fighting Ships* online and to discover the additional information available exclusively to online subscribers please visit jfs.janes.com

FRIGATES

Notes: The decision to build two new frigates was announced on 17 July 2006. The sections of the ships are to be built at BAE Systems' facilities at Govan and Scotstoun and final assembly is to take place at Labuan Shipyard. The 112 m ships are likely to be a development of the Lekiu class. An order is not expected until 2010.

2 LEKIU CLASS

Name	No	Builders	Laid down	Launched	Commissioned
JEBAT	29	Yarrow (Shipbuilders), Glasgow	Nov 1994	27 May 1995	20 Nov 1999
LEKIU	30	Yarrow (Shipbuilders), Glasgow	Mar 1994	3 Dec 1994	9 Oct 1999

Displacement, tons: 1,845 standard; 2,390 full load
Dimensions, feet (metres): 346 oa; 319.9 wl x 42 x 11.8
 (108.5; 97.5 x 12.8 x 3.6)
Main machinery: CODAD; 4 MTU 20V 1163 TB93 diesels;
 33,300 hp(m) (24.5 MW) sustained, 2 shafts; Kamewa cp
 props
Speed, knots: 28
Range, n miles: 5,000 at 14 kt
Complement: 146 (18 officers)



(Scale 1 : 900), Ian Sturton / 0081204

Missiles: SSM: 8 Aerospatiale MM 40 Exocet Block II ●; inertial cruise; active radar homing to 70 km (40 n miles) at 0.9 Mach; warhead 165 kg; sea-skimmer
SAM: British Aerospace VLS Seawolf; 16 launchers ●; command line of sight (CLOS) radar/TV tracking to 6 km (3.3 n miles) at 2.5 Mach; warhead 14 kg.
Guns: 1 Bofors 57 mm/70 SAK Mk 2 ●; 220 rds/min to 17 km (9.3 n miles); weight of shell 2.4 kg.
 2 MSI 30 mm/75 DS 308 ●; 650 rds/min to 10 km (5.4 n miles); weight of shell 0.36 kg.
Torpedoes: 6 Whitehead B 515 324 mm (2 triple) tubes ●; anti-submarine; Marconi Stingray; active/passive homing to 11 km (5.9 n miles) at 45 kt; warhead 35 kg (shaped charge).

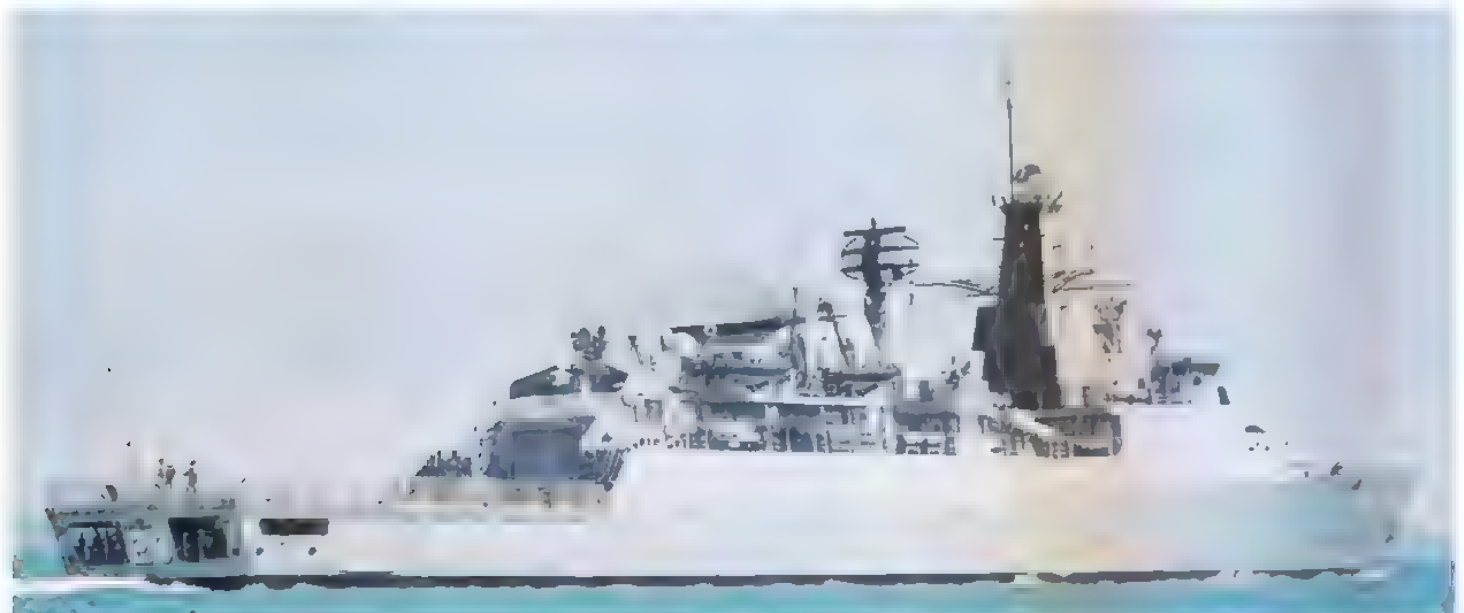
LEKIU
Countermeasures: Decoys: 2 Super Barricade 12-barrelled launchers for chaff ●; Graseby Sea Siren torpedo decoy.
ESM: AEG Telefunken/Marconi Mentor; intercept.
Combat data systems: GEC-Marconi Nautis-F; Signaal Link Y Mk 2
Electro-optic systems: Radamec 2400 Optronic director ●. Thomson-CSF ITL 70 (for Exocet); GEC-Marconi Type V 3901 thermal imager.
Radars: Air search: Signaal DA08 ●; E/F-band. Surface search: Ericsson Sea Giraffe 150HC ●; G/H-band. Navigation: Racal Decca; I-band
Fire control: 2 Marconi 1802 ●; I/J-band.

Sonars: Thomson Sintra Sphorion; hull-mounted active search and attack; medium frequency
Helicopters: 1 Westland Super Lynx ●.
Programmes: GEC Naval Systems Frigate 2000 design with a modern combat data system and automated machinery control.
Operational: Delivery dates were delayed by weapon system integration problems but both arrived in Malaysia in early 2000. Form 23rd Frigate Squadron.



LEKIU

6/2007, Royal Malaysian Navy / 1167989



JEBAT

7/2008, John Mortimer / 1339395

CORVETTES

2 KASTURI (TYPE FS 1500) CLASS (FSGH)

Name	No	Builders	Laid down	Launched	Commissioned
KASTURI	25	Howaldtswerke, Kiel	3 Jan 1983	14 May 1983	15 Aug 1984
LEKIR	26	Howaldtswerke, Kiel	3 Jan 1983	14 May 1983	15 Aug 1984

Displacement, tons: 1,500 standard; 1,850 full load
Dimensions, feet (metres): 319.1 x 37.1 x 11.5
 (97.3 x 11.3 x 3.5)
Main machinery: 4 MTU 20V 1163 T892 diesels, 23,400 hp(m) (17.2 MW) sustained; 2 shafts
Speed, knots: 28; 18 on 2 diesels
Range, n miles: 3,000 at 18 kt; 5,000 at 14 kt
Complement: 124 (13 officers)

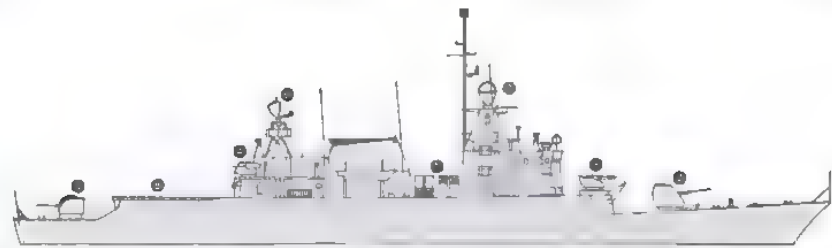
Missiles: SSM: 8 Aerospatiale MM 40 Exocet Block II ☉; inertial cruise; active radar homing to 70 km (40 n miles) at 0.9 Mach; warhead 165 kg; sea-skimmer.
Guns: 1 Creusot-Loire 3.9 in (100 mm)/55 Mk 2 compact ☉; 20/45/90 rds/min to 17 km (9.2 n miles) anti-surface; 6 km (3.2 n miles) anti-aircraft; weight of shell 13.5 kg.
 1 Bofors 57 mm/70 ☉; 200 rds/min to 17 km (9.2 n miles); weight of shell 2.4 kg. Launchers for illuminants.
 4 Emerson Electric 30 mm (2 twin) ☉; 1,200 rds/min combined to 6 km (3.2 n miles); weight of shell 0.35 kg.

A/S mortars: 1 Bofors 375 mm twin trainable launcher ☉; automatic loading; range 3,600 m.
Countermeasures: Decoys: 2 CSEE Dagaie trainable systems; replaceable containers for IR or chaff
 ESM Rapids.
 ECM MEL Scimitar, jammer
Combat data systems: Signaal Sewaco-MA. Link Y Mk 2.
Electro-optic systems: 2 Signaal LIOD optronic directors.
Radars: Air/surface search: Signaal DA08 ☉; F-band

Navigation: Kelvin Hughes 1007; I-band.
Fire control: Signaal WM22 ☉; I/J-band
IFF: US Mk 10
Sonars: Atlas Elektronik DSQS-21C; hull mounted; active search and attack; medium frequency.
Helicopters: Platform for 1 medium ☉
Programmes: First two ordered in February 1981. Fabrication began early 1982
Modernisation: An extensive Ship Life Extension Programme (SLEP) for both ships started in 2007. The upgrade includes a new Combat Data System (Tactics), IFF, Target Designation Sight (TDS), Mirador optronic

KASTURI

director, and underwater telephone. Bofors 375 A/S launchers are to be replaced by 324 mm torpedo tubes with A244S torpedoes while the 30 mm armament is to be replaced by new 30 mm MSI D530B REMSIG guns. The 100 mm gun forward is to be replaced by a Bofors 57 mm gun while the aft 57 mm gun is to be removed to facilitate extension of the flight deck. Super Barricade is to replace the Dagaie chaff system while the MEL Scimitar jammer is to be removed. The refits are to be completed by 2009 and 2010 respectively.
Structure: Near sisters to the Colombian ships with differing armament.
Operational: Form 22nd Corvette Squadron.



(Scale 1 : 900), Ian Sturton / 0608055



LEKIR

12/2007, Michael Nitz / 1170224



KASTURI

12/2005, Chris Sattler / 1153383



KASTURI

12/2005, Hartmut Ehlers / 1154844

496 Malaysia/Corvettes

3 + 3 KEDAH (MEKO 100 RMN) CLASS (FSGHM)

Name	No	Builders	Laid down	Launched	Commissioned
KEDAH	171	Blohm + Voss/Penang Shipbuilding	13 Nov 2001	21 Mar 2003	5 June 2006
PAHANG	172	Blohm + Voss/Penang Shipbuilding	21 Dec 2001	2 Oct 2003	3 Aug 2006
PERAK	173	Boustead Naval Shipyard, Lumut	2 Jan 2003	12 Nov 2007	Mar 2009
TERENGGANU	174	Boustead Naval Shipyard, Lumut	Aug 2004	6 Dec 2007	July 2009
KELANTAN	175	Boustead Naval Shipyard, Lumut	July 2005	24 Nov 2008	Nov 2009
SELANGOR	176	Boustead Naval Shipyard, Lumut	July 2006	2009	Mar 2010

Displacement, tons: 1,650 full load
 Dimensions, feet (metres): 298.9 x 42.2 x 11.1
 (91.1 x 12.85 x 3.4)
 Main machinery: 2 Caterpillar 3616 diesels, 14,617 hp(m)
 (10.9 MW) sustained; 2 shafts, cp propellers
 Speed, knots: 22
 Range, n miles: 6,050 at 12 kt
 Complement: 68 (11 officers)



KEDAH

(Scale 1 : 800), Ian Sturton / 1044756

Missiles: Fitted for SSM (MM40) and SAM (RAM CIWS)
 Guns: 1 Otobreda 3 in (76 mm)/62 Super Rapid; 120 rds/min to 16 km (8.7 n miles); weight of shell 6 kg.
 1—30 mm Otobreda/Mauser 2—12.7 mm MGs.
 Countermeasures: Decoys RBOC chaff launcher
 Combat data systems: STN Atlas Cosys 110M1
 Electro-optic systems: Contraves TMEO optronic director
 Radars: Air/surface search: EADS TRS-3D/16ES
 G-band
 Navigation: Atlas Elektronik 9600 ARPA; I-band.
 Sonars: Fitted for.
 Helicopters: Platform for medium helicopter.

Programme: An agreement between the Malaysian government, the Panang Shipbuilding Corporation (PSC) and German Naval Group consortium (led by Blohm + Voss) was reached in November 2000 for the supply of an initial batch of six vessels. The first two OPVs were built in Germany for shipment to Malaysia and assembly and fitting out at Lumut. The other four ships are under construction in Malaysia. Following technical problems and construction delays PSC reverted

to state control as Boustead Naval Shipyard which took over the programme in September 2005.
Structure: Design based on Blohm + Voss MEKO 100 including measures to reduce the radar and IR signatures. Space has been included for future enhancements which may include SSM, SAM, sonar and an EW suite.
Operational: Principal tasks are expected to be maritime surveillance and patrol duties in the Malaysian EEZ. The first two are to be based at Sepanggar.



PAHANG

6/2007, Royal Malaysian Navy / 1167988



KEDAH

12/2007, Michael Nitz / 1170275

4 LAKSAMANA (ASSAD) CLASS (FSGM)

Name	No	Builders	Laid down	Launched	Commissioned
LAKSAMANA HANG NADIM (ex-Khalid Ibn Al Walid)	F 134 (ex-F 216)	Fincantien, Breda, Mestre	3 June 1982	5 July 1983	28 July 1997
LAKSAMANA TUN ABDUL JAMIL (ex-Saad Ibn Abi Waccada)	F 135 (ex-F 218)	Fincantieri, Breda, Marghera	17 Sep 1982	2 Dec 1983	28 July 1997
LAKSAMANA MUHAMMAD AMIN (ex-Abdulla Ben Abi Sarh)	F 136 (ex-F 214)	Fincantieri, Breda, Mestre	22 Mar 1982	5 July 1983	31 July 1999
LAKSAMANA TAN PUSMAH (ex-Salahi Ad Deen Alayoori)	F 137 (ex-F 220)	Fincantieri, Breda, Marghera	17 Sep 1982	30 Mar 1984	31 July 1999

Displacement, tons: 705 full load
Dimensions, feet (metres): 204.4 x 30.5 x 8
(62.3 x 9.3 x 2.5)

Main machinery: 4 MTU 20V 956 TB92 diesels; 20,120 hp (m)
(14.8 MW) sustained; 4 shafts
Speed, knots, 36. Range, n miles: 2,300 at 18 kt
Complement: 47

Missiles. SSM. 6 OTO Melara/Matra Otomat Teseo Mk 2
(TG 2) (3 twin) ●; command guidance; active radar
homing to 180 km (98.4 n miles) at 0.9 Mach; warhead
210 kg; sea skimmer.

SAM. 1 Selenia/Elsag Albatros launcher ● (4 cell-2 reloads);
Aspide; semi-active radar homing to 13 km (7 n miles)
at 2.5 Mach; height envelope 15-5,000 m (49.2-16,405 ft);
warhead 30 kg.

Guns: 1 OTO Melara 3 in (76 mm)/62 Super Rapid ●;
120 rds/min to 16 km (8.7 n miles) anti-surface; 12 km
(6.6 n miles) anti-aircraft; weight of shell 6 kg.
2 Breda 40 mm/70 (twin) ●; 300 rds/min to 12.5 km
(6.8 n miles); weight of shell 0.95 kg.

Torpedoes. 6-324 mm (LAS 3 (2 triple) tubes ● Whitehead
A244S; anti-submarine; active/passive homing to 7 km
(3.8 n miles); warhead 34 kg (shaped charge).

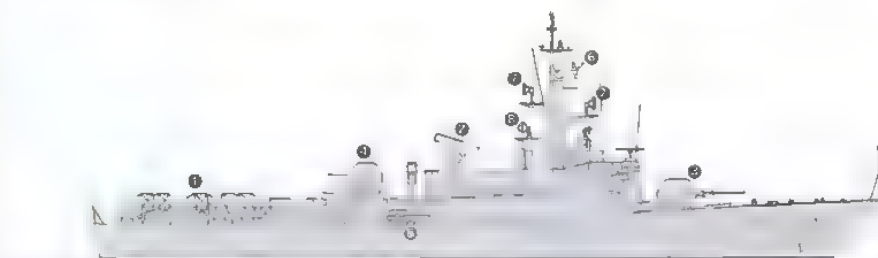
Countermeasures: Decoys: 2 Breda 105 mm 6-tubed
multipurpose launchers; chaff to 5 km (2.7 n miles);
illuminants to 12 km (6.6 n miles).

ESM. Selenia INS-3; intercept

ECM. Selenia TQN-2; jammer

Combat data systems: Selenia IPN 10 (136, 137); Alenia
IPN-S (134, 135); Signaal/AESN Link Y Mk 2.

Weapons control: 2 Selenia NA 21; Dardo.



LAKSAMANA HANG NADIM

(Scale 1 : 600), Ian Sturton / 0126348

Radars: Air/surface search: Selenia RAN 12L/X ●; D/I-band;
range 82 km (45 n miles).

Navigation. Kelvin Hughes 1007, I-band

Fire control 2 Selenia RTN 10X ●; I/J-band; 1 Selenia RTN
20X ●; I/J-band.

Sonars: Atlas Elektronik ASO 84-41; hull-mounted; active
search and attack.

Programmes: Ordered in February 1981 for the Iraqi Navy
and fell foul of UN sanctions before they could either be
paid for or delivered. Subsequently completed in 1988
and maintained by Fincantieri. Two near sister ships were
paid for by Iraq and remain laid up at La Spezia. Contract
signed on 26 October 1995, and confirmed on 26 July
1996, to transfer two of the class to the Malaysian Navy

after refit at Muggiano and three months training in Italy.
Contract for two more signed on 20 February 1997 for
conversion and delivery.

Modernisation: Super Rapid 76 mm gun, datalink, new
navigation radar and GPS fitted in 1996. Bridge wings
are extended to the after gun deck. Contract signed with
Alenia Marconi on 11 April 2002 to upgrade command
systems of F 134 and F 135 to IPN-S.

Structure: NBC citadel and full air conditioning fitted
Operational: First pair arrived in Malaysia in September
1997. Second pair delayed by payment problems but
arrived in September 1999. Constitute 24th Corvette
Squadron.

Opinion: This was an unusual purchase because of the lack
of equipment commonality with the rest of the Fleet.



LAKSAMANA MUHAMMAD AMIN

12/2007, Michael Nitz / 1170223



LAKSAMANA TAN PUSMAH

10/2003, Hartmut Ehlers / 056/894

498 Malaysia/Shipborne aircraft – Patrol forces

SHIPBORNE AIRCRAFT

Notes: (1) Sikorsky S-61A Nuri Army support helicopter can be embarked in the two Logistic Support Ships.
 (2) The procurement of six anti-submarine helicopters is under consideration. Contenders include the AgustaWestland AW 101, NH Industries NH 90 and Sikorsky MH-60R Seahawk.



NURI 6/1997 / 0081211

Numbers/Type: 6 GKN Westland Super Lynx.
Operational speed: 132 kt (244 km/h).
Service ceiling: 10,000 ft (3,048 m).
Range: 320 n miles (593 km).
Role/Weapon systems: Ordered on 3 September 1999. All delivered in 2003. ASW, ASuW and surveillance roles. Sensors: Seaspray radar; Sky Guardian 2500 ESM, MST-S FLIR. Weapons: ASW; two A244S torpedoes. ASV; three Sea Skus ASM, 2 – 12.7 mm MG.



SUPER LYNX 6/2007, Royal Malaysian Navy / 1167987

LAND-BASED MARITIME AIRCRAFT

Notes: The Air Force has eight F/A-18D fighter-bombers with Harpoon ASM, and 15 Hawk fighters with Sea Eagle ASM.

Numbers/Type: 6 Aerospatiale AS 555 Fennec.
Operational speed: 120 kt (222 km/h).
Service ceiling: 10,000 ft (3,050 m).
Range: 389 n miles (722 km).
Role/Weapon systems: Unarmed aircraft ordered late 2001 for delivery in June 2004. Utility, SAR and training roles. Sensors: Bendix RDR 1500B radar; EWR 99 Fruit RWR; ARGOS 410-A5 FLIR. Weapons: 7.62 mm MG.



FENNEC 6/2007, Royal Malaysian Navy / 1167986

Numbers/Type: 4 Beechcraft B 200T Super King
Operational speed: 282 kt (523 km/h)
Service ceiling: 35,000 ft (10,670 m).
Range: 2,030 n miles (3,756 km).
Role/Weapon systems: Used for maritime surveillance. Acquired in 1994. Air Force operated. Sensors: Search radar. Weapons: Unarmed



SUPER KING 6/1993 / 0084007

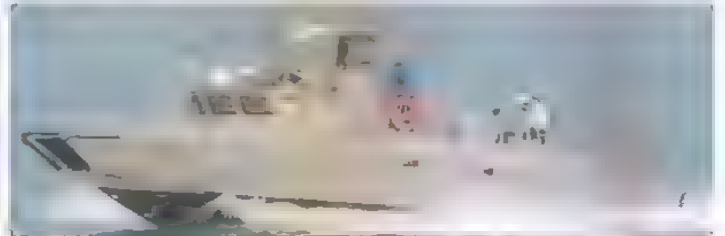
PATROL FORCES

17 COMBATBOAT 90H (PBF)

TEMPUR 1 TEMPUR 21–24 TEMPUR 41–44
 TEMPUR 11–14 TEMPUR 31–34

Displacement, tons: 19 full load
Dimensions, feet (metres): 52.2 x 12.5 x 2.6 (15.9 x 3.8 x 0.8)
Main machinery: 2 Volvo Penta TAMD 163P diesels; 1,500 hp(m) (1.1 MW); 2 waterjets
Speed, knots: 45. **Range, n miles:** 240 at 30 kt
Complement: 3
Guns: 1 – 7.62 mm MG.
Radars: Surface search: I-band

Comment: Ordered from Dockstarvarvet in Sweden in April 1997. Have more powerful engines than the boats in Swedish service. Primary role is maritime law enforcement particularly on east coast of Sabah. Three Combatboat 90E are operated by the Customs service



TEMPUR 31 6/2007, Royal Malaysian Navy / 1167984

4 HANDALAN (SPICA-M) CLASS
 (FAST ATTACK CRAFT – MISSILE) (PTFG)

Name	No	Builders	Commissioned
HANDALAN	3511	Karlskrona, Sweden	26 Oct 1979
PERKASA	3512	Karlskrona, Sweden	26 Oct 1979
PENDEKAR	3513	Karlskrona, Sweden	26 Oct 1979
GEMPITA	3514	Karlskrona, Sweden	26 Oct 1979

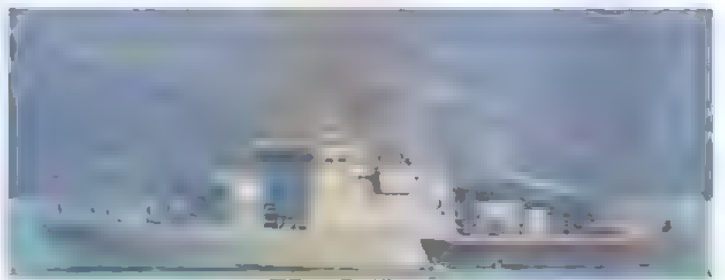
Displacement, tons: 240 full load
Dimensions, feet (metres): 142.6 x 23.3 x 7.4 (screws) (43.6 x 7.1 x 2.4)
Main machinery: 3 MTU 16V 538TB91 diesels; 9,180 hp(m) (6.75 MW) sustained, 3 shafts
Speed, knots: 34.5 **Range, n miles:** 1,850 at 14 kt
Complement: 40 (8 officers)

Missiles: SSM: 4 Aerospatiale MM 38 Exocet; inertial cruise; active radar homing to 42 km (23 n miles) at 0.9 Mach; warhead 165 kg; sea-skimmer.
Guns: 1 Bofors 57 mm/70 Mk 1; 200 rds/min to 17 km (9.2 n miles); weight of shell 2.4 kg
Illuminant launchers:
 1 Bofors 40 mm/70; 300 rds/min to 12 km (6.5 n miles) anti-surface; 4 km (2.2 n miles) anti-aircraft; weight of shell 0.96 kg.
Countermeasures: ESM: Thales DR 3000, intercept
Weapons control: 1 PEAB 9LV212 Mk 2 weapon control system with TV tracking LME anti-aircraft laser and TV rangefinder
Radars: Surface search: Philips 9GR 600, I-band (agile frequency).
Navigation: Kelvin Hughes 1007; I-band
Fire control: Philips 9LV 212; J-band.

Programmes: Ordered 15 October 1976. All named in one ceremony on 11 November 1978, arriving in Port Klang on 26 October 1979.

Modernisation: There are plans to replace the MM 38 with MM 40 or Teseo missiles and to update radar and EW.

Operational: Form 2nd Fast Attack Craft Squadron and based in Area 1.



GEMPITA 12/2007, Chris Sattler / 1170003

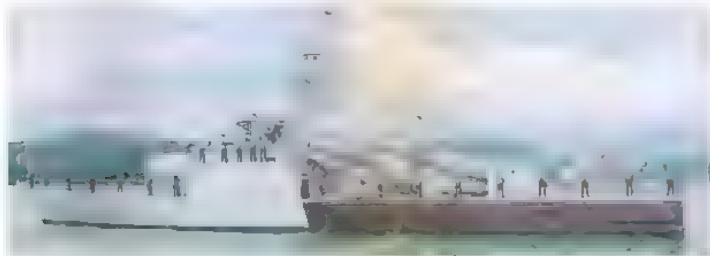
**4 PERDANA (LA COMBATTANTE II) CLASS
(FAST ATTACK CRAFT—MISSILE) (PTFG)**

Name	No	Builders	Launched	Commissioned
PERDANA	3501	CMN, Cherbourg	31 May 1972	21 Dec 1972
SERANG	3502	CMN, Cherbourg	22 Dec 1971	31 Jan 1973
GANAS	3503	CMN, Cherbourg	26 Oct 1972	28 Feb 1973
GANYANG	3504	CMN, Cherbourg	16 Mar 1972	20 Mar 1973

Displacement, tons: 234 standard, 265 full load
Dimensions, feet (metres): 154.2 x 23.1 x 12.8 (47 x 7 x 3.9)
Main machinery: 4 MTU MB 870 diesels; 14,000 hp(m) (10.3 MW); 4 shafts
Speed, knots: 36.5 **Range, n miles:** 800 at 25 kt; 1,800 at 15 kt
Complement: 30 (4 officers)

Missiles: SSM: 2 Aerospatiale MM 38 Exocet; inertial cruise; active radar homing to 42 km (23 n miles) at 0.9 Mach; warhead 166 kg, sea-skimmer. Not always carried
Guns: 1 Bofors 57 mm/70, 200 rds/min to 17 km (9.2 n miles); weight of shell 2.4 kg.
 1 Bofors 40 mm/70; 300 rds/min to 12 km (6.5 n miles) anti-surface; 4 km (2.2 n miles) anti-aircraft; weight of shell 0.96 kg.
Countermeasures: Decoys: 4 57 mm chaff/flare launchers.
ESM: Thomson-CSF DR 3000; intercept.
Weapons control: Thomson-CSF Vega optical for guns.
Radars: Air/surface search: Thomson-CSF TH-D 1040 Trton; G band; range 33 km (18 n miles) for 2 m² target.
 Navigation: Kelvin Hughes 1007; I-band.
 Fire control: Thomson-CSF Pollux; I/J-band; range 31 km (17 n miles) for 2 m² target.

Programmes: Left Cherbourg for Malaysia 2 May 1973
Modernisation: There are plans to replace MM 38 with MM 40 or Teseo SSMs and to update radar and EW
Structure: All of basic La Combattante II design with steel hulls and aluminium superstructure
Operational: Form 1st Fast Attack Craft Squadron and based in Area 1.



GANYANG 12/2005, Chris Sattler / 1153393

6 JERONG CLASS (FAST ATTACK CRAFT—GUN) (PB)

Name	No	Builders	Commissioned
JERONG	3505	Hong Leong-Lürssen, Butterworth	27 Mar 1976
TODAK	3506	Hong Leong-Lürssen, Butterworth	18 June 1976
PAUS	3507	Hong Leong-Lürssen, Butterworth	16 Aug 1976
YU	3508	Hong Leong-Lürssen, Butterworth	15 Nov 1976
BAUNG	3509	Hong Leong-Lürssen, Butterworth	11 Jan 1977
PARI	3510	Hong Leong-Lürssen, Butterworth	23 Mar 1977

Displacement, tons: 244 full load
Dimensions, feet (metres): 147.3 x 23 x 8.3 (44.9 x 7 x 2.5)
Main machinery: 3 MTU MB 16V 538 TB90 diesels; 9,000 hp(m) (6.6 MW) sustained; 3 shafts
Speed, knots: 32 **Range, n miles:** 2,000 at 14 kt
Complement: 36 (4 officers)
Guns: 3 Bofors 57 mm/70 Mk 1, 200 rds/min to 17 km (9.2 n miles); weight of shell 2.4 kg
 1 Bofors 40 mm/70.
Countermeasures: ESM, Thales DR 3000; intercept.
Radars: Surface search, Kelvin Hughes 1007; I-band.

Comment: Lürssen 45 type. Illuminant launchers on both gun mountings. Design of hull modification is reported to have been contracted. Form 6th Fast Attack Squadron based at Labuan



TODAK 6/2007, Royal Malaysian Navy / 116798F

2 31 METRE PATROL CRAFT (PB)

Name	No	Builders	Commissioned
SRI PERLIS	47	Vosper Ltd, Portsmouth	24 Jan 1968
SRI JOHOR	49	Vosper Ltd, Portsmouth	14 Feb 1968

Displacement, tons: 96 standard, 109 full load
Dimensions, feet (metres): 103 x 19.8 x 5.5 (31.4 x 6 x 1.7)
Main machinery: 2 MTU MD 656/18 diesels; 3,500 hp(m) (2.57 MW); 2 shafts
Speed, knots: 27
Range, n miles: 1,400 at 14 kt
Complement: 22 (3 officers)
Guns: 2 Bofors 40 mm/70, 2—7.62 mm MGs
Radars: Surface search: Racal Decca Bridgemaster ARPA, I-band

Comment: Two boats of the Kns class ordered in 1965 for delivery between 1966 and 1968. Prefabricated steel construction and fitted with air conditioning and Vosper roll damping equipment. These two craft form the 12th Patrol Boat Squadron based at Lumut. The remaining craft of the 13th and 14th Squadrons have been transferred to the Maritime Enforcement Agency (MMEA)



31 METRE CLASS 11/2001, Maritime Photographic / 0130744

AMPHIBIOUS FORCES

Notes: There is a requirement for up to three multirole support ships. The ships are to be capable of transporting up to 700 troops in addition to vehicles, guns and helicopters and will also have hospital facilities

1 NEWPORT CLASS (LSTH)

Name	No	Builders	Laid down	Launched	Commissioned
SRI INDERAPURA (ex: Spartanburg County)	1505 (ex-1192)	National Steel, San Diego	7 Feb 1970	11 Nov 1970	1 Sep 1971

Displacement, tons: 4,975 light, 8,450 full load
Dimensions, feet (metres): 522.3 (hull) x 89.5 x 17.5 (aft) (159.2 x 27.2 x 5.3)
Main machinery: 6ALCO 16-251 diesels; 16,500 hp (12.3 MW) sustained; 2 shafts; cp props; bow thruster
Speed, knots: 20 **Range, n miles:** 14,250 at 14 kt
Complement: 257 (13 officers)
Military lift: 400 troops (20 officers); 500 tons vehicles; 3 LCVPs and 1 LCPL on davits

Guns: 1 General Electric/General Dynamics 20 mm Vulcan Phalanx Mk 15
Radars: Surface search, Raytheon SPS-67; G-band
 Navigation: Marconi LN66; I/J-band
 Kelvin Hughes 1007; I-band.

Helicopters: Platform only

Programmes: Transferred by sale from the USN 16 December 1994, arriving in Malaysia in June 1995. Second authorised for transfer by lease in 1998 but this was not confirmed.

Structure: The hull form required to achieve 20 kt would not permit bow doors, thus these ships unload by a 112 ft ramp over their bow. The ramp is supported by twin derrick arms. A ramp just forward of the superstructure



SRI INDERAPURA 7/2007, Robert Pabst / 1166R14

connects the lower tank deck with the main deck and a vehicle passage through the superstructure provides access to the parking area amidships. A stern gate to the tank deck permits unloading of amphibious tractors into the water, or unloading of other vehicles into an LCU or onto a pier. Vehicle stowage covers 19,000 sq ft.

Length over derrick arms is 562 ft (171.3 m); full load draught is 11.5 ft forward and 17.5 ft aft.
Operational: 3 in guns removed before transfer. Repeated refits in Johore shipyard between late 1995 and 1998. Damaged by fire on 15 December 2002 at Lumut but subsequently repaired. Forms 32 Sealift Squadron.

500 Malaysia/Amphibious forces — Survey ships

5 LCP

RCP 2 RCP 3 RCP 6 RCP 8 RCP 9

Displacement, tons: 30 full load
Main machinery: 2 diesels; 330 hp (246 kW); 2 shafts
Speed, knots: 17
Military lift: 35 troops

Comment: Malaysian built and in service 1974–84. Transferred to the Army in 1993.

130 DAMEN ASSAULT CRAFT 540

Dimensions, feet (metres): 17.7 × 5.9 × 2 (5.4 × 1.8 × 0.6)
Main machinery: 1 outboard; 40 hp(m) (29.4 kW)
Speed, knots: 12
Military lift: 10 troops

Comment: First 65 built by Damen Gorinchem, Netherlands in 1986. Remainder built by Limbungan Timor SY. Army assault craft. Manportable and similar to Singapore craft. Used by the Army. Some have been deleted.

2 FAST TROOP VESSELS (AP)

SRI GAYA 331 SRITIGA 332

Displacement, tons: 116.5 full load
Dimensions, feet (metres): 123.1 × 23.0 × 3.6 (375 × 70 × 1.1)
Main machinery: 4 MAN D2842 LE 408 diesels, 2,080 hp (1.55 MW); 4 water-jets
Speed, knots: 25
Range, n miles: 540
Complement: 8
Military lift: 32 troops + stores
Radars: Navigation: Furuno; I-band.

Comment: Design based on Australian Wave Master fast-ferry monohull. Procured to transport troops and stores particularly in Sabah and Sarawak waters. Built by Naval Dockyard, Lumut and commissioned on 29 May 2001. Based at Kota Kinabalu.



SRI GAYA 12/2005, Chris Sattler / 1153396

2 LOGISTIC SUPPORT SHIPS (AOR/AE/AXH)

Name	No	Builders	Commissioned
SRI INDERA SAKTI	1503	Bremer Vulkan	24 Oct 1980
MAHAWANGSA	1504	Korea Tacoma	15 May 1983

Displacement, tons: 4,300 (1503); 4,900 (1504) full load
Dimensions, feet (metres): 328; 337.8 (1504) × 49.2 × 15.7 (100; 103 × 15 × 4.8)
Main machinery: 2 Deutz KHD SBV6M540 diesels; 5,865 hp(m) (4.31 MW); 2 shafts; cp props; bow thruster
Speed, knots: 16.5
Range, n miles: 4,000 at 14 kt
Complement: 136 (14 officers) plus 65 spare
Military lift: 17 tanks; 600 troops
Cargo capacity: 1,300 tons diesel; 200 tons fresh water (plus 48 tons/day distillers)

Guns: 2 Bofors 57 mm Mk 1 (1 only fwd in 1503). 2 Oerlikon 20 mm.
Countermeasures: ESM. Thales DR 3000; intercept.
Radars: Navigation: Kelvin Hughes 1007; I-band.

Helicopters: 1 Sikorsky S-61A Nuri (army support) can be carried (1504 only).

Programmes: Ordered in October 1979 and 1981 respectively.

Structure: Fitted with stabilising system, vehicle deck, embarkation ramps port and starboard, recompression chamber and a stern anchor. Large operations room and a conference room are provided. Transfer stations on either beam and aft, light jacks on both sides and a 15 ton crane for replenishment at sea. 1504 has additional capacity to transport ammunition and the funnel has been removed to enlarge the flight deck which is also higher in the superstructure.

Operational: Used as training ships for cadets in addition to main roles of long-range support of Patrol Forces and MCM vessels, command and communications and troop or ammunition transport. Form 31 Squadron.



SRI INDERA SAKTI 6/2007, Royal Malaysian Navy / 1170005



MAHAWANGSA 12/2007, Chris Sattler / 1170002

MINE WARFARE FORCES

4 MAHAMIRU (LERICI) CLASS (MINEHUNTERS) (MHC)

Name	No	Builders	Launched	Commissioned
MAHAMIRU	11	Intermarine, Italy	23 Feb 1984	11 Dec 1985
JERAI	12	Intermarine, Italy	5 Jan 1984	11 Dec 1985
LEDANG	13	Intermarine, Italy	14 July 1983	11 Dec 1985
KINABALU	14	Intermarine, Italy	19 Mar 1983	11 Dec 1985

Displacement, tons: 610 full load
Dimensions, feet (metres): 167.3 × 32.5 × 9.2 (51 × 9.9 × 2.8)
Main machinery: 2 MTU 12V 396TC82 diesels (passage); 2,605 hp(m) (1.91 MW) sustained, 2 shafts, Kamewa cp props; 3 Fincantieri Isotta Fraschini ID 36 SS 6V diesels; 1,481 hp(m) (1.09 MW) sustained, 2 Riva Calzoni hydraulic thrust jets
Speed, knots: 16 diesels; 7 thrust jet
Range, n miles: 2,000 at 12 kt
Complement: 42 (5 officers)
Guns: 1 Bofors 40 mm/70; 300 rds/min to 12.5 km (6.8 n miles); weight of shell 0.96 kg.
Countermeasures: Thomson-CSF IBIS II minehunting system; 2 improved PAP 104 ROVs. Oropesa 'O' MIS-4 mechanical sweep.
Radars: Navigation: Kelvin Hughes 1007; Thomson-CSF Tripartite III; I-band.
Sonars: Thomson Sintra TSM 2022 Mk III with Display 2060; minehunting; high frequency.

Comment: Ordered on 20 February 1981. All arrived in Malaysia on 26 March 1986. Heavy GRP construction without frames. Snatch active tank stabilisers. Draeger Duocomb decompression chamber. Slightly longer than Italian sisters. Endurance, 14 days. Upgrade of tactical data system completed in 2001; Minehunting Tactical Display System (MTDS) installed by Altech Defence System, South Africa. A SLEP for Mahamiru and Ledang was completed in 2007. Upgrades included TSM Mk III sonar, MTDS adaptation and Kongsberg navigation echo-sounder. The other two ships are to be similarly modified. Form the 26th Mine Countermeasures Squadron.



MAHAMIRU 12/2007, Chris Sattler / 1170001

SURVEY SHIPS

1 SURVEY VESSEL (AGSH)

Name	No	Builders	Commissioned
MUTIARA	255 (ex-152)	Hong Leong-Lurssen, Butterworth	12 Jan 1978

Displacement, tons: 1,905 full load
Dimensions, feet (metres): 232.9 × 42.8 × 13.1 (71 × 13 × 4)
Main machinery: 2 Deutz SBA12M528 diesels; 4,000 hp(m) (2.94 MW); 2 shafts
Speed, knots: 16
Range, n miles: 4,500 at 16 kt
Complement: 155 (14 officers)
Guns: 4 Oerlikon 20 mm (2 twin).
Radars: Navigation: 2 Racal Decca 1228/1229; I-band
Helicopters: Platform only.

Comment: Ordered in early 1975. Carries satellite navigation, auto-data system and computerised fixing system. Devita for six survey launches. Forms part of 36 Squadron.



MUTIARA 12/2005, Chris Sattler / 1153397

1 SURVEY VESSEL (AGS)

Name	No	Builders	Commissioned
PERANTAU	151	Hong Leong-Lürssen, Butterworth	12 Oct 1998

Displacement, tons: 1,996 full load
Dimensions, feet (metres): 222.4 × 43.6 × 13.1 (678 × 13.3 × 4)
Main machinery: 2 Deutz/MWM SBV8 M628 diesels; 4,787 hp(m) (3.52 MW); 2 shafts; Berg cp props, Schottel bow thruster
Speed, knots: 18. **Range, n miles:** 6,000 at 10 kt
Complement: 94 (17 officers)
Guns: 4 Oerlikon 20 mm (2 twin).
Radars: Navigation: STN Atlas; I-band.

Comment: Ordered from Krogenwerft in 1996. The ship is equipped with two survey launches and four multipurpose boats and has three winches and two cranes, including a hoist for a STN Atlas side scan sonar. Full range of hydrographic and mapping equipment embarked. Forms part of 36 Squadron.



PERANTAU 6/2007, Royal Malaysian Navy / 1167987

TRAINING SHIPS

1 HANGTUAH (TYPE 41/61) CLASS (FFH/AX)

Name	No	Builders	Commissioned
HANGTUAH (ex-Mermaid)	78	Yarrow (Shipbuilders), Glasgow	16 May 1973

Displacement, tons: 2,300 standard; 2,520 full load
Dimensions, feet (metres): 339.3 × 40 × 16 (screws) (103.5 × 12.2 × 4.9)
Main machinery: 2 Stork Wärtsilä 12SW28 diesels; 9,928 hp(m) (7.3 MW) sustained; 2 shafts; cp props
Speed, knots: 24. **Range, n miles:** 4,800 at 15 kt
Complement: 210
Guns: 1 Bofors 57 mm/70 Mk 1; 200 rds/min to 17 km (9.2 n miles); weight of shell 2.4 kg. 2 Bofors 40 mm/70, 300 rds/min to 12 km (6.5 n miles) anti-surface; 4 km (2.2 n miles) anti-aircraft; weight of shell 0.96 kg.
Radars: Navigation: Kelvin Hughes 1007; I-band.
Helicopters: Platform for 1 medium.

Comment: Originally built for Ghana as a display ship for ex-President Nkrumah but put up for sale after his departure. She was launched without ceremony on 29 December 1965 and completed in 1968. Commissioned in Royal Navy 16 May 1973 and transferred to Royal Malaysian Navy May 1977. Refitted in 1991–92 to become a training ship. Main gun and main engines replaced in 1995–96. Sonars and Limbo ASW mortars removed. There are no plans for further modifications. Forms 21st Frigate Squadron.



HANGTUAH 12/2007, Chris Settler / 1188000

1 SAIL TRAINING SHIP (AXS)

Name	No	Builders	Commissioned
TUNAS SAMUDERA	A 13	Brooke Yacht, Lowestoft	16 Oct 1989

Displacement, tons: 239 full load
Dimensions, feet (metres): 114.8 × 25.6 × 13.1 (35 × 7.8 × 4)
Main machinery: 2 Perkins diesels; 370 hp (272 kW); 2 shafts
Speed, knots: 9
Complement: 10 plus 26 trainees
Radars: Navigation: Racal Decca; I-band.

Comment: Laid down 1 December 1988 and launched 4 August 1989. Two-masted brig manned by the Navy but used for training all sea services.



TUNAS SAMUDERA 7/2007, B. Prézeln / 1166815

1 NAVAL TRAINING SHIP (AX)

FAJAR SAMUDERA (ex-Yufu, ex-Ferry Sunrise)

Measurement, tons: 4,476 gross
Dimensions, feet (metres): 295.6 × 51.2 × 14.8 (90.1 × 15.6 × 4.5)
Main machinery: 2 Daihatsu diesels; 7,200 hp (5.4 MW); 2 shafts
Speed, knots: 19
Complement: 25 plus 350 trainees
Radars: Navigation: I-band.

Comment: Former passenger/Ro-Ro ship constructed by Kanda Shipbuilding Company, Japan in 1989. Leased as a training ship by the Royal Malaysian Navy.



FAJAR SAMUDERA 6/2007, Royal Malaysian Navy / 1170009

1 SAIL TRAINING SHIP (AXS)

PUTERI MAHSURI (ex-Kanrin Maru)

Measurement, tons: 794 gross
Dimensions, feet (metres): 215.9 oa; 158.1 w l × 34.4 × 14.8 (65.8; 48.2 × 10.5 × 4.5)
Main machinery: 2 Mitsubishi diesels; 938 hp (700 kW); 1 shaft, cp prop
Speed, knots: 7
Complement: 40
Radars: Furuno FR-1510; I-band.

Comment: Three-masted sailing barque constructed by De Merwede shipyard Netherlands, in 1991. Leased as a training vessel by the Royal Malaysian Navy.



PUTERI MAHSURI 6/2007, Royal Malaysian Navy / 1170008

AUXILIARIES

Notes: (1) There are six miscellaneous personnel launches: *Kempong, Kuramah, Mangkasa, Patak, Selar and Tepuruk*.
 (2) An ex-tug, *Penyu* (465 tons) is used as a diving tender. Commissioned in 1979, it has a complement of 26.



PENYU 10/2003, Hartmut Ehlers / 0567883

4 COASTAL SUPPLY SHIPS AND TANKERS (AOTL/AKSL)

LANG TRAM LANG SIPUT MELEBAN JERNIH

Comment: Various auxiliaries mostly acquired in the early 1980s. There are also Sabah supply ships identified by M numbers.

502 Malaysia/Auxiliaries – Malaysia (COAST GUARD)/Patrol forces

1 DIVING SUPPORT/SALVAGE VESSEL (ARS)

MAHSURI (ex-Bramen)

Measurement, tons: 4,112 gross
Dimensions, feet (metres): 301.8 × 62.3 × 24.3 (92.0 × 19.0 × 7.4)
Main machinery: 2 MAK diesels; 4,800 hp (3.53 MW); 1 shaft; 1 Ulstein bow thruster
Speed, knots: 14
Complement: 80
Radars: Atlas 9600; E/F/I-band.

Comment: Former research ship constructed by Schichau-Unterwester, Bremerhaven, in 1972. Extensively refitted in 2001. Leased as a multirole vessel by the Royal Malaysian Navy. Capabilities include hydrographic survey, diving support, submarine rescue and accommodation vessel. It is also used for training.



MAHSURI

12/2007, Chris Sattler / 1167999

1 DIVING SUPPORT/SALVAGE SHIP (ARS)

SETIA SEKAL (ex-Orient Explorer, ex-Lady Gay)

Measurement, tons: 994 gross
Dimensions, feet (metres): 189.9 × 43.3 × 14.8 (57.9 × 13.2 × 4.5)
Main machinery: 4 Daihatsu diesels; 4,200 hp (3.1 MW); 2 shafts; 2 kort nozzles; 1 Kamewa bow thruster, 300 hp (225 kW)
Speed, knots: 12
Complement: 40
Radars: 2 Furuno; I-band.

Comment: Ex-anchor handling tug constructed by Carrington Slipway, Newcastle, NSW in 1974. Refitted by Pan United Shipyard in 1996. Leased as a diving support and salvage vessel by the Royal Malaysian Navy. Equipped with a four-point mooring system, hydra-lift 10-ton crane and a two-unit diving chamber for a total of six men. Also fitted with hospital facilities and a workshop. There is a Launch And Recovery System (LARS) for a wet-bell system capable of mixed-gas diving to 90 m.



SETIA SEKAL

6/2007, Royal Malaysian Navy / 1170007

TUGS

10 HARBOUR TUGS (YTM/YTL)

TUNDA SATU 1	TERITUP A 10	SOTONG A 8
TUNDA SATU 2	SIPUT A 9	KUPANG A 7
TUNDA SATU 3	BELANKAS A 11	KEPAH A 8
KETAM A 5		



TUNDA SATU 1

6/2007, Royal Malaysian Navy / 1170006

COAST GUARD (MARITIME ENFORCEMENT AGENCY)

Headquarters Appointments

Director General

Admiral Datuk Mohd Amdan bin Kurish

Establishment

The Malaysian Maritime Enforcement Agency (MMEA) (or Agensi Penguatkuasaan Maritim Malaysia (APMM)) commenced operations on 30 November 2005. Under the provisions of ACT 633, which came into force on 15 February 2005, the MMEA shall be under the general command and control of the Armed Forces of Malaysia during any period of emergency, special crisis or war.

The MMEA is established through an amalgamation of resources of existing Maritime agencies that include the Royal Malaysian Navy, Royal Malaysian Police, Customs, Fisheries, Marine and Immigration Department. The MMEA has a force of approximately 100 over vessels comprising ships and craft. There are plans to purchase helicopters and fixed-wing aircraft.

Principal Missions

Enforcement of law and order under Malaysian Federal Law
 Maritime search and rescue
 Air and coastal surveillance

Maintenance of maritime safety and security
 Control and prevention of maritime pollution
 Prevention and suppression of piracy and illicit traffic in narcotic drugs

Personnel

2009: 2,000 approx
 There are plans to build up to a force of about 4,025 personnel.

Organisation

The Malaysian Maritime Zone is divided into five maritime regions which consist of 18 maritime districts.

Bases

MMEA HQ: Putrajaya
 Northern Peninsula: Regional HQ: Langkawi (HQ)
 District: Langkawi, Pulau Pinang, Lumut
 Southern Peninsula: Regional HQ: Johore Bahru
 District: Johore Baharu, Port Klang, Kuala Linggi, Tanjung Sedili
 Eastern Peninsula: Regional HQ: Kuantan
 District: Kuantan, Kuala Trengganu, Tok Bali
 Sarawak: Regional HQ: Kuching
 District: Kuching, Bintulu, Miru
 Sabah: Regional HQ: Kota Kinabalu
 District: Kota Kinabalu, Labuan, Kudat, Sandakan, Tawau

PATROL FORCES

Notes: (1) There are 38 RHIB craft with pennant numbers 711-738

(2) There is one 9 m patrol craft *Pengaman 1* (ex-*Mastura*) with pennant number 901

(3) There are five craft *Pelindung 1* (ex-PL 27), *Pelindung 2* (ex-PL 48), *Pelindung 3* (ex-PL 50), *Pelindung 4* (ex-PL 59), *Pelindung 5* (ex-PL 60) with pennant numbers 701-705.



PELINDUNG 4 (police colours)

12/2007, Chris Sattler / 1167994

2 LANGKAWI CLASS (OFFSHORE PATROL VESSELS) (PSOH)

Name	No	Builders	Launched	Commissioned
LANGKAWI (ex-Musyitari)	7501 (ex-180)	Korea Shipbuilders, Pusan	20 July 1984	18 Dec 1985
BANGGI (ex-Marikh)	7502 (ex-181)	Malaysia SB and E Co, Johore	21 Jan 1985	9 Apr 1987

Displacement, tons: 1,300 full load
Dimensions, feet (metres): 246 × 35.4 × 12.1 (75 × 10.8 × 3.7)
Main machinery: 2 SEMT Pielstick diesels; 12,720 hp(m) (9.35 MW); 2 shafts
Speed, knots: 22
Range, n miles: 5,000 at 15 kt
Complement: 76 (10 officers)
Guns: 1—57 mm.
 2 Emerson Electric 30 mm (twin); 1,200 rds/min combined to 6 km (3.2 n miles); weight of shell 0.35 kg.
Countermeasures: ESM. Thales DR 3000; intercept.
Weapons control: PEAB 9LV 230 optronic system
Radars: Air/surface search: Signaal DA05, E/F-band; range 137 km (75 n miles) for 2 m² target
Navigation: Kelvin Hughes 1007; I-band.
Fire control: Philips 9LV; J-band.
Helicopters: Platform for 1 medium

Programmes: Ordered in June 1983
Structure: Flight deck suitable for Sikorsky S-61A Nuri army support helicopter.
Operational: These ships were transferred from the Malaysian Navy on 23 June 2006 and became operational in 2007. Based in the Eastern Peninsula region.



BANGGI (old number)

12/2005, Chris Settler / 1153391



LANGKAWI

12/2007, Michael Nitz / 1167980

15 SIPADAN CLASS (PB)

Name	No	Builders	Commissioned
SIPADAN (ex-Sri Sarawak)	3131 (ex-3145)	Vosper Ltd, Portsmouth	30 Sep 1964
LANG (ex-Kris)	3132 (ex-34)	Vosper Ltd, Portsmouth	1 Jan 1966
SFGANTANG (ex-Sundang)	3133 (ex-36)	Vosper Ltd, Portsmouth	29 Nov 1966
JARAK (ex-Badek)	3134 (ex-37)	Vosper Ltd, Portsmouth	15 Dec 1966
KUKUP (ex-Panah)	3135 (ex-42)	Vosper Ltd, Portsmouth	27 July 1967
SEMPADI (ex-Kelewang)	3136 (ex-45)	Vosper Ltd, Portsmouth	4 Oct 1967
LABAS (ex-Sri Sabah)	3137 (ex-3144)	Vosper Ltd, Portsmouth	2 Sep 1964
NYIREH (ex-Sri Negri Sembilan)	3138 (ex-3146)	Vosper Ltd, Portsmouth	28 Sep 1964
KURAMAN (ex-Renchang)	3139 (ex-38)	Vosper Ltd, Portsmouth	17 Jan 1967
SIAMIL (ex-Tombak)	3140 (ex-39)	Vosper Ltd, Portsmouth	2 Mar 1967
PEMANGGIL (ex-Kerambit)	3141 (ex-43)	Vosper Ltd, Portsmouth	28 July 1967
BIDONG (ex-Beladai)	3142 (ex-44)	Vosper Ltd, Portsmouth	12 Sep 1967
SATANG (ex-Rentaka)	3143 (ex-46)	Vosper Ltd, Portsmouth	22 Sep 1967
RUMBIA (ex-Sri Melaka)	3144 (ex-3147)	Vosper Ltd, Portsmouth	2 Nov 1964
LIGITAN (ex-Lembing)	3145 (ex-40)	Vosper Ltd, Portsmouth	12 Apr 1967

Displacement, tons: 96 standard; 109 full load
Dimensions, feet (metres): 103 × 19.8 × 5.5 (31.4 × 6 × 1.7)
Main machinery: 2 Bristol Siddeley or MTU MD 655/18 diesels; 3,500 hp(m) (2.57 MW); 2 shafts
Speed, knots: 27
Range, n miles: 1,400 (1,660 Sabah class) at 14 kt
Complement: 22 (3 officers)

Guns: 2 Bofors 40 mm/70. 2—7.62 mm MGs.
Radars: Surface search: Racal Decca Bridgemaster ARPA; I-band.
Comment: The four ex-Sabah class were ordered in 1963 for delivery in 1964. The boats of the ex-Kris class were ordered in 1965 for delivery between 1966 and 1968. All are of prefabricated steel construction and are fitted with

air conditioning and Vosper roll damping equipment. The differences between the classes are minor, the later ones having improved radar, communications, evaporators and engines of MTU, as opposed to Bristol Siddeley construction. All have been refitted to extend their operational lives and transferred from the Malaysian Navy to MMEA by June 2006. Similar craft in service in Panama.



KUKUP

12/2005, Chris Settler / 1153401

504 Malaysia (COAST GUARD)/Patrol forces

15 GAGAH CLASS (PBF)

GAGAH (ex-Lang Malam) 3901 (ex-PZ 2)
TABAH (ex-Lang Lebah) 3902 (ex-PZ 3)
CEKAL (ex-Lang Kuik) 3903 (ex-PZ 4)
BERANI (ex-Kurita) 3904 (ex-PZ 7)
SETIA (ex-Serangan Batu) 3905 (ex-PZ 8)
AMANAH (ex-Harimau Bintang) 3906 (ex-PZ 9)
JUJUR (ex-Harimau Kimbang) 3907 (ex-PZ 10)
IKHLAS (ex-Harimau Akar) 3908 (ex-PZ 12)

BUDIMAN (ex-Mersuji) 3909 (ex-PZ 14)
TEGAS (ex-Lang Hitam) 3910 (ex-PZ 1)
MULIA (ex-Balang) 3911 (ex-PZ 5)
BIJAK (ex-Belian) 3912 (ex-PZ 6)
ADIL (ex-Harimau Belang) 3913 (ex-PZ 11)
PINTAR (ex-Parangan) 3914 (ex-PZ 13)
BISTARI (ex-Alu-Alu) 3915 (ex-PZ 15)

Displacement, tons: 230 full load
Dimensions, feet (metres): 126.3 x 22.9 x 5.9 (38.5 x 7 x 1.8)
Main machinery: 2 MTU 20V 538 TB92 diesels, 8,360 hp (m) (6.14 MW) sustained; 2 shafts
Speed, knots: 35
Range, n miles: 1,200 at 15 kt
Complement: 38 (4 officers)
Guns: 1 Bofors 40 mm/70 (in a distinctive plastic turret),
 1 Oerlikon 20 mm, 2 FN 762 mm MGs
Radars: Navigation: Kelvin Hughes; I-band.

Comment: Ordered from Hong Leong-Lurssen, Butterworth, Malaysia in 1979. First delivered August 1980, last in April 1983. All transferred from the Marine Police to the Maritime Enforcement Agency and became operational in November 2005.



TEGAS

12/2007, Chris Sattler / 1167998

5 RAMUNIA (BAHTERA) CLASS (PATROL CRAFT) (PB)

RAMUNIA (ex-Bahtera Kinabalu) 3221 (ex-K 7)
MARUDU (ex-Bahtera Bayu) 3222 (ex-K 37)
DANGA (ex-Bahtera Hijau) 3223 (ex-K 38)
SIANGIN (ex-Bahtera Jera) 3224 (ex-K 40)
KIMANIS (ex-Bahtera Juang) 3225 (ex-K 33)

Displacement, tons: 143 full load
Dimensions, feet (metres): 106.2 x 23.6 x 5.9 (32.4 x 7.2 x 1.8)
Main machinery: 2 Paxman Valenta 16CM diesels; 6,650 hp (5 MW) sustained, 2 shafts
 1 Cummins diesel; 575 hp (423 kW); 1 shaft
Speed, knots: 27; 8 on cruise diesel
Range, n miles: 2,000 at 8 kt
Complement: 26
Guns: 1 Oerlikon 20 mm 2—762 mm MGs
Radars: Surface search: Kelvin Hughes; I-band.

Comment: Vosper 32 m craft ordered February 1981 from Malaysia Shipyard and Engineering Company with technical support from Vosper Thornycroft (Private) Ltd, Singapore. Two completed 1982, the remainder in 1983–84. Five transferred from the Customs Service to the MMEA in June 2005.



SIANGIN

12/2007, Michael Nitz / 1167979

2 RHU CLASS (PB)

RHU 2601 (ex-P 202) **STAPA 2602** (ex-P 204)

Displacement, tons: 99 full load
Dimensions, feet (metres): 88.2 x 19.0 x ? (26.9 x 5.8 x ?)
Main machinery: 2 Deutz 16M 816CR diesels; 2 shafts
Speed, knots: 20
Complement: 15
Radars: Navigation: I-band.

Comment: Former Fisheries Department craft built in 1990 and transferred in 2006.



STAPA (Fisheries colours)

12/1999, Sattler/Steele / 0081228

4 MALAWALI CLASS (PATROL CRAFT) (PB)

MALAWALI (ex-Bintang Utara) 2551 **MANJUNG** (ex-Bintang Manjung) 2553
SERASAN (ex-Bintang Timur) 2552 **TEBRAU** (ex-Bintang Baru) 2554

Displacement, tons: 63.5 full load
Dimensions, feet (metres): 82.0 x 19.7 x ? (25.0 x 6.0 x ?)
Main machinery: 2 Deutz 16M 816CR diesels; 2 shafts
Speed, knots: 25
Complement: 12
Radars: Navigation: I-band.

Comment: Built in 1999 and transferred from the Marine Department to the MMEA in April 2006.

2 NUSA CLASS (PATROL CRAFT) (PB)

NUSA (ex-Rajawali 11) 2201 **RENTAP** (ex-Rajawali 111) 2202

Displacement, tons: 53 full load
Dimensions, feet (metres): 72.2 x 19.7 x ? (22.0 x 6.0 x ?)
Main machinery: 2 Deutz 16M 816CR diesels; 2 shafts
Speed, knots: 25
Complement: 14
Radars: Navigation: I-band.

Comment: Built in 1993 and transferred from the Marine Department to the MMEA in April 2006.

4 SEMBILANG CLASS (PATROL CRAFT) (PB)

SEMBILANG 2161 (ex-P 101) **MERSUJI 2163** (ex-P 103)
ALU-ALU 2162 (ex-P 102) **SIKAP 2164** (ex-P 104)

Displacement, tons: 77 full load
Dimensions, feet (metres): 68.9 x 18.0 x ? (21.0 x 5.5 x ?)
Main machinery: 2 Deutz SBA 12M 816SR diesels; 2 shafts
Speed, knots: 25
Complement: 12
Radars: Navigation: I-band.

Comment: Former Fisheries Department craft. Built in 1986 and transferred in 2006.

1 PENINJAU CLASS (PATROL CRAFT) (PB)

PENINJAU 1701 (ex-P 301)

Displacement, tons: To be announced
Dimensions, feet (metres): 55.8 x ? x ? (17.0 x ? x ?)
Main machinery: To be announced
Speed, knots: To be announced
Complement: To be announced
Guns: To be announced
Radars: Navigation: I-band.

Comment: Former Fisheries Department craft transferred in 2006.

2 PENGGALANG CLASS (PATROL CRAFT) (PB)

PENGGALANG 1 1801 **PENGGALANG 2 1802**

Displacement, tons: 10.8
Dimensions, feet (metres): 59.0 x 14.6 x ? (18.0 x 4.45 x ?)
Main machinery: 2 CAT C18 diesels; 2 shafts
Speed, knots: 45
Complement: 10
Guns: 2—762 mm MGs.
Radars: Navigation: I-band.

Comment: Transferred from the Marine Department to the MMEA in 2006.



PENGGALANG 1

12/2007, Chris Sattler / 1167997

4 PENYELAMAT CLASS (PATROL CRAFT) (PB)

PENYELAMAT 1 (ex-Chendering) 1571 **PENYELAMAT 3** (ex-Murau) 1573
PENYELAMAT 2 (ex-Rhu) 1572 **PENYELAMAT 4** (ex-Lanngun) 1574

Displacement, tons: 15.0
Dimensions, feet (metres): 49.2 x ? x ? (15.0 x ? x ?)
Main machinery: To be announced
Speed, knots: To be announced
Complement: To be announced
Guns: To be announced
Radars: Navigation: I-band.

Comment: Transferred from the Marine Department to the MMEA in 2006.

8 PENGAWAL CLASS (PATROL CRAFT) (PB)

PENGAWAL 1 (ex-Labian) 1411 PENGAWAL 5 (ex-Memerang Laut) 1415
 PENGAWAL 2 (ex-Bidadari) 1412 PENGAWAL 6 (ex-Subis) 1416
 PENGAWAL 3 (ex-Kubung) 1413 PENGAWAL 7 (ex-Niah) 1417
 PENGAWAL 4 (ex-Serapi) 1414 PENGAWAL 8 (ex-Murud) 1418

Displacement, tons: To be announced
 Dimensions, feet (metres): 45.9 x 7 x 7 (14.0 x 7 x 7)
 Main machinery: To be announced
 Speed, knots: To be announced
 Complement: To be announced
 Guns: To be announced
 Radars: Navigation: I-band.

Comment: Transferred from the Marine Department to the MMEA in 2006.

2 13 m PATROL CRAFT (PB)

PENGAWAL 11 (ex-Matang) 1311 PENGAWAL 12 (ex-Nyabau) 1312

Displacement, tons: To be announced
 Dimensions, feet (metres): 42.6 x 7 x 7 (13.0 x 7 x 7)
 Main machinery: To be announced
 Speed, knots: To be announced
 Complement: To be announced
 Guns: To be announced
 Radars: Navigation: I-band.

Comment: Transferred from the Marine Department to the MMEA in 2006.

TRAINING SHIPS

1 MARLIN CLASS (TRAINING VESSEL) (AX)

MARLIN 4001

Displacement, tons: 270
 Dimensions, feet (metres): 131.2 x 23.6 x 7 (40.0 x 7.2 x 7)
 Main machinery: To be announced
 Speed, knots: To be announced
 Complement: 29
 Radars: Navigation: I-band.

Comment: A new training ship built and donated by The Nippon Foundation. The ship was handed over at Port Klang on 1 June 2006. Based at Lumut.



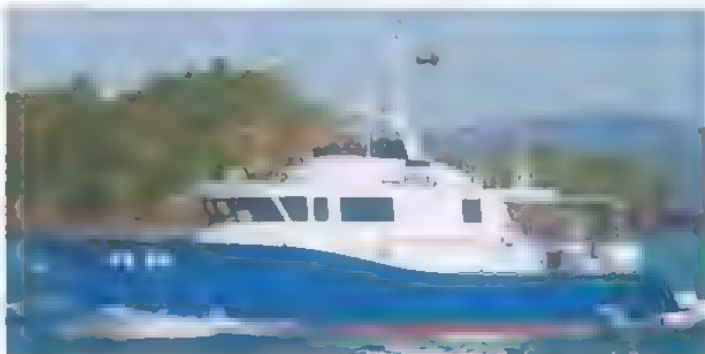
MARLIN 12/2007, Michael Nitz / 1167978

120 INSHORE/RIVER PATROL CRAFT (PBI/PBR)

Comment: Built in several batches and designs since 1964. Some are armed with 7.62 mm MGs. All have PX/PA/PC/PSC/PGR numbers. Included are 23 Simonneau SM 465 type (PC 6-28) built between January 1992 and mid-1993, six Vosper craft (PX 19-24) constructed in 1972-3, Camar class (PA series), and ten Penyengat class (PSC series)



PC 6 (SIMONNEAU) 4/1997, Maritime Photographic / 0012763



PA 30 12/2007, Chris Sattler / 1167956



PSC 19 12/2007, Chris Sattler / 1167995

6 STAN PATROL 1500 CLASS (PBF)

Dimensions, feet (metres): 48.6 x 8.9 x 2.6 (14.8 x 2.7 x 0.8)
 Main machinery: 4 diesels, 4,500 hp(m) (33.1 MW); 4 shafts; LIPS props
 Speed, knots: 55
 Complement: 8
 Guns: 2—12.7 mm MGs.

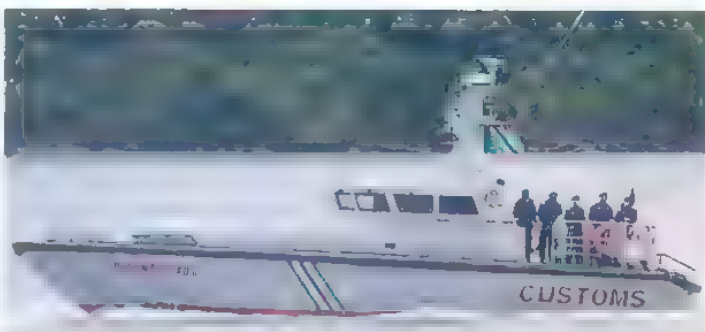
Comment: Built in Malaysia and completed in 1998/99. Details are not confirmed.

CUSTOMS

Notes: In addition there are about 25 interceptor craft of 9 m, and 30 of 13.7 m and some inflatable chase boats



HELANG LAUT 4 12/2005, Chris Sattler / 1163406



KB 62 12/2005, Chris Sattler / 1163407

GOVERNMENT MARITIME FORCES

Notes: The Fire and Rescue Department operates at least eight 10 m rescue craft. Helicopters include Mi-17 and Agusta Westland A 109.

POLICE

6 BROOKE MARINE 29 METRE CLASS (PBF)

SANGITAN PX 28 DUNGUN PX 30 TUMPAT PX 32
 SABAHAN PX 29 TIOMAN PX 31 SEGAMA PX 33

Displacement, tons: 114 full load
 Dimensions, feet (metres): 95.1 x 19.7 x 5.6 (29 x 6 x 1.7)
 Main machinery: 2 Paxman Valenta 6CM diesels, 2,250 hp (1.68 MW) sustained; 2 shafts
 Speed, knots: 36
 Range, n miles: 1,200 at 24 kt
 Complement: 18 (4 officers)
 Guns: 1 Oer ikon 20 mm, 2—7.62 mm MGs.

Comment: Ordered 1979 from Penang Shipbuilding Co. First delivery June 1981, last pair completed June 1982. Brooke Marine provided lead yard services.



SANGITAN 1991, RM Police / 0506756

506 Malaysia/Government maritime forces — Maldives/Introduction

10 PERANTAS FAST INTERCEPT CRAFT (PBF)

KB 59 KB 71 +8

Displacement, tons: 16.2 full load
 Dimensions, feet (metres): 54.1 x 12.8 x 7 (16.5 x 3.9 x 7)
 Main machinery: 2 MTU 12V183TE94 diesels; 2,600 hp (1.94 MW); 2 Kamewa waterjets
 Speed, knots: 45
 Range, n miles: 400 at 40 kt
 Complement: 8

Comment: Built by Destination Marine Services, Port Klang. GRP hulls.



KB 59 12/2007, Chris Sattler / 1167993

4 PEMBANTERAS CLASS (PB)

Displacement, tons: 58 full load
 Dimensions, feet (metres): 94.5 x 19.4 x 6.6 (28.8 x 5.9 x 2)
 Main machinery: 2 Deutz SBA16M816C diesels; 3,140 hp(m) (2.31 MW); 2 shafts
 Speed, knots: 20
 Complement: 8

Comment: Built at Limbungan Timor shipyard, Torongganu and completed in 1993



KA 45 9/2003, Hartmut Ehlers / 0567886

9 VOSPER 32 METRE (BAHTERA CLASS) PATROL CRAFT (PB)

JUANG K 33 - K 35 BAYU K 37 - K 39 - K 42
 PULAJ K 34 PERAK K 36 HIJAU K 38 - K 41

Displacement, tons: 143 full load
 Dimensions, feet (metres): 106.2 x 23.6 x 5.9 (32.4 x 7.2 x 1.8)
 Main machinery: 2 Paxman Valenta 16CM diesels; 6,650 hp (5 MW) sustained, 2 shafts
 1 Cummins diesel, 575 hp (423 kW); 1 shaft
 Speed, knots: 27; 8 on cruise diesel
 Range, n miles: 2,000 at 8 kt
 Complement: 26
 Guns: 1 Oerlikon 20 mm, 2 - 762 mm MGs.
 Radars: Surface search; Kelvin Hughes; I-band.

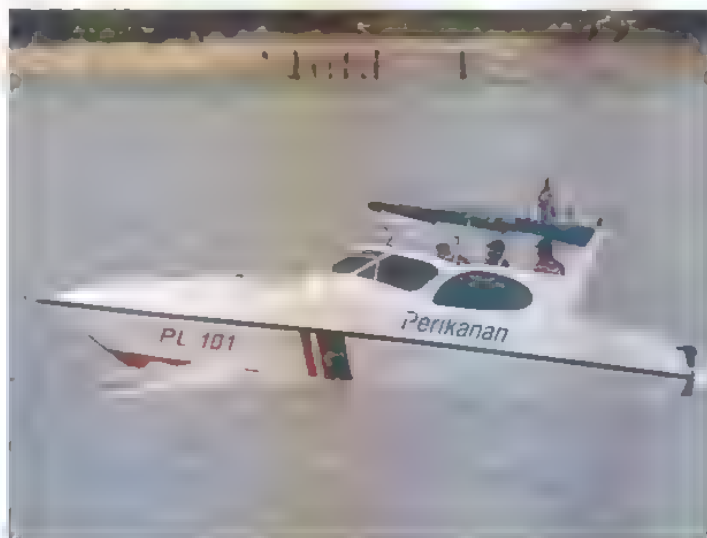
Comment: Ordered February 1981 from Malaysia Shipyard and Engineering Company with technical support from Vosper Thornycroft (Private) Ltd, Singapore. Two completed 1982, the remainder in 1983-84. Names are preceded by 'Bahtera'. Five vessels have been transferred to the new Maritime Enforcement Agency.



BAHTERA PERAK 12/2007, Chris Sattler / 1167997

FISHERIES DEPARTMENT

Notes: Patrol craft have distinctive thick blue and thin red diagonal bands on the hull and have been mistaken for a Coast Guard. All have P numbers. There is also a research vessel K K Senangin II. There have been 12 craft transferred to the new Maritime Enforcement Agency.



PL 101 12/2007, Chris Sattler / 1167991



K K SENANGIN II 9/2003, Hartmut Ehlers / 0567880



Maldives

Country Overview

Formerly a British Protectorate, The Maldives gained independence in 1965 and a republic was established in 1968. Situated in the northern Indian Ocean, southwest of the southern tip of India, the country comprises a 468 n mile long chain of

nearly 2,000 small coral islands that are grouped together into clusters of atolls. The capital and principal commercial centre is Malé and other populous atolls include Suvadiva and Tiladummati. An archipelagic state, territorial waters (12 n miles) are claimed. A 200 n mile Exclusive Economic Zone (EEZ) has been claimed although the limits

have only been partly defined by boundary agreements.

Headquarters Appointments

Director General of Coast Guard:
 Colonel Zakariyya Mansoor

Bases

Malé Kaadeddhoo

Personnel

2009: 400

COAST GUARD

Notes: (1) All pennant numbers add up to seven.
 (2) The ex-UK patrol craft *Kingfisher* was acquired by a civilian company in early 1997. It is painted white and is used as a survey ship.
 (3) There are also four RIBs in service.

1 SDB MK 5 CLASS (LARGE PATROL CRAFT) (PBO)

HURAWEE (ex-*Tillanchang*) – (ex-T 62)

Displacement, tons: 260 full load
Dimensions, feet (metres): 151.0 × 24.6 × 8.2 (46.0 × 7.5 × 2.5)
Main machinery: 2 MTU 16V 538TB92 diesels; 6,820 hp (m) (5 MW) sustained; 2 shafts
Speed, knots: 30. **Range, n miles:** 2,000 at 12 kt
Complement: 34 (4 officers)
Guns: 1 Medak 30 mm 2A42.
Radars: Surface search: Bharat 1245, I-band.

Comment: Built at Garden Reach and first commissioned in 2002. Transferred from the Indian Navy and recommissioned on 16 April 2006.



SDB MK 5 CLASS (Indian colours)

5/2002 / 0534383

2 GHAZEE CLASS (PB)

ISKANDHAR 223 **GHAZEE 214**

Displacement, tons: 58 full load
Dimensions, feet (metres): 80.1 × 19.0 × 4.1 (24.4 × 5.8 × 1.3)
Main machinery: 2 Paxman diesels; 8,506 hp (m) (6.26 MW); 2 Kamewa waterjets
Speed, knots: 37
Range, n miles: 600 at 25 kt
Complement: 18
Guns: 1–20 mm MG. 2–762 mm MGs.
Radars: Surface search/navigation: JRC-JMA 2254, I-band.

Comment: Ordered from Colombo Dockyard in 1997. *Ghazee* commissioned on 20 January 1998 and *Iskandhar* on 7 December 1998. Employed on security, fishery protection and SAR tasks.



GHAZEE

6/2005, Maldives Coast Guard / 1133514

3 TRACKER II CLASS (PB)

KAANI 133 (ex-11) **MIDHILI 151** (ex-13) **NIROLHU 106** (ex-14)

Displacement, tons: 39 full load
Dimensions, feet (metres): 66.3 × 17.1 × 4.9 (20.2 × 5.2 × 1.5)
Main machinery: 2 Detroit 12V-71TA diesels; 840 hp (627 kW) sustained; 2 shafts
Speed, knots: 25. **Range, n miles:** 450 at 20 kt
Complement: 10
Guns: 1–12.7 mm MG. 1–762 mm MG.
Radars: Surface search: JRC-JMA, I-band.

Comment: First one ordered June 1985 from Fairey Marine, UK and commissioned in April 1987. Three more acquired July 1987 ex UK Customs craft. Used for fishery protection and security patrols. *Kuredhi* decommissioned in 2002.



NIROLHU

6/2005, Maldives Coast Guard / 1133513

1 CHEVERTON CLASS (PB)

BUREVI 116 (ex-7)

Displacement, tons: 26 full load
Dimensions, feet (metres): 56.7 × 14.4 × 4.3 (17.3 × 4.4 × 1.3)
Main machinery: 2 MAN B&W diesels; 850 hp (634 kW) sustained; 2 shafts
Speed, knots: 23. **Range, n miles:** 590 at 18 kt
Complement: 10
Guns: 1–12.7 mm MG. 1–762 mm MG.
Radars: Surface search: JRC; I-band.

Comment: GRP hull and aluminium superstructure. Originally built by Fairey Marine, UK, for Kiribati and subsequently sold to Maldives and commissioned on 11 September 1981. Used for security and SAR operations.



BUREVI

6/2005, Maldives Coast Guard / 1133512

3 HARBOUR PATROL CRAFT (PB)

HP 1 **HP 2** **HP 4**

Displacement, tons: 6 full load
Dimensions, feet (metres): 36.1 × 7.5 × 1.8 (11.0 × 2.3 × 0.5)
Main machinery: 2 Yamaha outboard engines; 500 hp (375 kW)
Speed, knots: 30
Range, n miles: 90 at 25 kt
Complement: 8
Guns: 1–762 mm MG.

Comment: Built by Gulf Craft Service based in the Maldives. GRP hull. First craft commissioned 12 December 1999. Used for harbour patrol and SAR duties.



HARBOUR PATROL CRAFT

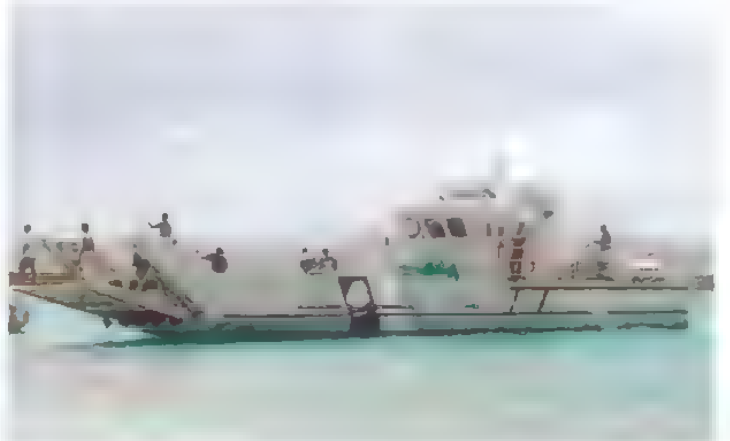
6/2005, Maldives Coast Guard / 1133510

1 LANDING CRAFT (LCM)

LC 1

Displacement, tons: 38.4
Dimensions, feet (metres): 68.6 × 16.4 × 2.3 (20.9 × 5.0 × 0.7)
Main machinery: 2 MAN B&W D 2842 LE 401 diesels; 2 Hamilton waterjets
Speed, knots: 20
Range, n miles: 500 at 18 kt
Complement: 7
Guns: 2–762 mm MGs.
Radars: Surface search/Navigation: JRC; I-band.

Comment: Built by Colombo Dockyard and commissioned on 12 December 1999. Aluminium hull and superstructure. Used for carrying troops and supplies.



LC 1

6/2005, Maldives Coast Guard / 1133511



Malta

Country Overview

Formerly a British colony, the Republic of Malta gained independence in 1964. Situated 45 n miles south of Sicily, the country comprises the islands of Malta (95 square miles), Gozo (26 square miles), Comino, Kemmalett, and Filfla. It has a 76 n mile coastline with the Mediterranean Sea. The capital, largest town and principal port is Valletta. Territorial seas (12 n miles) are claimed. A fishery management and conservation zone of 25 n miles is also claimed.

Headquarters Appointments

Officer Commanding Maritime Squadron:
Major Wallace Camilleri

General

The Maritime Squadron of the Armed Forces of Malta was established in November 1970. An independent unit of the

Armed Forces of Malta, it is employed primarily as a Coast Guard

Personnel

2009: 242 (14 officers)

PATROL FORCES

2 MARINE PROTECTOR CLASS (PB)

P 51 P 52

Displacement, tons: 91 full load
Dimensions, feet (metres): 86.9 × 19 × 5.2 (26.5 × 5.8 × 1.6)
Main machinery: 2 MTU 8V 396TE94 diesels; 2,680 hp(m) (1.97 MW) sustained; 2 shafts
Speed, knots: 25 **Range, n miles:** 900 at 8 kt
Complement: 10 (1 officer)
Radars: Navigation: I-band.

Comment: Built by Bollinger Shipyards to US Coast Guard specifications. The vessels are based on the hull of the Damen Stan Patrol 2600 in service with the Hong Kong police. Steel hull with GRP superstructure. A stern ramp is used for launching a 5.5 m RIB. P 51 was commissioned 18 November 2002 and P 52 was commissioned 7 July 2004



P 51 11/2007, Marco Ghiglino / 11/0193

1 DICOTTI CLASS (OFFSHORE PATROL VESSEL) (PBO)

P 61

Displacement, tons: 393 full load
Dimensions, feet (metres): 176.2 × 28.6 × 17.7 (53.4 × 8.1 × 5.4)
Main machinery: 2 Isotta Fraschini V1716T2 MSD diesels; 6,335 hp (4.7 MW); 2 shafts
Speed, knots: 23 **Range, n miles:** 2,100 at 18 kt
Complement: 25 (4 officers)
Guns: 1 Otobreda 25 mm, 2—12.7 mm MGs.
Radars: Surface search: E/F-band
Navigation: I-band
Helicopters: Platform for 1 medium.

Comment: Financed from the 5th Italo-Maltese Protocol, contract signed on 12 March 2004 with Fincantieri, Muggiano, Italy for the construction of one vessel. The ship was commissioned on 3 November 2005. The contract included a training and logistic support package. Design based on Dicotti (modified Saettia) class vessels in service with the Italian Coast Guard. Steel hull with helicopter deck and stern ramp for launching a 6.5 m RIB.



P 61 10/2005, Air Squadron, AFM / 1133090

2 BREMSE CLASS (INSHORE PATROL CRAFT) (PBI)

P 32 (ex-G 33/GS 20) P 33 (ex-G 22/GS 22)

Displacement, tons: 42 full load
Dimensions, feet (metres): 74.1 × 15.4 × 3.6 (22.6 × 4.7 × 1.1)
Main machinery: 2 Iveco (P 32) diesels; 1,000 hp(m) (745 kW); 2 shafts
Speed, knots: 17
Complement: 9
Guns: 1—12.7 mm MG
Radars: Surface search: Racal 1290A; I-band

Comment: Built in 1971–72 for the ex-GDR GBK. Transferred from Germany in mid-1992. Others of the class acquired by Tunisia. P 32 completed mid-life upgrade in 2005. P 33 is in reserve but it is unlikely to be upgraded.



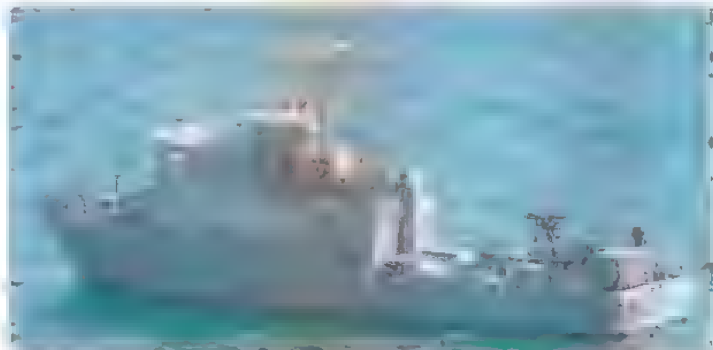
P 32 11/2007, Marco Ghiglino / 11/0192

2 SWIFT CLASS (HARBOUR PATROL CRAFT) (YP)

P 23 (ex-C 6823) P 24 (ex-C 6824)

Displacement, tons: 22.5 full load
Dimensions, feet (metres): 50 × 13 × 4.9 (15.6 × 4 × 1.5)
Main machinery: 2 GM 12V-71 diesels, 680 hp (507 kW) sustained; 2 shafts
Speed, knots: 25
Range, n miles: 400 at 18 kt
Complement: 6
Guns: 1—12.7 mm MG
Radars: Surface search: Furuno 1040, I band.

Comment: Built by Sewart Seacraft Ltd in 1967. Transferred from US in February 1971. Have an operational endurance of about 24 hours. Modernised in Malta in 1998/99



P 24 11/2007, Marco Ghiglino / 11/0191

2 SUPERVITTORIA 800 CLASS (SAR)

MELITA I MELITA II

Displacement, tons: 12.5 full load
Dimensions, feet (metres): 37.7 × 18.1 × 2.6 (11.5 × 4.9 × 0.8)
Main machinery: 2 Cummins 6CTA 8.3 DIAMONS; 840 hp(m) (618 kW); 2 Kamewa FF310 waterjets
Speed, knots: 34
Range, n miles: 160 at 34 kt
Complement: 4
Radars: Surface search: Raytheon Pathfinder SL 70; I-band.

Comment: Built in 1998 by Vitoria Naval Shipyard, Italy, for the Civil Protection Department of Malta. Transferred to the Armed Forces of Malta (AFM) in May 1999 for search and rescue duties. Although still the property of the Civil Protection Department, the Melita I and II are operated and maintained by the Maritime Squadron of the AFM.



MELITA I 11/2007, Marco Ghiglino / 11/0190

1 HIGH-SPEED INTERCEPTION CRAFT (HSIC)

P 01

Displacement, tons: 3.4 full load
Dimensions, feet (metres): 34.0 x 8.8 x 2.6 (10.37 x 2.67 x 0.8)
Main machinery: 2 VM diesels; 600 hp (450 kW); 2 shafts
Speed, knots: 50+ **Range, n miles:** 200 at 35 kt
Complement: 2 plus 8
Guns: 1—7.62 mm MG.
Radars: Navigation: Furuno; I-band

Comment: Co-financed by the EU. RIB 33SC designed and built by FB Design, Italy, and commissioned in February 2006. The high-speed interception craft is to provide support to maritime law enforcement agencies and special forces.



P 01 6/2006, Lawrence Dalli / 1158416



BN ISLANDER 2001, Douglas-John Falzon / 0114534

LAND-BASED MARITIME AIRCRAFT

Notes: The Armed Forces of Malta operate two Britten-Norman BN-2B maritime patrol aircraft, five BAe Bulldog T. Mk 1 observation aircraft, two Nardi MD NH 500HM, five SA.316B/D Alouette III and two AB-47G-2 helicopters



ALOUETTE III 4/2006, Frank Findler / 1305138



NH 500 4/2002, Adolfo Ortigueira Gil / 0668875

Marshall Islands



Country Overview

The Republic of the Marshall Islands was a US-administered UN Trust territory from 1947 before becoming a self-governing republic in 1979. In 1986, a Compact of Free Association, delegating to the US the responsibility for defence and foreign affairs, came into effect. The country

consists of some 1,200 atolls and reefs in the central Pacific. There are two main island groups: the Ratak and Ralik chains. Majuro is the capital island. Kwajalein is the largest atoll and is leased as a US missile test range. Bikini and Eniwetok are former US nuclear test sites. An archipelagic state, territorial seas (12 n miles) are claimed. An Exclusive Economic Zone (EEZ) (200 n miles)

is also claimed but limits have not been fully defined.

Headquarters Appointments

Chief of Surveillance
Major Thomas Heine

Personnel

2009: 30

Bases

Majuro

PATROL FORCES

1 PACIFIC CLASS (LARGE PATROL CRAFT) (PB)

Name	No	Builders	Commissioned
LOMOR	03	Australian Shipbuilding Industries	29 June 1991

Displacement, tons: 162 full load
Dimensions, feet (metres): 103.3 x 26.6 x 6.9 (31.5 x 8.1 x 2.1)
Main machinery: 2 Caterpillar 3516TA diesels, 4,400 hp (3.3 MW) sustained; 2 shafts
Speed, knots: 20
Range, n miles: 2,500 at 12 kt
Complement: 17 (3 officers)
Guns: 1—12.7 mm MG
Radars: Surface search: Furuno 8111, I-band

Comment: The 14th craft to be built in this series for a number of Pacific Island coast guards. Ordered in 1989. Following the decision by the Australian government to extend the Pacific Patrol Boat project to a 30-year life for each boat, Lomor completed a half-life refit in 1999 and a life-extension refit in December 2008



LOMOR 12/2008, Chris Sattler / 1335795

Mauritania

MARINE MAURITANIENNE



Country Overview

A former French colony, The Islamic Republic of Mauritania gained full independence in 1960. With an area of 397,955 square miles, it is situated in northwestern Africa and has borders to the north with western Sahara and Algeria, to the east with Mali and to the south with Senegal. It has a 405 n mile coastline with the Atlantic Ocean. The capital and largest city is Nouakchott while Nouadhibou is the principal port. Territorial seas (12 n miles) are claimed

but while it has claimed a 200 n mile Exclusive Economic Zone (EEZ), its limits have not been defined by boundary agreements.

Personnel

(a) 2009: 500 (40 officers) plus 200 marines
 (b) Voluntary service

Bases

Port Etienne, Nouadhibou (new quay began construction in 2007)
 Port Friendship, Nouakchott

Headquarters Appointments

Commander of Navy:
Captain Isselkou Ould Cheikh El-Wel

510 Mauritania / Patrol forces

PATROL FORCES

Notes: Two 16 m Rodman 55M (ex-M 02 and M 05) and two 12 m Saeta 12 (ex-L 01 and L 03) were transferred from the Spanish Guardia Civil in 2006.

1 OPV 54 CLASS (PBO)

Name	No	Builders	Launched	Commissioned
ABOUBEKR BEN AMER	P 541	Leroux & Lotz, Lorient	17 Dec 1993	7 Apr 1994

Displacement, tons: 374 full load
Dimensions, feet (metres): 177.2 × 32.8 × 8.2 (54 × 10 × 2.8)
Main machinery: 2 MTU 16V 396 TE94 diesels, 5,712 hp(m) (4.2 MW) sustained; 2 auxiliary motors; 250 hp(m) (184 kW); 2 shafts; cp props
Speed, knots: 23 (8 on motors)
Range, n miles: 4,500 at 12 kt
Complement: 21 (3 officers)
Guns: 2—12.7 mm MGs
Radars: Surface search: Rocal Decca Bridgemaster 250; I-band.

Comment: Ordered in September 1982. This is the prototype to a Sertar design of three similar craft built for the French Navy. Stern ramp for a 30 kt RIB. Option on a second of class not taken up. Refitted at Lorient 2001



ABOUBEKR BEN AMER 7/2001, Peron/Marsan / 0137/8/

1 PATRA CLASS (LARGE PATROL CRAFT) (PB)

Name	No	Builders	Commissioned
EL NASR (ex-Le Dix Juillet, ex-Rapière)	P 411	Auroux, Arcachon	14 May 1982

Displacement, tons: 1475 full load
Dimensions, feet (metres): 132.5 × 19.4 × 5.2 (40.4 × 5.9 × 1.6)
Main machinery: 2 Wärtsilä UD 33 V12 diesels; 4,340 hp(m) (3.2 MW) sustained; 2 shafts
Speed, knots: 26.3
Range, n miles: 1,750 at 10 kt
Complement: 20 (2 officers)
Guns: 1 Bofors 40 mm/60. 1 Oerlikon 20 mm 2—12.7 mm MGs
Radars: Surface search. Rocal/Decca 1228; I-band.

Comment: Originally built as a private venture by Auroux. Carried out trials with French crew as *Rapière*. Laid down 15 February 1980, launched 3 June 1981, commissioned for trials 1 November 1981. Transferred to Mauritania in 1982. Re-engined in 1993–94.



EL NASR 4/1988 / 0052598

1 LARGE PATROL CRAFT (PBO)

Name	No	Builders	Commissioned
VOUM-LEGLEITA (ex-Poseidon)	B 551 (ex-A 12)	Bazán	8 Aug 1964

Displacement, tons: 1,069 full load
Dimensions, feet (metres): 183.5 × 32.8 × 13.1 (56.9 × 10 × 4)
Main machinery: 2 Sulzer diesels; 3,200 hp (2.53 MW); 1 shaft; cp prop
Speed, knots: 15
Range, n miles: 4,640 at 14 kt
Complement: 60
Guns: 2 Oerlikon 20 mm.
Radars: Navigation 2 Decca TM 626; I-band.

Comment: Ocean going tug transferred from Spain in January 2000, about a year later than planned. Used primarily as an OPV and for fishery protection



VOUM-LEGLEITA 1/2000, Diego Quevedo / 0081240

1 HUANGPU CLASS (PB)

LIMAM EL HADRAMI P 601

Displacement, tons: 430 full load
Dimensions, feet (metres): 196.8 × 26.9 × 14.8 (60.0 × 8.2 × 4.5)
Main machinery: 3 MTU 12V 4000 diesels; 3 shafts
Speed, knots: 20
Guns: 4—37 mm (2 twin). 4—14.5 mm (2 twin).
Radars: Navigation; I-band.
Fire control: Type 347G, I band.

Comment: Delivered from China on 20 April 2002.



LIMAM EL HADRAMI 12/2006, Adolfo Ortigueira Gil / 1164957

1 ARGUIN CLASS (PBO)

Name	Builders	Commissioned
ARGUIN	Fassmer Werft, Berne/Motzen, Germany	17 July 2000

Measurement, tons: 1,000 dwt
Dimensions, feet (metres): 178.8 × 35.8 × 14.8 (54.5 × 10.9 × 4.5)
Main machinery: 2 MaK 6M20 diesels; 2,735 hp (2.04 MW); 1 shaft; cp prop
Speed, knots: 16.5. **Range, n miles:** 15,000 at 12 kt
Complement: 13

Comment: Ordered in 1998. Hull construction at Yantar, Kaliningrad. Steel hull and superstructure. Equipped with interception craft on centreline ramp in mother-daughter configuration.



ARGUIN 7/2000, Fassmer Werft / 1044268

4 MANDOVI CLASS (INSHORE PATROL CRAFT) (PB)

Displacement, tons: 15 full load
Dimensions, feet (metres): 49.2 × 11.8 × 2.6 (15 × 3.6 × 0.8)
Main machinery: 2 Deutz MWM TBD232V12 Marine diesels; 750 hp(m) (551 kW); 2 Hamilton water-jets
Speed, knots: 24. **Range, n miles:** 250 at 14 kt
Complement: 8
Guns: 1—7.62 mm MG
Radars: Navigation: Furuno FR 8030, I-band.

Comment: Built by Garden Reach, Calcutta and delivered from India in 1990. Some may not be operational

2 CONJERA CLASS (PB)

Name	No	Builders	Commissioned
—(ex- <i>Dragonera</i>)	—(ex-P 32)	Bazán, Ferrol	31 Dec 1981
—(ex- <i>Alcanda</i>)	—(ex-P 34)	Bazán, Ferrol	10 May 1982

Displacement, tons: 85 full load
Dimensions, feet (metres): 106.6 × 17.4 × 4.6 (32.2 × 5.3 × 1.4)
Main machinery: 2 MTU-Bazán MA 16V 362 S880 diesels; 2,450 hp (1.8 MW); 2 shafts
Speed, knots: 13. **Range, n miles:** 1,200 at 13 kt
Complement: 12
Guns: 1 Oerlikon 20 mm/120 Mk 10, 1—12.7 mm MG
Radars: Surface search: Furuno, I-band.

Comment: Former Spanish coastal patrol craft transferred in 2007. The details are as for the vessels in Spanish service and may differ



CONJERA CLASS 9/2006, Adolfo Ortigueira Gil / 1040693

1 RAIDCO RPB 18 CLASS (PATROL CRAFT) (PB)

YACOB OULD RAJEL

Displacement, tons: To be announced
Dimensions, feet (metres): 58.3 x 15.1 x 4.1 (17.9 x 4.6 x 1.25)
Main machinery: 2 MAN V12 diesels; 1,500 hp (1.1 MW); 2 shafts
Speed, knots: 23
Radars: Navigation: I-band.

Comment: Donated by the European Union, the vessel was built by Raidco Marine and delivered in 2000. Steel hull and aluminium superstructure. Used for fishery protection. A similar craft, *Dah Ould Bah*, is operated by the Customs Service.

LAND-BASED MARITIME AIRCRAFT

Numbers/Type: 2 Piper Cheyenne II.
Operational speed: 283 kt (524 km/h).
Service ceiling: 31,600 ft (9,630 m).
Range: 1,510 n miles (2,796 km).
Role/Weapon systems: Coastal surveillance and EEZ protection acquired 1981 Sensors. Bendix 1400 weather radar; cameras. Weapons: Unarmed

Mauritius**Country Overview**

A former British colony, the Republic of Mauritius gained independence in 1968 and became a republic in 1992. Situated in the western Indian Ocean, east of Madagascar, it comprises the islands of Mauritius (720 square miles), Rodrigues (42 square miles), the Agalega islands to the north and the St Brandon Group (also known as the Cargados Carajos Shoals) to the northeast. The capital, largest town and principal port is Port Louis. Territorial seas (12 n miles) are claimed but, while it has declared a 200 n mile Exclusive Economic Zone (EEZ), the claim is

complicated by disputes over the sovereignty of Tromelin Island (France) and Diego Garcia (UK).

A maritime security force was established in 1974 with the donation of MNS *Amar* by India. The National Coast Guard, a specialised wing of the Mauritius Police Force, was formed in 1987.

Headquarters Appointments

Commandant National Coast Guard:
 Commander Mahendra V S Negi

Port Louis (plus 24 manned CG stations)

Personnel

2009: 750 (including officers on deployment)

Maritime Aircraft

2 Dornier 228 (MPCG 1 and 3).
 1 Britten-Norman BN-2-T Defender (MPCG 2).

COAST GUARD

Notes: There are approximately 80 inshore craft (RHIBs, glass fibre boats and so on) in addition to those listed.

1 VIGILANT CLASS (PSOH)

Name	No	Builders	Launched	Commissioned
VIGILANT	21	Talcahuano Yard, Chile	6 Dec 1995	27 June 1996

Displacement, tons: 1,650 full load
Dimensions, feet (metres): 246.1 x 45.9 x 12.8 (75 x 14 x 3.9)
Main machinery: 4 Caterpillar 3516 diesels; 11,530 hp (8.6 MW); 2 shafts; cp props; bow thruster, 671 hp (500 kW)
Speed, knots: 22
Range, n miles: 6,500 at 19 kt
Complement: 57 (11 officers) plus 20 spare
Guns: 2 Bofors 40 mm/56 (1 twin). 2 – 12.7 mm MGs.
Radars: Surface search. Kelvin Hughes; I-band
Helicopters: 1 light.

Comment: Contract signed with the Western Canada Marine Group in March 1994. Keel was laid in April 1994. All-steel construction. The ship can be operated by a crew of 18. Full helicopter facilities are included in the design which is based on a Canadian Fisheries vessel *Leonard J Cowley*. The ship was refitted in India 2003–04.



VIGILANT 2/2001, Sattler/Steele / 0114306

1 SDB MK 3 CLASS (PB)

GUARDIAN

Displacement, tons: 210 full load
Dimensions, feet (metres): 124 x 24.6 x 6.2 (37.8 x 7.5 x 1.9)
Main machinery: 2 MTU 16V 538 TB92 diesels, 6,820 hp(m) (5 MW) sustained; 2 shafts
Speed, knots: 21
Complement: 32
Guns: 1 Bofors 40 mm/60; 120 rds/min to 10 km (5.5 n miles); weight of shell 0.89 kg
Radars: Surface search. Furuno FK 1505 DA; I-band

Comment: Transferred from Indian Navy in 1993. Built by Garden Reach, Calcutta in 1984. Underwent mid-life upgrade at Mumbai 2005–06.



GUARDIAN 7/2003, Arjun Sarup / 0568319

2 ZHUK (TYPE 1400M) CLASS (PB)

RESCUER

RETRIEVER

Displacement, tons: 39 full load
Dimensions, feet (metres): 78.7 x 16.4 x 3.9 (24 x 5 x 1.2)
Main machinery: 2 M 401B diesels; 2,200 hp(m) (1.6 MW) sustained; 2 shafts
Speed, knots: 30
Range, n miles: 1,100 at 15 kt
Complement: 14 (2 officers)
Guns: 4 – 12.7 mm (2 twin) MGs
Radars: Surface search: SpinTrough; I-band.

Comment: Acquired from the USSR on 3 December 1989. Rescuer machinery systems upgraded in 2004. Similar refit planned for *Retriever*.



RETRIEVER 7/2003, Arjun Sarup / 0568318

1 P-2000 CLASS (PB)

OBSERVER (ex-C 39)

Displacement, tons: 40 full load
Dimensions, feet (metres): 68.2 x 19 x 5.9 (20.8 x 5.8 x 1.8)
Main machinery: 2 Deutz MWM TBD234 V12 diesels; 1,646 hp(m) (1.21 MW) sustained, 1 Deutz MWM TBD234 V8 diesel; 550 hp(m) (404 kW) sustained; 3 Hamilton 402 waterjets
Speed, knots: 25. **Range, n miles:** 600 at 15 kt
Complement: 8 (1 officer)
Guns: 1 – 7.62 mm MG
Radars: Navigation: Furuno; I-band.

Comment: Leased from the Indian Coast Guard in 2001. Originally commissioned in 1997, one of ten ordered from Anderson Marine, Goa in September 1990 to a P-2000 design by Amgram, similar to Archer class. GRP hull. Built at Goa.



OBSERVER 6/2005, Mauritius Coast Guard / 1133238

512 Mauritius/Coast guard – Mexico/Introduction

4 HEAVY DUTY BOATS (PBI)

HDB 01-04

Displacement, tons: 5
Dimensions, feet (metres): 29.25 × 11.5 × 1.5 (8.9 × 3.5 × 0.45)
Main machinery: 2 Johnson outboard motors; 400 hp
Speed, knots: 45 **Range, n miles:** 300 at 35 kt
Complement: 4 (plus 14 passengers)

Comment: An initial order of four boats supplied by M/S Praga Marine, India in 2000. Option for six additional boats.



HEAVY DUTY BOAT 2000, Mauritius Coast Guard / 0105127

8 KAY MARINE HEAVY DUTY BOATS (PBI)

HDB 5-12

Displacement, tons: 6
Dimensions, feet (metres): 29.0 × 10.5 × 1.5 (8.85 × 3.21 × 0.45)
Main machinery: 2 Suzuki (1 twin) outboard motors, 450 hp
Speed, knots: 40
Complement: 18 including passengers

Comment: Acquired from Kay Marine Malaysia in November 2002. Deep Vee monohull of aluminium construction.



KAY MARINE HDB 05 8/2003, Arjun Sarup / 0568316

4 HALMATIC HEAVY DUTY BOATS (PBI)

HDB 13-16

Displacement, tons: 6
Dimensions, feet (metres): 30.2 × 10.2 × 3.3 (9.2 × 3.1 × 1.0)
Main machinery: 2 Yamaha V6 outboard motors, 450 hp
Speed, knots: 35
Complement: 18 including passengers

Comment: Acquired from Halmatic Ltd UK in June 2003.



HALMATIC HDB 16 7/2003, Arjun Sarup / 0568315

6 TORNADO VIKING 580 RHIB (PBI)

Displacement, tons: 2
Dimensions, feet (metres): 18.7 × 8.5 × 2.5 (5.7 × 2.6 × 0.75)
Main machinery: 1 Yamaha outboard motor; 90 hp
Speed, knots: 35
Complement: 10 including passengers

Comment: Acquired in 2004



VIKING 580 6/2004, Mauritius Coast Guard / 0569763



Mexico MARINA NACIONAL

Country Overview

The United Mexican States is a federal republic in North America. A total land area of 756,066 square miles includes a number of offshore islands. Bordered to the north by the United States and to the south by Belize and Guatemala, it has a 1,382 n mile coastline with the Caribbean and Gulf of Mexico and 3,856 n mile coastline with the Pacific Ocean. The capital and largest city is Mexico City while the principal ports are Acapulco (Pacific) and Veracruz (Gulf of Mexico). Territorial seas (12 n miles) are claimed. A 200 n mile EEZ has also been claimed but the limits have not been fully defined by boundary agreements.

Headquarters Appointments

Secretary of the Navy:

Admiral Marco Mariano Francisco Saynez Mendoza

Under-Secretary of the Navy:

Admiral Raul Santos Galán Villanueva

Commander of the Navy:

Admiral Moses Gomez Cabrera

Inspector General of the Navy:

Admiral Sergio Enrique Henaro Galán

Chief of the Naval Staff:

Admiral Jorge Humberto Pastor Gómez

Flag Officers

Commander in Chief, Gulf and Caribbean:

Admiral Joseph Mars Camarena

Commander in Chief, Pacific:

Admiral Nestor Amador Evencio Yee

Personnel

- (a) 2009: 46,972 officers and men (including 946 Naval Air Force and 11,385 Marines)
 (b) Military service

Naval Bases and Commands

The Naval Command is split between the Pacific and Gulf areas each with a Commander-in-Chief with HQs at Manzanillo and Tuxpan respectively. Each area has three

naval Regions which are further subdivided into Zones (9), Sectors (11) and Subsectors (7). There is a Central Naval Region that has an HQ in Mexico City.

Gulf Area

First Naval Region (HQ Tuxpan, Veracruz)

I Naval Zone (HQ Ciudad Madero, Tamaulipas)

Naval Sector (Matamoros, Tamaulipas)

Naval Sector (La Pesca, Tamaulipas)

III Naval Zone (HQ Veracruz, Veracruz)

Naval Sector (HQ Coatzacoalcos, Veracruz)

Third Naval Region (HQ Ciudad del Carmen, Campeche)

V Naval Zone (HQ Frontera Tabasco, Campeche)

VII Naval Zone (HQ Lerma, Campeche)

Naval Sector (HQ Champotón, Campeche)

Fifth Naval Region (HQ Isla Mujeres, Quintana Roo)

IX Naval Zone (HQ Yukalpeten, Yucatán)

XI Naval Zone (HQ Chetumal, Quintana Roo)

Naval Subsector (HQ Isla Cozumel, Quintana Roo)

Pacific Area

Second Naval Region (HQ Ensenada, Baja California)

Naval Sector (HQ Puerto Cortez, Baja California)

Fourth Naval Region (HQ Guaymas, Sonora)

Naval Sector (HQ San Felipe, Baja California)

Naval Sector (HQ Puerto Penasco, Baja California)

II Naval Zone (HQ La Paz, Baja California Sur)

Naval Sector (HQ Santa Rosalía, Baja California Sur)

Naval Sector (HQ Los Cabos, Baja California Sur)

IV Naval Zone (HQ Mazatlán, Sinaloa)

Naval Sector (HQ Topolobampo, Sinaloa)

Sixth Naval Region (HQ Manzanillo, Colima)

Naval Sector (HQ Isla Socorro, Colima)

VI Naval Zone (HQ San Blas, Nayarit)

X Naval Zone (HQ Lázaro Cárdenas, Michoacán)

Eighth Naval Region (HQ Acapulco, Guerrero)

Naval Sector (HQ Ixtapa Zihuatanejo, Guerrero)

XII Naval Zone (HQ Salina Cruz, Oaxaca)

Naval Sector (HQ Huatulco, Oaxaca)

XIV Naval Zone (HQ Puerto Chiapas, Chiapas)

Naval Air Force

Six naval air bases at Mexico City, Veracruz, Campeche, Chetumal, Tapachula and La Paz; there are two Naval Air Stations at Guaymas and Tampico.

Marine Forces

There are two Amphibious Reaction Forces, based at Manzanillo and Tuxpan; one Parachute Battalion, 30 Infantry Battalions and one Presidential Guards Battalion based in Mexico City.

Strength of the Fleet

Type	Active	Building
Destroyers	1	-
Frigates	7	-
Gunships	19	2
Large Patrol Craft	26	-
Coast Guard	11	-
Coastal and River Patrol Craft	60	12
Survey Ships	7	-
Support Ships	7	-
Tankers	2	-
Sail Training Ship	1	-

Names and Pennant Numbers

Many of the ship names and pennant numbers were changed in early 1994 and again in 2001. Destroyers and frigates are named after Aztec emperors and forerunners of the Independence War (1810-1825). Gunboats are named after naval and military heroes.

DELETIONS

Patrol Forces

2007 Manuel Crescencio Rejon

FRIGATES

4 ALLENDE (KNOX) CLASS (FFHM)

Name	No	Builders	Laid down	Launched	Commissioned
IGNACIO ALLENDE (ex-Stein)	F 211 (ex-E 50, ex-FF 1065)	Lockheed	1 June 1970	19 Dec 1970	8 Jan 1972
MARIANO ABASOLO (ex-Marvin Shields)	F 212 (ex-E 51, ex-FF 1066)	Todd Shipyards	12 Apr 1968	23 Oct 1969	10 Apr 1971
GUADALOUPE VICTORIA (ex-Pharris)	F 213 (ex-E 52, ex-FF 1094)	Avondale Shipyards	11 Feb 1972	16 Dec 1972	26 Jan 1974
FRANCISCO JAVIER MINA (ex-Whipple)	F 214 (ex-FF 1062)	Todd Shipyards	24 Apr 1967	12 Apr 1968	22 Aug 1970

Displacement, tons: 3,011 standard; 4,260 full load
Dimensions, feet (metres): 439.6 x 46.8 x 15; 24.8 (sonar)
 (134 x 14.3 x 4.6; 7.8)

Main machinery: 2 Combustion Engineering/Babcock & Wilcox boilers; 1,200 psi (84.4 kg/cm²); 950°F (510°C); 1 Westinghouse turbine; 35,000 hp (26 MW); 1 shaft

Speed, knots: 27

Range, n miles: 4,000 at 22 kt on 1 boiler

Complement: 288 (20 officers)

Missiles: SAM: 1 octuple Mk 25 launcher for Sea Sparrow RIM-7P (in F 211) (see *Structure*); semi-active radar homing to 16 km (8.5 n miles) at 2.5 Mach; warhead 38 kg. SA-N-10; IR homing to 5 km (2.7 n miles) at 1.7 Mach, warhead 1.5 kg.

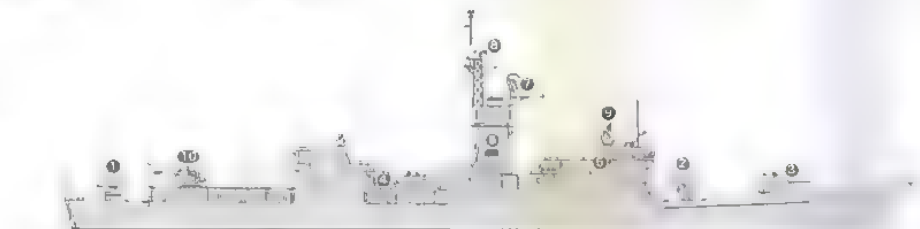
A/S: Honeywell ASROC Mk 16 octuple launcher with reload system (has 2 cells modified to fire Harpoon); inertial guidance to 1.8–10 km (1–5.4 n miles); payload Mk 46.

Guns: 1 FMC 5 in (127 mm)/54 Mk 42 Mod 9; 20–40 rds/min to 24 km (13 n miles) anti-surface; 14 km (7.7 n miles) anti-aircraft, weight of shell 32 kg.

Torpedoes: 4–324 mm Mk 32 (2 twin) fixed tubes; 22 Honeywell Mk 46; anti-submarine; active/passive homing to 11 km (5.9 n miles) at 40 kt; warhead 44 kg

Countermeasures: Decoys: 2 Loral Hyco SRBOC 6-barrelled fixed Mk 36; IR flares and chaff to 4 km (2.2 n miles). T Mk-6 Fanfare/SLO-25 Nixie; torpedo decoy. Prairie Masker hull and blade rate noise suppression.

ESM: SLO-32(V)2; intercept



IGNACIO ALLENDE

(Scale 1 : 1,200), Ian Sturton / 011466R

Weapons control: Mk 68 Mod 3 GFCS Mk 114 Mod 6 ASW FCS.

Mk 1 target designation system. MMS target acquisition sight (for mines, small craft and low flying aircraft)

Radars: Air search: Lockheed SPS-408; B-band Surface search: Raytheon SPS-10 or Norden SPS-67; G-band.

Navigation: Marconi LN66; I-band.

Fire control: Western Electric SPG-53D/F; I/J-band. Tecan: SRN 15.

Sonars: EDO/General Electric SOS-26CX; bow-mounted; active search and attack; medium frequency.

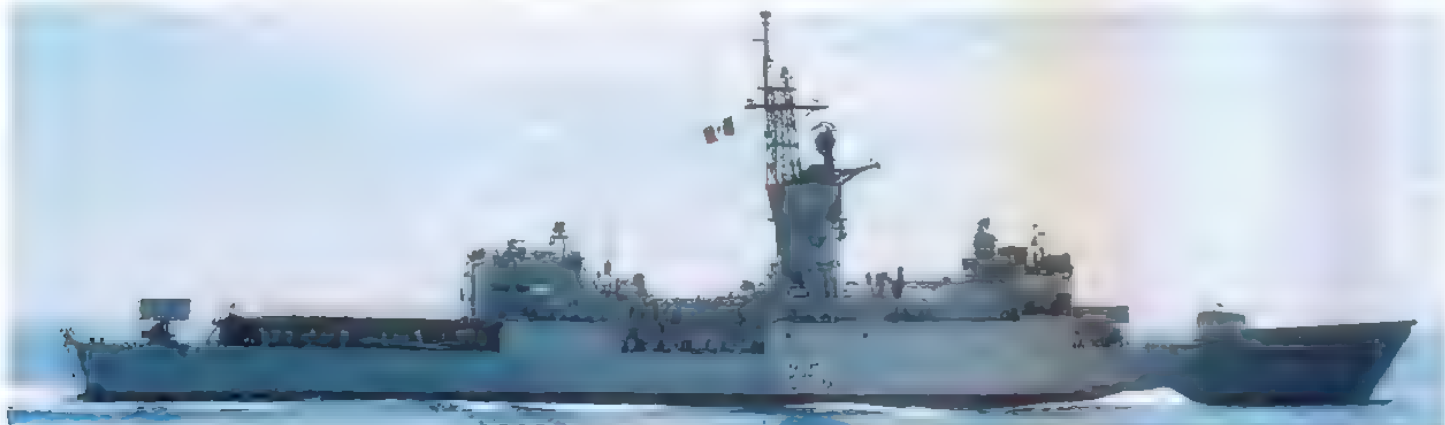
Helicopters: 1 BO 105 CB

Programmes: First pair decommissioned from USN in 1992/93. Both transferred on 29 January 1997 and

arrived in Mexico 16 August 1997. Both then underwent extensive refits, entering service on 23 November 1998. Third of class (ex-Pharris) transferred 2 February 2000 and recommissioned on 16 March 2000. The fourth ship (ex-Whipple) transferred in August 2001 and recommissioned on 1 November 2002.

Modernisation: To be fitted with SSM (Harpoon or Gabriel II).
Structure: Four Mk 32 torpedo tubes are fixed in the midships structure, two to a side, angled out at 45°. The original Knox class SAM launcher has been put back aft, in F 211 only.

Operational: In US service these ships had Harpoon SSM, but it is reported that these weapons are not carried. Pennant numbers changed in 2001. All based at Tuxpan.



IGNACIO ALLENDE (old number)

11/1998, Mexican Navy / 0017679



IGNACIO ALLENDE

6/2005, Mexican Navy / 1153500

2 BRAVO (BRONSTEIN) CLASS (FFH)

Name	No	Builders	Laid down	Launched	Commissioned
NICOLAS BRAVO (ex-McClay)	F 201 (ex-E 40, ex-FF 1038)	Avondale Shipyards	15 Sep 1961	9 June 1962	21 Oct 1963
HERMENEGILDO GALEANA (ex-Bronstein)	F 202 (ex-E 42, ex-FF 1037)	Avondale Shipyards	16 May 1961	31 Mar 1962	16 June 1963

Displacement, tons: 2,360 standard; 2,650 full load
Dimensions, feet (metres): 371.5 x 40.5 x 13.5, 23 (sonar)
 (113.2 x 12.3 x 4.1; 7)

Main machinery: 2 Foster-Wheeler boilers; 1 De Laval geared turbine; 20,000 hp (14.92 MW); 1 shaft
Speed, knots: 23.5. **Range, n miles:** 3,924 at 15 kt
Complement: 207 (17 officers)

Missiles: A/S: Honeywell ASROC Mk 112 octuple launcher

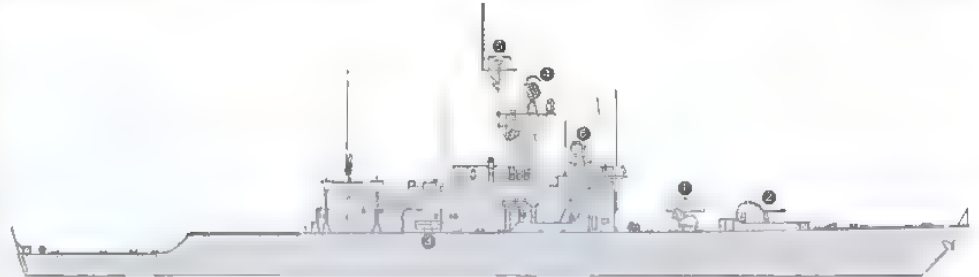
Guns: 2 USN 3 in (76 mm)/50 (twin) Mk 33; 50 rds/min to 12.8 km (7 n miles); weight of shell 6 kg, or 1 Bofors 57 mm/70 Mk 2; 220 rds/min to 17 km (9.3 n miles); weight of shell 2.4 kg.

Torpedoes: 6—324 mm US Mk 32 Mod 7 (2 triple tubes)
 14 Honeywell Mk 46; anti-submarine; active/passive homing to 11 km (5.9 n miles) at 40 kt; warhead 44 kg

Countermeasures: Decoys: 2 Loral Hycor 6-barrelled fixed Mk 33; IR flares and chaff to 4 km (2.2 n miles)
 T-Mk 6 Fanfare; torpedo decoy system.

Weapons control: Mk 58 GFCS. Mk 114 ASW FCS Mk 1 target designation system. Eisag NA 18 optronic director may be fitted.

Radars: Air search: Lockheed SPS-40D; B-band; range 320 km (175 n miles)
 Surface search: Raytheon SPS-10F; G-band.



NICOLAS BRAVO

(Scale 1 : 900), Ian Sturton / D506240

Navigation: Marconi LN66; I-band
Fire control: General Electric Mk 35; I/J-band.
Sonars: EDO/General Electric SQS-26 AXR; bow-mounted; active search and attack, medium frequency.

Helicopters: Platform and some facilities but no hangar

Programmes: Transferred from the US to Mexico by sale 12 November 1993 having paid off in December 1990.

Modernisation: Bofors 57 mm SAK may be fitted to replace the Mk 33 gun, possibly with an Eisag NA 18 optronic director

Structure: Position of stem anchor and portside anchor (just forward of gun mount) necessitated by large bow sonar dome. As built, a single 3 in (Mk 34) open mount was aft of the helicopter deck, removed for installation of towed sonar which has since been taken out

Operational: ASROC is non-operational. Pannant numbers changed in 2001. Both based at Manzanillo.



HERMENEGILDO GALEANA

6/2004, Mexican Navy / 0589778



HERMENEGILDO GALEANA

6/2004, Mexican Navy / 0589777

SHIPBORNE AIRCRAFT

Numbers/Type: 6 MD 902 Explorer.
Operational speed: 113 kt (210 km/h).
Service ceiling: 9,845 ft (3,000 m).
Range: 407 n miles (754 km).
Role/Weapon systems: Coastal patrol helicopter acquired 1999–2000 for patrol, fisheries protection and EEZ protection duties, SAR as secondary role. Sensors: Bendix search radar. Weapons: MGs or rocket pods



BO 105CB 9/1994, Mexican Navy / 0052605

Numbers/Type: 11 Bolkow BO 105
Operational speed: 100 kt (185 km/h).
Service ceiling: 17,000 ft (5,180 m).
Range: 160 n miles (296 km).
Role/Weapon systems: Coastal patrol helicopter acquired 1982–86 for patrol, fisheries protection and EEZ protection duties, SAR as secondary role. A modernisation programme was announced in October 2003; the first upgraded aircraft was delivered in 2004 and the programme was completed by late 2006. Sensors: Bendix search radar. Weapons: MGs or rocket pods.



BO 105 6/2004, Mexican Navy / 1133542

Numbers/Type: 2 Eurocopter AS 565 AF Fennec.
Operational speed: 121 kt (225 km/h).
Service ceiling: 13,120 ft (4,000 m).
Range: 389 n miles (722 km).
Role/Weapon systems: Patrol helicopter for EEZ protection and SAR. Operated from Oaxaca class patrol ships. More may be acquired when funds are available. Sensors: Bendix 1500 search radar. Weapons: Can carry up to two torpedoes, rocket pods or an MG



AS 565 AF 6/2005, Mexican Navy / 1133541

Numbers/Type: 4 Eurocopter AS 565ME Panther.
Operational speed: 165 kt (305 km/h).
Service ceiling: 15,223 ft (4,640 m).
Range: 200 n miles (370 km).
Role/Weapon systems: Transport and reconnaissance helicopter procured in June 2005. Four further aircraft are to be acquired. Capable of carrying eight passengers or 1,000 kg load



AS 565 ME 6/2005, Mexican Navy / 1133540

LAND-BASED MARITIME AIRCRAFT (FRONT LINE)

Notes: (1) Transport aircraft used include two Rockwell 306 Sabraliners, three Learjets, one Dash 8-200, 28 Mil Mi-17, four Mil Mi-2 Hoplite and four MD 500E
 (2) Training aircraft include eight Aeromacchi M-290TP Redigos, 14 Maule MX-7-180, nine Zlin Z242L, three Beech B55 Baron, one Cessna 402C, four Lancair and five Schweizer 300C.
 (3) Two Cessna C-208 Grand Caravan Elint aircraft are to be transferred from the US To be equipped with radar and FLIR.



MI-2 6/2005, Mexican Navy / 1133539



MI-17 6/2005, Mexican Navy / 1133537



SABRELINER 6/2005, Mexican Navy / 1133538

Numbers/Type: 3 Grumman E-2C Hawkeye.
Operational speed: 323 kt (598 km/h).
Service ceiling: 37,000 ft (11,278 m).
Range: 1,540 n miles (2,852 km).
Role/Weapon systems: Acquired from Israel in 2004 after refurbishment by Israel Aircraft Industries' (IAI's) Bedek Aviation Group. Equipment details are speculative. Sensors: ESM, ALR-73 PDS, Airborne tactical data system with Links 4A and 11; AN/AP-125 radar; Mk XII IFF. Weapons: Unarmed.



E-2C 6/2004, Mexican Navy / 0589773

Numbers/Type: 7 CASA C-212 Aviocar.
Operational speed: 190 kt (353 km/h).
Service ceiling: 24,000 ft (7,315 m).
Range: 1,650 n miles (3,055 km).
Role/Weapon systems: Acquired from 1987 and used for Maritime Surveillance. Two aircraft upgraded in Spain with EADS/CASA Integrated Tactical System (FITS) in 2003. The remainder upgraded in Mexico by late 2006. One aircraft lost in November 2006. Sensors: Search radar; APS 504. Weapons: Unarmed.



C-212 6/2005, Mexican Navy / 1133536

Numbers/Type: 4 Rockwell Turbo Commander
Operational speed: 250 kt (463 km/h).
Service ceiling: 31,000 ft (9,450 m).
Range: 480 n miles (890 km).
Role/Weapon systems: Acquired in 1992. Used for reconnaissance and transport.



TURBO COMMANDER 6/2004, Mexican Navy / 113354

Numbers/Type: 6 Antonov AN 32B.
Operational speed: 250 kt (463 km/h).
Service ceiling: 26,000 ft (7,925 m).
Range: 750 n miles (1,390 km).
Role/Weapon systems: Acquired 1997-99. Used for transport and reconnaissance. Two aircraft fitted with FLIR.



An-32B 6/2004, Mexican Navy / 0589775

Numbers/Type: 2 Casa CN-235 MP Persuader.
Operational speed: 210 kt (384 km/h).
Service ceiling: 24,000 ft (7,315 m).
Range: 2,000 n miles (3,218 km).
Role/Weapon systems: EEZ surveillance. Two ordered in September 2006 with plans for a further four. Sensors and weapons to be announced.



CN-235 MP (Irish colours) 7/2003, Paul Jackson / 0588935

PATROL FORCES

Notes: The Caribe project was initiated in about 1998 and involves the construction of 31 m patrol craft of 110 tons. One is under construction at ASTIMAR 3 and was reported 30 per cent completed in September 2006.

2 HURACAN (SAAR 4.5) CLASS (FAST ATTACK CRAFT — MISSILE) (PTG)

Name	No	Builders	Launched	Commissioned
HURACAN (ex-Aliya)	301	Israel Shipyards, Haifa	11 July 1980	11 July 1980
TORMENTA (ex-Geoula)	302	Israel Shipyards, Haifa	Oct 1980	31 Dec 1980

Displacement, tons: 498 full load
Dimensions, feet (metres): 202.4 x 24.9 x 9.2
 (61.7 x 7.6 x 2.8)
Main machinery: 4 MTU/Bazán 16V 956 TB91 diesels;
 15,000 hp(m) (11 03 MW) sustained; 4 shafts
Speed, knots: 31
Range, n miles: 3,000 at 17 kt; 1,500 at 30 kt
Complement: 53

Missiles: SSM: 4 IAI Gabriel II; radar or optical guidance; semi-active radar plus anti-radiation homing to 36 km (19.4 n miles) at 0.7 Mach, warhead 75 kg or 4 McDonnell Douglas Harpoon; active radar homing to 130 km (70 n miles) at 0.9 Mach; warhead 227 kg.

Guns: 2 Oerlikon 20 mm, 800 rds/min to 2 km.
 1 General Electric/General Dynamics Vulcan Phalanx 6-barrelled 20 mm Mk 15; 3,000 rds/min combined to 15 km anti-missile
 4—12.7 mm (twin or quad) MGs.

Countermeasures: Decoys: 1—45-tube, 4—24-tube, 4 single-tube chaff launchers.

ESM/ECM: Elisra NS 9003/6; intercept and jammer.

Combat data systems: IAI Reshet datalink.

Radars: Air/surface search: Thomson-CSF TH-D 1040 Neptune; G-band

Fire control: Selenia Orion RTN-10X; I/J-band.

Programmes: First two of the original class of five Saar 4.5s, before conversions from Saar 4s were started. Transferred to Mexico on 1 June 2004.

Modernisation: Harpoon may have replaced Gabriel in one or both ships.



HURACAN 7/2004, Diego Quevedo / 0583999

Structure: The CIWS mounted in the eyes of the ship replaced a 40 mm gun. **Operational:** Test-firing of a Gabriel missile took place in June 2005. Both based at Coatzacoalcos.



TORMENTA 7/2004, Diego Quevedo / 0584000

4 HOLZINGER (ÁGUILA) CLASS (GUNSHIPS) (PSOH)

Name	No	Builders	Laid down	Launched	Commissioned
CAPITÁN DE NAVIO SEBASTIAN JOSÉ HOLZINGER (ex-Uxmal)	PO 131 (ex-C 01, ex-GA 01)	ASTIMAR 20, Salina Cruz, Oaxaco	1 June 1985	1 June 1988	1 May 1991
CAPITÁN DE NAVIO BLAS GODÍNEZ (ex-Militia)	PO 132 (ex-C 02, ex-GA 02)	ASTIMAR 1, Tampico, Tamaulipas	7 July 1985	22 Mar 1988	1 Nov 1991
BRIGADIER JOSÉ MARIÁ DE LA VEGA (ex-Paten)	PO 133 (ex-C 03, ex-GA 03)	ASTIMAR 20, Salina Cruz, Oaxaco	22 Sep 1986	1 June 1988	16 Mar 1994
GENERAL FELIPE B BERRIOZÁBAL (ex-Anahuac)	PO 134 (ex-C 04, ex-GA 04)	ASTIMAR 1, Tampico, Tamaulipas	9 Mar 1988	21 Apr 1991	18 Mar 1994

Displacement, tons: 1,290 full load
Dimensions, feet (metres): 244.1 × 34.4 × 11.1
 (74.4 × 10.5 × 3.4)
Main machinery: 2 MTU 20V 956 TB92 diesels; 11,700 hp(m)
 (8.6 MW) sustained; 2 shafts
Speed, knots: 22
Range, n miles: 3,920 at 16 kt
Complement: 75 (11 officers)

Guns: 1 Bofors 57 mm/70 Mk 2 (PO 133, PO 134); 220 rds/min to 17 km (9.3 n miles); weight of shell 2.4 kg or 2 Bofors 40 mm/60 (1 twin) (PO 131, PO 132).

Combat data systems: Elsig 2 CSDA-10

Weapons control: Elsig NA 18 optronic director (PO 133, PO 134)

Radars: Surface search: Raytheon SPS-64(V)6A; I-band.
 Navigation: Kelvin Hughes Nucleus; I-band.

Helicopters: 1 MBB BO 105 CB.

Programmes: Originally four were ordered from Tampico and Veracruz. First laid down November 1983, second in 1984 but then there were delays caused by financial problems. Named after military heroes.

Structure: An improved variant of the Bazán Falcon (Urbe) class with a flight deck extended to the stern.

Operational: Pennant numbers changed in 2001. All based at Lazero.



GENERAL FELIPE B BERRIOZÁBAL

6/2005, Mexican Navy / 1133533

3 SIERRA CLASS (GUNSHIPS) (PSOH)

Name	No	Builders	Laid down	Launched	Commissioned
JUSTO SIERRA MENDEZ	PO 141 (ex-C 2001)	ASTIMAR 1, Tampico, Tamaulipas	19 Jan 1998	1 June 1998	1 June 1998
GUILLERMO PRIETO	PO 143 (ex-C 2003)	ASTIMAR 1, Tampico, Tamaulipas	1 June 1998	18 Sep 1999	18 Sep 1999
MATIAS ROMERO	PO 144 (ex-C 2004)	ASTIMAR 20, Salina Cruz, Oaxaco	23 July 1998	17 Sep 1999	17 Sep 1999

Displacement, tons: 1,344 full load
Dimensions, feet (metres): 231.0 × 34.4 × 9.2
 (70.4 × 10.5 × 2.8)
Main machinery: 2 Caterpillar 3616 V16 diesels; 6,197 hp(m)
 (4.55 MW); 2 shafts
Speed, knots: 18
Complement: 76 (10 officers)

Missiles: SA-N-10 (PO 144); IR homing to 5 km (2.7 n miles) at 1.7 Mach; warhead 1.5 kg.

Guns: 1 Bofors 57 mm/70 Mk 3; 220 rds/min to 17 km (9.3 n miles); weight of shell 2.4 kg.

Combat data systems: Alenia 2.

Weapons control: Saab EOS 450 optronic director.

Radars: Air/surface search: E/F-band
 Surface search: I-band.

Helicopters: 1 MD 902 Explorer.

Programmes: Follow on to the Holzinger class. Ordered in 1997.

Structure: Derived from the Holzinger class but with a markedly different superstructure. All ships carry 11 m interceptor craft capable of 50 kt.

Operational: All based at Acapulco. PO 142 *Benito Juárez* badly damaged by fire in October 2003 and subsequently decommissioned. The ship was sunk as a target in July 2007.



JUSTO SIERRA MENDEZ

6/2005, Mexican Navy / 1133535



JUSTO SIERRA MENDEZ

6/2004, Mexican Navy / 0509771

4 DURANGO CLASS (GUNSHIPS) (PSOH)

Name	No	Builders	Laid down	Launched	Commissioned
DURANGO	PO 151	ASTIMAR 1, Tampico, Tamaulipas	18 Dec 1999	11 Sep 2000	11 Sep 2000
SONORA	PO 152	ASTIMAR 20, Salina Cruz, Oaxaco	14 Dec 1999	4 Sep 2000	4 Sep 2000
GUANAJUATO	PO 153	ASTIMAR 1, Tampico, Tamaulipas	2000	13 Dec 2001	13 Dec 2001
VERACRUZ	PO 154	ASTIMAR 20, Salina Cruz, Oaxaco	4 Sep 2000	17 Dec 2001	17 Dec 2003

Displacement, tons: 1,470 full load
 Dimensions, feet (metres): 268.4 x 34.4 x 9.2
 (81.8 x 10.5 x 2.8)

Main machinery: 2 Caterpillar 3616 V16 diesels, 6 197 hp(m)
 (4.55 MW); 2 shafts

Speed, knots: 18

Complement: 76 (10 officers)

Guns: 1 Bofors 57 mm/70 Mk 3; 220 rds/min to 17 km
 (9.3 n miles); weight of shell 2.4 kg.

Combat data systems: Alenia 2.

Weapons control: Saab EDS 450 optronic director.

Radars: Air/surface search: E/F-band

Surface search: I-band.

Helicopters: 1 MD 902 Explorer

Programmes: Follow on to the Sierra class. Ordered on
 1 June 1998.

Structure: Derived from the Holzinger class but with
 a markedly different superstructure. Durango class
 slightly larger than the Sierra class. All ships carry 11 m
 interceptor craft capable of 50 kt.

Operational: PO 151 and PO 152 based at Guaymas and
 PO 153 and PO 154 at Coatzacoalcos



DURANGO

8/2004, Mexican Navy / 0589/70

2 + 2 (2) OAXACA CLASS (GUNSHIPS) (PSOH)

Name	No	Builders	Laid down	Launched	Commissioned
OAXACA	PO 161	ASTIMAR 20, Salina Cruz, Oaxaco	17 Dec 2001	11 Apr 2003	Feb 2005
BAJA CALIFORNIA	PO 162	ASTIMAR 1, Tampico, Tamaulipas	13 Dec 2001	21 May 2003	Apr 2007
BICENTENARIO	PO 163	ASTIMAR 20, Salina Cruz, Oaxaco	11 Apr 2003	2009	2010
INDEPENDENCIA	PO 164	ASTIMAR 1, Tampico, Tamaulipas	21 May 2003	2009	2010

Displacement, tons: 1,680
 Dimensions, feet (metres): 282.2 x 34.4 x 9.3
 (86.0 x 10.5 x 3.0)

Main machinery: 2 Caterpillar 3916 V16 diesels, 2 shafts

Speed, knots: 20

Complement: 77

Guns: 1 Oto Melara 3 in (76 mm)/62 Compact, 85 rds/min
 to 16 km (8.7 n miles); weight of shell 6 kg. 1 Oto Melara
 25 mm. 2 - 12.7 mm MGs.

Combat data systems: Alenia.

Radars: Surface search/navigation: Terma Scantec 2001,
 I band

Fire control: Alenia NA-25; I-band.

Helicopters: Eurocopter AS 565 Panther.

Programmes: The programme was originally for six ships.
 Construction of PO 163 and PO 164 was suspended for
 about two years but was resumed in 2007. Delivery of

both ships is now expected in 2010. A further two ships
 are expected to be laid down in 2009.

Structure: A further derivation of the basic Holzinger
 class and a slightly longer version of the Durango
 class. Capable of operating a helicopter and
 equipped with a fast 11 m interception boat capable
 of 50 kt.

Operational: PO 161 and PO 162 based at Coatzacoalcos.



OAXACA

9/2007, Mario R V Carneiro / 1353233

For details of the latest updates to *Jane's Fighting Ships* online and to discover the additional
 information available exclusively to online subscribers please visit
jfs.janes.com

6 URIBE CLASS (GUNSHIPS) (PSOH)

Name	No	Builders	Laid down	Launched	Commissioned
CADETE VIRGILIO URIBE	PO 121 (ex-C 11, ex-GH 01)	Bazán, San Fernando	1 July 1981	12 Nov 1981	1 Aug 1982
TENIENTE JOSÉ AZUETA	PO 122 (ex-C 12, ex-GH 02)	Bazán, San Fernando	7 Sep 1981	12 Dec 1981	23 Sep 1982
CAPITÁN de FRAGATA PEDRO SÁINZ de BARANDA	PO 123 (ex-C 13, ex-GH 03)	Bazán, San Fernando	22 Oct 1981	28 Jan 1982	1 May 1983
COMODORO CARLOS CASTILLO BRETÓN	PO 124 (ex-C 14, ex-GH 04)	Bazán, San Fernando	11 Nov 1981	26 Feb 1982	24 Feb 1983
VICELMIRANTE OTHÓN P BLANCO	PO 125 (ex-C 15, ex-GH 05)	Bazán, San Fernando	18 Dec 1981	26 Mar 1982	24 Feb 1983
CONTRALMIRANTE ANGEL ORTIZ MONASTERIO	PO 126 (ex-C 16, ex-GH 06)	Bazán, San Fernando	30 Dec 1981	4 May 1982	24 Feb 1983

Displacement, tons: 988 full load
Dimensions, feet (metres): 219.9 × 34.4 × 11.5 (67 × 10.5 × 3.5)
Main machinery: 2 MTU-Bazán 16V 958 T892 diesels; 7,500 hp (m) (5.52 MW) sustained; 2 shafts
Speed, knots: 22 **Range, n miles:** 5,000 at 13 kt
Complement: 46 (7 officers)

Guns: 1 Bofors 40 mm/70, 300 rds/min to 12.5 km (6.7 n miles); weight of shell 0.96 kg.

Weapons control: Naja optronic director.
Radars: Surface search; Decca AC 1226; I-band.
Navigation: I-band.
Tacan: SRN 15.

Helicopters: 1 MBB BO 105 CB.

Programmes: Ordered in 1980 to a Falcon class design. Contracts for a further eight of the class have been

shelved. Pennant numbers changed in 1992. Named after naval heroes.

Modernisation: An upgrade programme for all six ships was in progress in 2006.

Structure: Flight deck extends to the stern. Similar ships built for Argentina.

Operational: Used for EEZ patrol. Pennant numbers changed in 2001. Basing, Lázaro (PO 121, 122), Manzanillo (PO 123); Ensenada (PO 124, 125, 126)



COMODORO CARLOS CASTILLO BRETÓN

9/2008, Julio Montes / 1353234

10 VALLE (AUK) CLASS (COAST GUARD) (PG/PGH)

JUAN DE LA BARRERA (ex-Guillermo Prato, ex-Symbol MSF 123) PO 102 (ex-C 71, ex-G-02)
 MARIANO ESCOBEDO (ex-Champion MSF 314) PO 103 (ex-C 72, ex-G-03)
 MANUEL DOBLADO (ex-Defense MSF 317) PO 104 (ex-C 73, ex-G-05)
 SANTOS DEGOLLADO (ex-Gladiator MSF 319) PO 106 (ex-C 75, ex-G-07)
 JUAN N ALVARES (ex-Ardent MSF 340) PO 108 (ex-C 77, ex-G-09)
 MANUEL GUTIERREZ ZAMORA (ex-Rosalie MSF 379) PO 109 (ex-C 78, ex-G-10)
 VALENTIN GOMEZ FARIAS (ex-Starling MSF 64) PO 110 (ex-C 79, ex-G-11)
 IGNACIO L VALLARTA (ex-Velocity MSF 128) PO 113 (ex-C 82, ex-G-14)
 JESUS GONZALEZ ORTEGA (ex-Chief MSF 315) PO 114 (ex-C 83, ex-G-15)
 MARIANO MATAMOROS (ex-Hermenegildo Galeans, ex-Sage MSF 111) PO 117 (ex-C 86, ex-G-19)

Displacement, tons: 1,065 standard; 1,250 full load
Dimensions, feet (metres): 221.2 × 32.2 × 9.2 (67.5 × 9.8 × 2.8)
Main machinery: Diesel-electric; 2 Caterpillar diesels; 2 shafts
Speed, knots: 18
Range, n miles: 6,900 at 10 kt
Complement: 73 (9 officers)
Guns: 1 USN 3 in (76 mm)/50, 4 Bofors 40 mm/80 (2 twin), 4–12.7 mm (2 twin) MGs (in some on quarterdeck)
Radars: Surface search; Kelvin Hughes 14/9 (in most), I band
Helicopters: Platform for 1 BO 105 (PO 103, 104 and 110)

Comment: Transferred from US, six in February 1973, four in April 1973, nine in September 1973. Eight have since been deleted. Employed on Coast Guard duties. All built during Second World War. Variations are visible in the mid-ships section where some have a bulwark running from the break of the forecastle to the quarterdeck. Minesweeping gear removed. All ships re-engined 1999–2002. Some carry a Pirana 26 kt motor launch armed with 40 mm grenade launchers and 7.62 mm MGs. P 103, P 104 and P 110 have had helicopter flight decks installed aft. Plans to fit flight decks in the others have been shelved. PO 102, 103, 104, 106, 108 and 113 based at Lázaro; PO 109 and 114 based at Tampico; PO 110 and 117 based at Ensenada.



SANTOS DEGOLLADO

6/2005, Mexican Navy / 1133532

48 POLARIS CLASS (COMBATBOAT 90 HMN) (PBF)

POLARIS PI 1101	FOMALHAUT PI 1113	PEACOCK PI 1125	ELTANIN PI 1137
SIRIUS PI 1102	POLLUX PI 1114	BETELGEUSE PI 1126	KOCHAB PI 1138
CAPELLA PI 1103	RÉGULUS PI 1115	ADHARA PI 1127	ENIF PI 1139
CANOPUS PI 1104	ACRUX PI 1116	ALIOH PI 1128	SCHEDAR PI 1140
VEGA PI 1105	SPICA PI 1117	RASALHAGUE PI 1129	MARKAB PI 1141
ACHERNAR PI 1106	HADAR PI 1118	NUNKI PI 1130	MEGREZ PI 1142
RIGEL PI 1107	SHAULA PI 1119	HAMAL PI 1131	MIZAR PI 1143
ARCTURUS PI 1108	MIRFAK PI 1120	SUHAIL PI 1132	PHEKDA PI 1144
ALPHERATZ PI 1109	ANKAA PI 1121	DUBHE PI 1133	ACAMAR PI 1145
PROCYON PI 1110	BELLATRIX PI 1122	DENEbola PI 1134	DIPHDA PI 1146
AVIOR PI 1111	ELNATH PI 1123	ALKAID PI 1135	MENKAR PI 1147
DENEb PI 1112	ALNILAN PI 1124	ALPHECCA PI 1136	SABIK PI 1148

Displacement, tons: 19 full load
Dimensions, feet (metres): 52.8 × 12.5 × 2.9 (16.1 × 3.8 × 0.9)
Main machinery: 2 CAT 3406E diesels; 1,605 hp (m) (1.18 MW); 2 waterjets
Speed, knots: 47
Range, n miles: 240 at 30 kt
Complement: 4
Guns: 1 Oto Melara 12.7 mm MG (PL 1141–1148), 1–12.7 mm MG (others).
Radars: Surface search; Littor Decca Bndgemaster E, I-band.

Comment: All named after stars. First 12 ordered from Dockstarvarvet, Sweden, on 15 April 1999, second batch of eight on 29 July 1999 and last batch of 20 on 1 February 2000. All delivered by 2001. A further batch of eight constructed at ASTIMAR 3, Coatzacoalcos, and delivered 2004–05. These craft are in service with the Swedish and Norwegian navies and with paramilitary forces in Malaysia and China. Based at Lerma (1103, 1104); Cozumel (1143, 1144); Yucatápeten (1107, 1108); Isla Mujeres (1109, 1110); Tuxpan (1113, 1114, 1105, 1106); Chetumel (1101, 1102, 1128, 1129); Veracruz (1131, 1132); Ensenada (1111, 1112, 1123); Manzanillo (1115, 1116); Topolobampo (1118); Mazatlan (1121, 1122); Puerto Cortes (1141); Puerto Vallarta (1124, 1136); Acapulco (1126, 1127); Guaymas (1130, 1139); Puerto Penasco (1138); Isla Socorro (1135); Frontera (1142); Puerto Chiapas (1117, 1120); Los Cabos (1119, 1147); Huatulco (1133, 1134); Isla Maria Nay (1137); San Blas Nay (1145, 1146); La Paz (1148); Lázaro (1125, 1140)



RÉGULUS

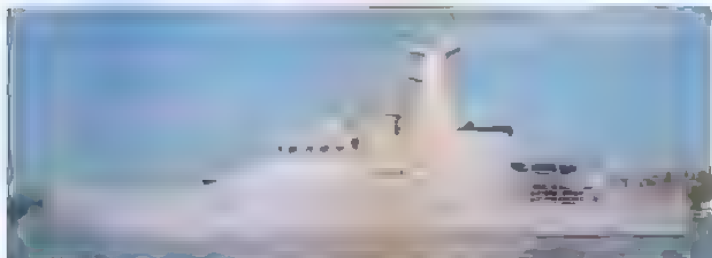
6/2005, Mexican Navy / 1133526

1 + 1 (4) DÉMOCRATA CLASS (PBO)

Name	No	Builders	Launched	Commissioned
DÉMOCRATA	PC 241 (ex-C 101)	ASTIMAR 6, Varadero, Guaymas	18 Oct 1997	9 Jan 1998
FRANCISCO MADERO	—	ASTIMAR 3, Coatzacoalcos, Veracruz	8 June 2007	—

Displacement, tons: 450 full load
Dimensions, feet (metres): 172.2 x 29.5 x 8.8 (52.5 x 9 x 2.7)
Main machinery: 2 MTU 20V 956 TB92 diesels; 6,119 hp (4.5 MW); 2 shafts
Speed, knots: 30
Complement: 36 (13 officers)
Guns: 2 Bofors 40 mm/60 (twin)
Radars: Surface search: Racal Decca; E/F-band

Comment: Based at Yucalpeten. A second slightly longer (58 m) unit is under construction and was launched in 2007. Further units may be built subject to funding. A 50 kt Boston Whaler launch is carried at the stern.



DÉMOCRATA 6/2004, Mexican Navy / 0589769

3 CAPE (PGM 71) CLASS (LARGE PATROL CRAFT) (PB)

Name	No	Builders	Recommissioned
CABO CORRIENTES (ex-Jalisco, ex-Cape Carter)	PC 271 (ex-P 42)	CG Yard, Curtis Bay	16 Mar 1990
CABO CORZO (ex-Nayarit, ex-Cape Hedge)	PC 272 (ex-P 43)	CG Yard, Curtis Bay	21 Apr 1990
CABO CATOCHÉ (ex-Cape Hattaras)	PC 273 (ex-P 44)	CG Yard, Curtis Bay	18 Mar 1991

Displacement, tons: 98 standard, 148 full load
Dimensions, feet (metres): 95 x 20.2 x 6.1 (28.9 x 6.2 x 1.85)
Main machinery: 2 GM 16V-149TI diesels, 2,322 hp (1.73 MW) sustained; 2 shafts
Speed, knots: 20 **Range, n miles:** 2,500 at 10 kt
Complement: 14 (1 officer)
Guns: 1—20 mm, 2—12.7 mm MGs
Radars: Navigation: Raytheon SPS-64; I-band.

Comment: All built in 1953; have been re-engined and extensively modernised. Transferred under the FMS programme, having paid off from the US Coast Guard. Pennant numbers changed in 2001. PC 271 and PC 272 based at Puerto Vallarta and PC 273 at Isla Cozumel.



CABO CORZO 6/2005, Mexican Navy / 1133531

2 POINT CLASS (LARGE PATROL CRAFT) (PB)

Name	No	Builders	Recommissioned
PUNTA MORRO (ex-Point Verde)	PC 281 (ex-P 60, ex-P 45)	CG Yard, Curtis Bay	19 July 1991
PUNTA MASTUN (ex-Point Herron)	PC 282 (ex-P 61, ex-P 46)	CG Yard, Curtis Bay	19 July 1991

Displacement, tons: 67 full load
Dimensions, feet (metres): 83 x 17.2 x 5.8 (25.3 x 5.2 x 1.8)
Main machinery: 2 Caterpillar diesels; 1,600 hp (1.19 MW); 2 shafts
Speed, knots: 12. **Range, n miles:** 1,500 at 8 kt
Complement: 10
Guns: 2—12.7 mm MGs (can be carried).
Radars: Surface search: Raytheon SPS 64; I-band

Comment: Ex-US Coast Guard craft built in 1961. Steel hulls and aluminium superstructures. Speed much reduced from original 23 kt. Pennant numbers changed in 2001. Both based at Lerma.



PUNTA MASTUN 6/2005, Mexican Navy / 1133579

19 AZTECA CLASS (LARGE PATROL CRAFT) (PB)

Name	No	Builders	Commissioned
MATIAS DE CORDOVA (ex-Guaycura)	PC 202 (ex-P 02)	Scott & Sons, Bowling	6 Jan 1974
IGNACIO LÓPEZ RAYÓN (ex-Tarahumara)	PC 208 (ex-P 06)	Ailsa Shipbuilding Co Ltd	18 Apr 1975
JUAN ANTONIO DE LA FUENTE (ex-Mexica)	PC 208 (ex-P 08)	Ailsa Shipbuilding Co Ltd	28 Dec 1975
LEON GUZMAN (ex-Zapoteca)	PC 209 (ex-P 09)	Scott & Sons, Bowling	1 June 1975
IGNACIO RAMÍREZ (ex-Huasteca)	PC 210 (ex-P 10)	Ailsa Shipbuilding Co Ltd	1 June 1975
IGNACIO MARISCAL (ex-Mazahua)	PC 211 (ex-P 11)	Ailsa Shipbuilding Co Ltd	25 Dec 1975
HERIBERTO JARA CORONA (ex-Huichol)	PC 212 (ex-P 12)	Ailsa Shipbuilding Co Ltd	17 Nov 1975
COLIMA (ex-Yacqui)	PC 214 (ex-P 14)	Scott & Sons, Bowling	1 July 1975
JOSE JOAQUÍN FERNÁNDEZ DE LIZARDI (ex-Tlapaneco)	PC 215 (ex-P 15)	Ailsa Shipbuilding Co Ltd	1 July 1976
FRANCISCO J MUGICA (ex-Tarasco)	PC 216 (ex-P 16)	Ailsa Shipbuilding Co Ltd	1 June 1976
JOSE MARIA DEL CASTILLO VELAZCO (ex-Otomí)	PC 218 (ex-P 18)	Lamont & Co Ltd	1 Nov 1976
JOSE NATIVIDAD MACIAS (ex-Pimas)	PC 220 (ex-P 20)	Lamont & Co Ltd	29 Dec 1976
TAMAULIPAS (ex-Mazateco)	PC 223 (ex-P 23)	ASTIMAR 3, Coatzacoalcos	18 May 1977
YUCATAN (ex-Tolteca)	PC 224 (ex-P 24)	ASTIMAR 3, Coatzacoalcos	18 May 1977
TABASCO (ex-Maya)	PC 225 (ex-P 25)	ASTIMAR 3, Coatzacoalcos	1 Dec 1978
COCHIMIE (ex-Veracruz)	PC 226 (ex-P 26)	ASTIMAR 3, Coatzacoalcos	1 Dec 1978
PUEBLA (ex-Totonaca)	PC 228 (ex-P 28)	ASTIMAR 3, Coatzacoalcos	1 Aug 1982
LEONA VICARIO (ex-Olmeca)	PC 230 (ex-P 30)	ASTIMAR 20, Salina Cruz, Oaxaca	1 May 1977
JOSEFA ORTIZ DE DOMINGUEZ (ex-Tlahuica)	PC 231 (ex-P 31)	ASTIMAR 20, Salina Cruz, Oaxaca	1 June 1977

Displacement, tons: 148 full load
Dimensions, feet (metres): 112.7 x 28.3 x 7.2 (34.4 x 8.7 x 2.2)
Main machinery: 2 Paxman 12YJCM diesels; 3,000 hp (2.24 MW) sustained; 2 shafts
Speed, knots: 24
Range, n miles: 1,537 at 14 kt
Complement: 24 (2 officers)
Guns: 1 Bofors 40 mm/60; 300 rds/min to 12 km (6.5 n miles) anti-surface; 4 km (2.2 n miles) anti-aircraft; weight of shell 2.4 kg
 1 Derlikon 20 mm or 1—7.62 mm MG
Radars: Surface search: Kelvin Hughes; I-band

Comment: Ordered by Mexico on 27 March 1973 from Associated British Machine Tool Makers Ltd to a design by TT Boat Designs, Bembridge, Isle of Wight. The first 21 were modernised in 1987 in Mexico with spare parts and equipment supplied by ABMTM Marine Division who supervised the work which included engine refurbishment and the fitting of air conditioning. Names and pennant numbers changed in 2001. Based at: Veracruz (PC 223, 228); Yucalpeten (PC 224, 225, 226); Salina Cruz (PC 206, 209), Puerto Chiapas (PC 218, 220), Guaymas (PC 210, 214); Mazatlan (PC 211, 230, 231); Acapulco (PC 212, 215), La Paz (PC 208, 216); Ciudad Madero (PC 202).



JOSE NATIVIDAD MACIAS 6/2005, Mexican Navy / 1133528

4 ISLA CLASS (FAST ATTACK CRAFT) (PBF)

Name	No	Builders	Commissioned
ISLA CORONADO	PI 1201 (ex-P 51)	Equitable Shipyards	1 Sep 1993
ISLA LOBOS	PI 1202 (ex-P 52)	Equitable Shipyards	1 Nov 1993
ISLA GUADALUPE	PI 1203 (ex-P 53)	Equitable Shipyards	1 Feb 1994
ISLA COZUMEL	PI 1204 (ex-P 54)	Equitable Shipyards	1 Apr 1994

Displacement, tons: 52 full load
Dimensions, feet (metres): 82 x 17.7 x 3.9 (25 x 5.4 x 1.2)
Main machinery: 3 Detroit diesels; 16,200 hp (12.9 MW); 3 Arneson surface drives
Speed, knots: 50
Range, n miles: 1,200 at 30 kt
Complement: 9 (3 officers)
Guns: 1—12.7 mm MG, 2—7.62 mm MGs.
Radars: Surface search: Raytheon SPS 69; I-band.
Fire control: Thomson-CSF Agrion; J-band.

Comment: Built by the Trinity Marine Group to an XFPB (extra fast patrol boat) design. Deep Vee hulls with FRP/Kevlar construction. Similar craft built for US Navy. May be fitted with MM 15 SSMs in due course and armed with 40 mm or 20 mm guns. Pennant numbers changed 2001. Based at Topolobampo (PI 1201, 1202) and Guaymas (PI 1203, 1204).



ISLA CORONADO 6/2005, Mexican Navy / 1133527

8 ACUARIO CLASS (COMBATBOAT 90HMN) (PBF)

ACUARIO PI 1301 ARIES PI 1303 CANCER PI 1305 CENTAURO PI 1307
 AGUILA PI 1302 AURIGA PI 1304 CAPRICORNO PI 1306 GEMINIS PI 1308

Displacement, tons: 19 full load
Dimensions, feet (metres): 52.8 x 12.5 x 2.9 (16.1 x 3.8 x 0.9)
Main machinery: 2 CAT 3406E diesels, 1,605 hp(m) (1.18 MW); 2 waterjets
Speed, knots: 47. **Range, n miles:** 240 at 30 kt
Complement: 4
Guns: 1 Oto Melara 12.7 mm MG
Radars: Surface search; Litton Decca Bridgemester E; I-band

Comment: A further development of the Polaris class which are based on the Swedish Combatboat 90 and built by ASTIMAR 3, Coatzacoalcos. 1301 and 1302 commissioned on 1 June 2004 and 1303-1306 on 1 September 2004. P 1307-1308 commissioned on 1 September 2004 and known as Acuario B class. Based at Puerto Peñasco (1301); El Mezquital (1302, 1303); Frontera (1304), Ciudad Madero (1305, 1306); Ensenada (1307), Manzanillo (1308). All named after stars.



AGUILA 6/2005, Mexican Navy / 1133523

6 + 5 POLARIS II CLASS (COMBATBOAT 90 HMN) (PBF)

MIAPLACIDUS PI 1401 BEAVER PI 1403 CAPH PI 1405
 ALGOL PI 1402 MERAK PI 1404 MIRACH PI 1406

Displacement, tons: 19 full load
Dimensions, feet (metres): 52.5 x 11.2 x 2.9 (16.0 x 3.4 x 0.9)
Main machinery: 2 MAN diesels; 2,200 hp(m) (1.62 MW); 2 waterjets
Speed, knots: 50. **Range, n miles:** 240 at 30 kt
Complement: 4
Guns: 1 Oto Melara 12.7 mm MG
Radars: Surface search; Litton Decca Bridgemester E; I-band.

Comment: A further development of the Polaris and Acuario classes. The first of class was delivered by Dockstarvarvet, Sweden, on 10 August 2005 and three further craft were completed at ASTIMAR 3 by 2007. Two further craft delivered in January 2008. Based at Isla Cozumel (1401, 1402) and Ciudad del Carmen (1403, 1404). A class of 11 is expected.

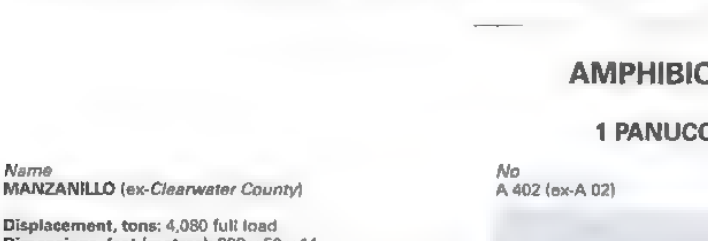


MIAPLACIDUS 6/2005, Mexican Navy / 1133524

0 + 6 (24) DEFENDER CLASS (RESPONSE BOATS) (PBF)

Displacement, tons: 2.7 full load
Dimensions, feet (metres): 10.1 x ? x ? (33.3 x ? x ?)
Main machinery: 3 outboard motors; 825 hp (615 kW)
Speed, knots: 50
Complement: 4
Guns: 2 – 12.7 mm MGs.
Radars: To be announced.

Comment: High-speed inshore patrol craft of aluminum construction and foam collar built by SAFE Boats International, Port Orchard, Washington. An initial order for six craft was made in December 2007 for delivery in 2009. A further 24 craft are expected by 2012.



DEFENDER CLASS 6/2004, Mexican Navy / 0589767

61 FAST PATROL CRAFT (PBF)

G 01-36 +25

Dimensions, feet (metres): 22.3 x 7.5 x 1 (6.8 x 2.3 x 0.3)
Main machinery: 2 Johnson outboards; 280 hp (209 kW)
Speed, knots: 40
Range, n miles: 190 at 40 kt
Complement: 2
Guns: 1 or 2 – 7.62 mm MGs.

Comment: Details are for the 36 G 01-38 Piraña class. Acquired in 1993/94. An 11.6 m 50 kt Interceptor class launch is carried in *Democrata* and modified 10.5 m versions are embarked in the *Sierra*, *Durango* and *Oaxaca* classes. Ten are in service and more may be acquired. There are also ten 29 ft Mako Marine craft, with twin Mercury outboards acquired in 1995. Five Sea Force 730 RIBs with Hamilton water-jets, also acquired in 1995-96.



INTERCEPTOR (old number) 7/1998, Mexican Navy / 0052510



PIRAÑA CLASS 9/2002, Julio Montes / 0533285



INTERCEPTOR (mod) 6/2004, Mexican Navy / 0589767

AMPHIBIOUS FORCES

1 PANUCO CLASS (AP)

Name: MANZANILLO (ex-Clearwater County)

No: A 402 (ex-A 02)

Builders: Chicago Bridge & Iron Co

Commissioned: 31 Mar 1944

Displacement, tons: 4,080 full load
Dimensions, feet (metres): 328 x 50 x 14 (100 x 15.3 x 4.3)
Main machinery: 2 GM 12-567A diesels; 1,800 hp (1.34 MW); 2 shafts
Speed, knots: 11
Range, n miles: 6,000 at 11 kt
Complement: 250
Guns: 8 Bofors 40 mm (2 twin, 4 single)

Comment: Ex-US LST 452 class transferred and recommissioned on 1 July 1972. Deployed also as SAR and disaster relief ship. Based at Manzanillo.



TRANSPORT SHIP
 7/1991, Harald Carstens
 0081259

2 NEWPORT CLASS (LSTH)

Name	No	Builders	Laid down	Launched	Commissioned	Recommissioned
RIO PAPALOAPAN (ex-Sonora, ex-Newport)	A 411 (ex-A-04, ex-LST-1179)	Philadelphia Naval Shipyard	1 Nov 1966	3 Feb 1968	7 June 1969	5 June 2001
USUMACINTA (ex-Frederick)	A 412 (ex-LST-1184)	National Steel & Shipbuilding Co	13 Apr 1968	8 Mar 1969	11 Apr 1970	1 Dec 2002

Displacement, tons: 4,975 light; 8,450 full load
Dimensions, feet (metres): 522.3 (hull) x 69.5 x 17.5 (aft) (159.2 x 21.2 x 5.3)
Main machinery: 6 General Motors 16-645-E5 diesels; 16,500 hp (12.3 MW) sustained; 2 shafts; cp props; bow thruster
Speed, knots: 20
Range, n miles: 14,250 at 14 kt
Complement: 257 (13 officers)
Military lift: 400 troops, 500 tons vehicles; 3 LCVPs and 1 LCPL on davits.
Guns: 4 USN 3 in (76 mm)/50 (A 411)
Radars: Surface search: Raytheon SPS-10F; G-band.
Navigation: Raytheon SPS-64, I-band

Helicopters: Platform only.

Programmes: A-411 sold to Mexico by the US Navy on 18 January 2001, A-412 sold on 9 December 2002. Both ships employed in amphibious role rather than as transport ships as previously reported. A 411 based at Tampico and A 412 at Manzanillo.

Modernisation: A new surface search radar reported installed in both ships by 2008.



PAPALOAPAN

8/2008, A A de Krulff / 1353235



PAPALOAPAN
8/2008, Michael Nitz
8/2008

SURVEY AND RESEARCH SHIPS

1 SUPPORT SHIP (AKS)

Name	No	Builders	Commissioned
RIO SUCHIATE (ex-Monob 1)	BI 05 (ex-A 27, ex-YAG 61, ex-YW 87)	Zenith Dredge Co	11 Nov 1943

Displacement, tons: 1,390 full load
Dimensions, feet (metres): 193.6 x 32.5 x 9.5 (59.9 x 9.9 x 2.9)
Main machinery: 1 Caterpillar D 398 diesel; 850 hp (634 kW); 1 shaft
Speed, knots: 9
Range, n miles: 2,500 at 9 kt
Complement: 21

Comment: Acquired from US on 1 August 1966. The ship was converted from a water carrier to an acoustic research role in 1969, and had four laboratories in US service. Adapted to act also in support ship role in 1997. New pennant number in 2001. Based at Guaymas.



RIO SUCHIATE

8/2005, Mexican Navy / 1170106



ALTAIR

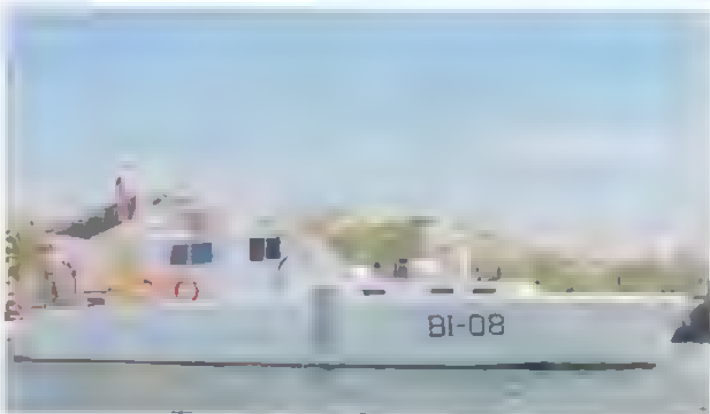
8/2005, Mexican Navy / 1133519

4 ARRECIFE (EX-OLMECA II) CLASS (SURVEY CRAFT) (YGS)

ALACRAN BI 08 (ex-PR 301)	CABEZO BI 10 (ex-PR 304)
RIZO BI 09 (ex-PR 310)	ANEGAGADA DE ADENTRO BI 11 (ex-PR 309)

Displacement, tons: 18 full load
Dimensions, feet (metres): 54.8 x 14.4 x 3.9 (16.7 x 4.4 x 1.2)
Main machinery: 2 Detroit 8V-92TA diesels; 700 hp (562 kW) sustained; 2 shafts
Speed, knots: 20 **Range, n miles:** 460 at 10 kt
Complement: 15 (2 officers)
Guns: 1—12.7 mm MG
Radars: Navigation: Raytheon 1900; I-band

Comment: Built at Acapulco and completed between 1982 and 1989. GRP hulls. Converted for inshore hydrographic duties in 2003. All have *Arrecife* in front of the names. Based at Manzanillo (BI 08, 09) and Veracruz (BI 10, 11).



ALACRAN

8/2005, Mexican Navy / 1133518

2 ROBERT D CONRAD CLASS (RESEARCH SHIPS) (AGOR)

Name	No	Builders	Commissioned
ALTAIR (ex-James M Gilliss)	BI 03 (ex-H 06, ex-AGOR 4)	Christy Corp, WI	5 Nov 1962
ANTARES (ex-S P Lee)	BI 04 (ex-H 06, ex-AG 192)	Defoe, Bay City	2 Dec 1962

Displacement, tons: 1,370 full load
Dimensions, feet (metres): 208.9 x 40 x 15.4 (63.7 x 12.2 x 4.7)
Main machinery: Diesel-electric; 2 Caterpillar diesel generators; 1,200 hp (895 kW); 2 motors; 1,000 hp (746 kW); 1 shaft; bow thruster
Speed, knots: 13.5
Range, n miles: 10,500 at 10 kt
Complement: 41 (12 officers) plus 15 scientists
Radars: Navigation: Raytheon 1025; Raytheon R4iY; I-band.

Comment: *Altair* leased from US 14 June 1983. Refitted and modernised in Mexico. Recommissioned 23 November 1984. Primarily used for oceanography. *Antares* served as an AGI with the USN until February 1974 when she transferred on loan to the Geological Survey. Acquired by sale and recommissioned on 1 December 1992. New pennant numbers in 2001. Based at Manzanillo (BI 03) and Tampico (BI 04).

1 SURVEY SHIP (AGS)

Name	No	Builders	Commissioned
RIO HONDO (ex-Deer Island)	BI 06 (ex-H 08, ex-A 26, ex-YAG 62)	Haitec Marine	May 1962

Displacement, tons: 400 full load
 Dimensions, feet (metres): 120.1 × 27.9 × 6.9 (36.6 × 8.5 × 2.1)
 Main machinery: 2 General Motors 7122-700 diesels; 2 shafts
 Speed, knots: 10
 Range, n miles: 6,000 at 10 kt
 Complement: 20

Comment: Acquired from US on 1 August 1996 and adapted for a support ship role in 1997. Converted to Survey Ship in 1999. Used in US service from 1983 as an acoustic research ship to test noise reduction equipment. Started life as an oil rig supply tug. New pennant number in 2001. Based at Coatzacoalcos.



RIO HONDO (old number) 4/1999, M Declerck / 0081258

1 HUMBOLDT CLASS (RESEARCH SHIP) (AGOR)

Name	No	Builders	Recommissioned
ALEJANDRO DE HUMBOLDT	BI 01 (ex-H 03)	JG Hitzler, Elbe	22 June 1987

Displacement, tons: 585 standard; 700 full load
 Dimensions, feet (metres): 140.7 × 32 × 13.5 (42.3 × 9.6 × 4.1)
 Main machinery: 1 MAN R8V 22/30 diesel; 2 shafts
 Speed, knots: 14
 Complement: 20 (4 officers)
 Radars: Navigation: Kelvin Hughes; I-band.

Comment: Former trawler built in Germany and launched in January 1970. Converted in 1982 to become a hydrographical and acoustic survey ship. Based at Manzanillo. New pennant number in 2001



ALEJANDRO DE HUMBOLDT (old number) 6/2001, Mexican Navy / 0114671

1 SURVEY SHIP (AGS)

Name	No	Builders	Commissioned
RIO TUXPAN (ex-Whiting)	BI 12	Marette Manufacturing Company, Mt Pleasant, West Virginia	July 1963

Displacement, tons: 907
 Dimensions, feet (metres): 163.0 × 33.0 × 12.2 (49.7 × 10.1 × 3.7)
 Main machinery: 2 General Motors diesels, 1,600 hp (1.2 MW); 2 cp props
 Speed, knots: 12
 Range, n miles: 5,700 at 11 kt
 Complement: 30 (7 officers)
 Radars: Surface search; E/F-band
 Navigation: I-band.

Comment: Ex-US NOAA ship designed for hydrographic and bathymetric survey work. Decommissioned in May 2003 and transferred to the Mexican Navy in April 2005. Equipped (in NOAA service) with Intermediate Depth Swath Survey System (IDSSS) (36 kHz), Deep Water Echo Sounder (12 kHz), Shallow Water Echo Sounder (100 kHz), Hydrographic Survey Sounder (24 and 100 kHz), EG&G 270 Side Scan Sonar and Klein T-5000 High Speed/High Resolution Side Scan Sonar. Based at Tuxpan.



RIO TUXPAN 4/2005, NOAA / 1133517

1 ONJUKU CLASS (SURVEY SHIP) (AGS)

Name	No	Builders	Commissioned
ONJUKU	BI 02 (ex-H 04)	Uchida Shipyard	10 Jan 1980

Displacement, tons: 494 full load
 Dimensions, feet (metres): 121 × 26.2 × 11.5 (36.9 × 8 × 3.5)
 Main machinery: 1 Yanmar 6UA-UT diesel; 700 hp (m) (515 kW); 1 shaft
 Speed, knots: 10
 Range, n miles: 5,645 at 10.5 kt
 Complement: 20 (4 officers)
 Radars: Navigation: Furuno; I-band.
 Sonars: Furuno; hull-mounted; high frequency active.

Comment: Launched 9 December 1977 in Japan. Sonar is a fish-finder type. New pennant number in 2001. Based at Veracruz.



ONJUKU 6/2005, Mexican Navy / 1133520

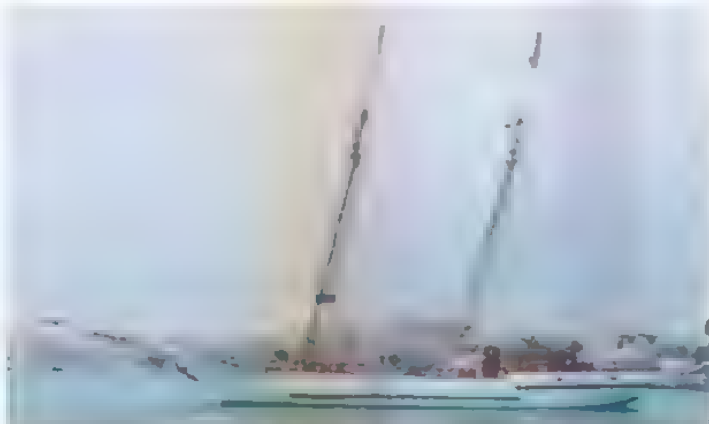
TRAINING SHIPS

1 TRAINING SHIP (AGSC)

Name	No	Builders	Commissioned
MOCTEZUMA II	BI 07 (ex-A-09)		

Displacement, tons: 150 full load
 Dimensions, feet (metres): 78.7 × 20.3 × 13.1 (24.0 × 6.2 × 4.0)
 Main machinery: 1 Detroit diesel; 192 hp (143 kW); 1 shaft
 Speed, knots: 17 (sail), 3 (diesel)
 Complement: 18 (5 officers)

Comment: Two-masted sailing vessel built in 1972 and taken over by the Navy on 6 December 1985. Also used for oceanographic research. Based at Acapulco.



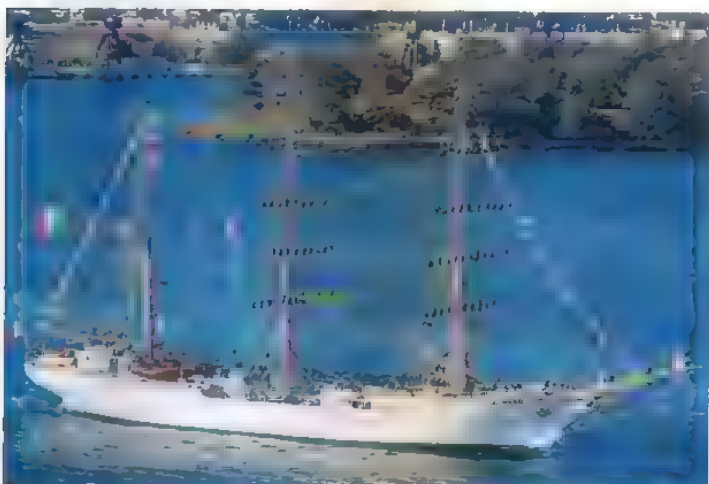
MOCTEZUMA II 6/2007, Mexican Navy / 1170154

1 SAIL TRAINING SHIP (AXS)

Name	No	Builders	Launched	Commissioned
CUAUHTÉMOC	SE 01 (ex-A 07)	Astilleros Talleres Calaya SA, Bilbao	9 Jan 1982	23 Sep 1982

Displacement, tons: 1,662 full load
Dimensions, feet (metres): 296.9 (bowsprit); 220.5 wl × 39.4 × 17.7 (90.5; 67.2 × 12 × 5.4)
Main machinery: 1 Detroit 12V-149T diesel; 1,125 hp (839 kW); 1 shaft
Speed, knots: 17 sail; 7 diesel
Complement: 268 (20 officers, 90 midshipmen)
Guns: 2 — 65 mm Schneider Model 1902 saluting guns.

Comment: Has 2,368 m² of sail. Similar ships in Ecuador, Colombia and Venezuela. Based at Acapulco.



CUAUHTÉMOC 7/2006, Chris Sattler / 1184/36

1 MANUEL AZUETA (EDSALL) CLASS (FF/AX)

Name	No	Builders	Laid down	Launched	Commissioned
COMODORO	D 111	Brown SB Co,	27 Jan 1943	14 Apr 1943	30 Aug 1943
MANUEL AZUETA	(ex-E 30, ex-Hurst DE 250)	Houston, TX			
	(ex-A 06)				

Displacement, tons: 1,400 standard; 1,850 full load
Dimensions, feet (metres): 302.7 × 36.6 × 13 (92.3 × 11.3 × 4)
Main machinery: 4 Fairbanks-Morse 38D8-1/8-10 diesels; 7,080 hp (5.3 MW) sustained; 2 shafts
Speed, knots: 12
Range, n miles: 13,000 at 12 kt
Complement: 216 (15 officers)

Guns: 2 USN 3 in (76 mm)/50; 20 rds/min to 12 km (6.6 n miles); weight of shell 6 kg.
 8 Bofors 40 mm/60 (1 quad, 2 twin) Mk 2 and Mk 1; 120 rds/min to 10 km (5.5 n miles); weight of shell 0.89 kg.
 2 Oerlikon 20 mm. 2 — 37 mm saluting guns.
Weapons control: Mk 52 (for 3 in); Mk 51 Mod 2 (for 40 mm).
Radars: Surface search: Kelvin Hughes Type 17; I-band.
Navigation: Kelvin Hughes Type 14; I-band.

Programmes: Transferred from US 1 October 1973.
Modernisation: OTO Melara 76 mm gun fitted in 1995 but subsequently removed and US 3 in gun restored.
Operational: Employed as training ship and based at Tuxpan, A/S weapons and sensors removed. Speed much reduced. Pennant number changed in 2001.



COMODORO MANUEL AZUETA 6/2005, Mexican Navy / 113354b

AUXILIARIES

Notes: (1) Procurement of up to two Hospital Ships is reported to be under consideration. (2) Procurement of up to two logistic support vessels, capable of carrying 120 marines and of operating helicopters, is reported to be under consideration.

1 LOGISTIC SUPPORT SHIP (AKS)

Name	No	Builders	Recommissioned
MAYA (ex-Rio Nautla)	ATR 01 (ex-A 20, ex-A 23)	Isla Gran Cayman, Ru	1 June 1988

Displacement, tons: 924 full load
Dimensions, feet (metres): 160.1 × 38.1 × 11.5 (48.8 × 11.6 × 3.5)
Main machinery: 1 MAN diesel; 1 shaft
Speed, knots: 12
Complement: 15 (8 officers)

Comment: First launched in 1962 and acquired for the Navy in 1988. Unarmed. New name and pennant number in 2001. Based at Mazatlan



MAYA 8/2004, Mexican Navy / 0589766

1 LOGISTIC SUPPORT SHIP (AK)

Name	No	Builders	Recommissioned
TARASCO (ex-Rio Lerma, ex-Sea Point, ex-Tricon, ex-Marika, ex-Arneb)	ATR 03 (ex-A 22, A 25)	Solvesborg, Sweden	1 Mar 1990

Displacement, tons: 1,970 full load
Dimensions, feet (metres): 315.0 × 40.7 × 15.8 (96.0 × 12.4 × 4.8)
Main machinery: 1 Deutz RBV8M 358 diesel; 2,100 hp(m) (1.54 MW); 1 shaft
Speed, knots: 14
Complement: 35
Cargo capacity: 778 tons

Comment: Built in 1962 as a commercial ship and taken into the Navy in 1990. New name and pennant number in 2001. Based at Tampico.



TARASCO 6/2005, Mexican Navy / 1133516

17 DREDGERS (YM)

- | | |
|------------------------------|------------------------------|
| BANDERAS ADR 01 (ex-D 01) | CHACAGUA ADR 10 (ex-D 24) |
| MAGDALENA ADR 02 (ex-D 02) | COYUCA ADR 11 (ex-D 25) |
| KINO ADR 03 (ex-D 03) | FARRALLON ADR 12 (ex-D 26) |
| YAVAROS ADR 04 (ex-D 04) | CHAIREL ADR 13 (ex-D 27) |
| CHAMELA ADR 05 (ex-D 05) | SAN ANDRES ADR 14 (ex-D 28) |
| TEPOCA ADR 06 (ex-D 06) | SAN IGNACIO ADR 15 (ex-D 29) |
| TODO SANTOS ADR 07 (ex-D 21) | TERMINOS ADR 16 (ex-D 30) |
| ASUNCION ADR 08 (ex-D 22) | TECULAPA ADR 17 (ex-D 31) |
| ALMEJAS ADR 09 (ex-D 23) | |

Comment: Ships vary in size from 113 m *Kino* to 8 m *Terminos*. Most were taken over by the navy from the Transport Ministry in 1994.

2 HUASTECA CLASS (APH/AK/AH)

Name	No	Builders	Commissioned
HUASTECA (ex-Rio Usumacinta)	AMP 01 (ex-A 10, ex-A 21)	Tampico, Tampico	21 May 1986
ZAPOTECO (ex-Rio Coatzacoalcos)	AMP 02 (ex-A 11, ex-A 22)	Salina Cruz	1 Sep 1986

Displacement, tons: 1,854 standard; 2,650 full load
Dimensions, feet (metres): 227 × 42 × 15.5 (69.2 × 12.8 × 4.73)
Main machinery: 1 GM-EMD diesel; 3,600 hp(m) (2.65 MW); 1 shaft
Speed, knots: 14.5
Range, n miles: 5,500 at 14 kt
Complement: 85 plus 300 passengers
Guns: 1 Bofors 40/60 Mk 3
Radars: Navigation: I-band
Helicopters: Platform for 1 MBB BO 105C

Comment: Used in a training role but can also serve as troop transports, supply or hospital ships. New names and pennant numbers in 2001. AMP 01 based at Tampico and AMP 02 at Manzanillo.



HUASTECA 7/2004, Diego Quevedo / 0583785

2 AGUASCALIENTES CLASS (YOG/YO)

Name	No	Builders	Recommissioned
AGUASCALIENTES (ex-Las Choapas)	ATQ 01 (ex-A 45, ex-A 03)	Geo H Mathis Co Ltd	26 Nov 1964
TLAXCALA (ex-Amatlan)	ATQ 02 (ex-A 46, ex-A 04)	Geo Lawley & Son, Neponset, MA	26 Nov 1964

Displacement, tons: 895 standard; 1,480 full load
Dimensions, feet (metres): 173.9 × 32.8 × 10.2 (53.0 × 10.0 × 3.1)
Main machinery: 1 Fairbanks-Morse diesel; 500 hp (373 kW); 1 shaft
Speed, knots: 6
Complement: 26 (5 officers)
Cargo capacity: 6,570 barrels
Guns: 1 Oerlikon 20 mm.

Comment: Former US self-propelled fuel oil barges built in 1943. Purchased in August 1964. New names and pennant numbers in 2001. ATQ 01 based at Puerto Cortes and ATQ 02 at Coatzacoalcos.



TLAXCALA 6/2005, Mexican Navy / 1133515

5 FLOATING DOCKS (YOG/YO)

ADI 01 (ex-US ARD 2)	ADI 03 (ex-US AFDL 28)	— (ex-US ARD 31)
ADI 02 (ex-US ARD 15)	ADI 04 (ex-US ARD 11)	

Comment: ARD 2 (150 × 24.7 m) transferred 1963 and ARD 11 (same size) 1974 by sale. Lift 3,550 tons. Two 10 ton cranes and one 100 kW generator. ARD 15 has the same capacity and facilities—transferred 1971 by lease. AFDL 28 built in 1944, transferred 1973. Lift, 1,000 tons. ARD 30 transferred on 20 March 2001 and ARD 31 in 2004.

TUGS

6 HARBOUR TUGS (YTL)

IZTACCHUATL ARE 05 (ex-R 60)	XINANTECATL ARE 08 (ex-R-63)
POPOCATEPTL ARE 06 (ex-R 61)	MATLALCUEYE ARE 09 (ex-R-64)
CITLALTEPL ARE 07 (ex-R-62)	TLALOC ARE 10 (ex-R-65)

Displacement, tons: 140 full load
Dimensions, feet (metres): 73.8 × 22.3 × 9.8 (22.5 × 6.8 × 3.0)
Complement: 12

Comment: Details are for ARE 05 built by Soadrec, Ltd, and taken over by the Navy on 1 November 1994. Based at Tuxpan (ARE 06), Manzanillo (ARE 08), Mazatlán (ARE 07), Ciudad Madero (ARE 08); Salina Cruz (ARE 09); Coatzacoalcos (ARE 10).

4 ABNAKI CLASS (ATF)

Name	No	Builders	Commissioned
OTOMI (ex-Kukulcan, ex-Mojala ATF 106)	ARE 01 (ex-A 52, ex-A 17)	United Eng Co, Alameda, CA	29 Sep 1943
YAQUI (ex-Ehacatl, ex-Abnaki ATF 96)	ARE 02 (ex-A 53, ex-A 18)	Charleston SB and DD Co	15 Nov 1943
SERI (ex-Tonatiuh, ex-Cocopa ATF 101)	ARE 03 (ex-A 54, ex-A 19)	Charleston SB and DD Co	25 Mar 1944
CORA (ex-Chac, ex-Hitchiti ATF 103)	ARE 04 (ex-A 55, ex-A 20)	Charleston SB and DD Co	27 May 1944

Displacement, tons: 1,640 full load
Dimensions, feet (metres): 205 × 38.5 × 17 (62.5 × 11.7 × 5.2)
Main machinery: Diesel-electric, 4 Busch Sulzer BS-53S diesels; 6,000 hp (4.48 MW); 4 generators; 1 motor; 3,000 hp(m) (2.24 MW); 1 shaft
Speed, knots: 10
Range, n miles: 6,500 at 10 kt
Complement: 76
Guns: 1 US 3 in (76 mm)/50 Mk 22
Radars: Navigation: Marconi LN66; I-band.

Comment: Otomi transferred from US 27 September 1978, remainder 1 October 1978. All by sale. Speed reduced. Based at Tampico (ARE 01, ARE 03) and Manzanillo (ARE 02, ARE 04).



SERI 6/2003, Mexican Navy / 0567905



Federated States of Micronesia

Country Overview

The Federated States of Micronesia was a US-administered UN Trust territory from 1947 before becoming a self-governing republic in 1979. In 1986, a Compact of Free Association, delegating to the US the responsibility for defence and foreign affairs,

came into effect. Composed of the states of Pohnpei (location of capital, Palikir), Kosrae, Chuuk, and Yap, the country consists of 607 islands in the western Pacific Ocean which extend 1,566 n miles across the Caroline Islands archipelago. Moen Island in Chuuk is the largest community. Territorial seas (12 n miles) are claimed. An Exclusive

Economic Zone (EEZ) (200 n miles) is also claimed but limits have not been fully defined.

Headquarters Appointments

Maritime Wing Commander:
Commander Robert Maluweiranj

Personnel

2009: 120

Bases

Koloria (main base), Kosrae, Moen, Takatik.

PATROL FORCES

3 PACIFIC CLASS (LARGE PATROL CRAFT) (PB)

Name	No	Builders	Commissioned
PALIKIR	FSM 01	Australian Shipbuilding Industries	28 Apr 1990
MICRONESIA	FSM 02	Australian Shipbuilding Industries	3 Nov 1990
INDEPENDENCE	FSM 05	Transfield	22 May 1997

Displacement, tons: 162 full load
Dimensions, feet (metres): 103.3 x 26.6 x 6.9 (31.5 x 8.1 x 2.1)
Main machinery: 2 Caterpillar 3516TA diesels, 4,400 hp (3.28 MW) sustained; 2 shafts
Speed, knots: 20
Range, n miles: 2,500 at 12 kt
Complement: 17 (3 officers)
Radars: Surface search: Furuno 1011, I-band

Comment: First pair ordered in June 1989 from Australian Shipbuilding Industries. Training and support provided by Australia at Port Kolonia Third of class negotiated with Transfield (former ASI) in 1997. Following the decision by the Australian government to extend the Pacific Patrol Boat programme to enable 30-year boat lives, *Palikir*, *Micronesia* and *Independence*, underwent half life refits in 1998, 1999 and 2003. A life-extension refit for *Palikir* was completed in 2007 and is due for *Micronesia* in 2009 and *Independence* in 2011

MICRONESIA
 11/1990, Royal Australian Navy



Montenegro



Country Overview

The Republic of Montenegro was formed following a referendum on 21 May 2006 in which the people voted for independence and for the dissolution of the Federal Republic of Serbia and Montenegro which itself was the rump of the former Yugoslavia. A formal declaration of independence was made by the Montenegro Assembly on 3 June 2006. With an area of 5,333 square miles, it is located in south-eastern Europe in the Balkan Peninsula and is bordered to the north-west by Bosnia, to the east by Serbia, to the south by Albania and to the west by Croatia. It has a 158 n mile coastline with the Adriatic Sea on which Bar and Tivat are the principal ports. The capital and largest city is Podgorica Territorial waters (12 n miles) are claimed but an EEZ has not been claimed

The provisions of the Union Constitution were that, in the event of dissolution, the armed forces of Serbia and Montenegro would be split in such a way that each state keeps the assets in its territory. Therefore, all of the former navy of Serbia and Montenegro transferred to Montenegro in June 2006, except for the former Danube Flotilla, which transferred to Serbian land forces. While the future size and shape of the Montenegrin Navy is yet to be decided, it is expected that the force will drawn down into a small Coast Guard force and that most former units will be sold or scrapped.

Personnel

2009: 1,100

Bases

Headquarters and Base Bar

Organisation

Montenegrin naval forces are to be re-organised into five detachments: Patrol forces; search and rescue; coastal reconnaissance; coast guard; training. All naval facilities have been concentrated at Bar and the naval repair and maintenance yard at Tivat has been sold. All special forces have been consolidated under the command of the army. Former coastal defence missile systems have reportedly been sold to Egypt.

Headquarters Appointments

Commander-in-Chief
 Rear Admiral Dragan Semardzic

SUBMARINES

Notes. All former patrol submarines have been decommissioned or scrapped. The Sava-class boats *Sava* and *Drava* are to be sold. The Heroj-class boats *Heroj*, *Junak* and *Uskuk* are all likely to be scrapped while all five Una class midget submarines have been laid-up or scrapped.

2 R-2 MALA CLASS (TWO-MAN SWIMMER DELIVERY VEHICLES) (LDW)

Displacement, tons: 1.4
Dimensions, feet (metres): 16.1 x 4.6 x 4.3 (4.9 x 1.4 x 1.3)
Main machinery: 1 motor; 4.7 hp(m) (3.5 kW); 1 shaft
Speed, knots: 4.4
Range, n miles: 18 at 4.4 kt, 23 at 3.7 kt
Complement: 2
Mines: 250 kg of limpet mines

Comment: Free-flood craft with the main motor, battery, navigation pod and electronic equipment housed in separate watertight cylinders. Instrumentation includes aircraft type gyrocompass, magnetic compass, depth gauge (with 0-100 m scale), echo-sounder, sonar and two searchlights. Constructed of light aluminium and plexiglass, it is fitted with fore and after-hydroplanes, the tail being a conventional cruciform with a single rudder abaft the screw. Large perspex windows give a good all-round view. Operating depth 60 m (196.9 ft) maximum. Two operated by Croatia. Two reported sold to Syria and one to Sweden.

Notes: There are also reported to be four R-1 craft. Transportable in submarine torpedo tubes and crewed by one man, they are 3.7 m craft, powered by a 1 kW electric motor and 24V silver-zinc batteries. Capable of 2.8 kt, they can dive to 60 m. They have a range of 4 n miles. Of a total twelve reported to have been manufactured. A further six units have probably been deleted, one unit is in Croatia and one was exported to Sweden.



R-2
 6/2003, Serbia and Montenegro Navy
 p. 433

FRIGATES

Notes: The two decommissioned Koni-class frigates, *Beograd* and *Podgorica*, may be sold

1 KOTOR CLASS (FFGM)

Name	No	Builders	Launched	Commissioned
NOVI SAD (ex-Pula)	34	Tito Shipyard, Kraljevica	18 Dec 1985	Nov 1988

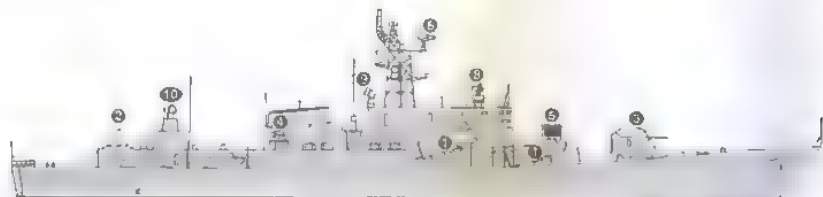
Displacement, tons: 1,870 full load
Dimensions, feet (metres): 317.3 × 42 × 13.7
 (96.7 × 12.8 × 4.2)
Main machinery: CODAG; 1 SGW Nikolayev gas turbine; 18,000 hp(m) (13.2 MW); 2 SEMT-Pielstick 12 PA6 V 280 diesels; 9,600 hp(m) (7.1 MW) sustained; 3 shafts
Speed, knots: 27 gas; 22 diesel. **Range, n miles:** 1,800 at 14 kt
Complement: 110

Missiles: SSM: 4 SS-N-2C Styx ●, active radar or IR homing to 83 km (45 n miles) at 0.9 Mach; warhead 513 kg; sea-skimmer at end of run.
SAM: SA-N-4 Gecko twin launcher ●, semi-active radar homing to 15 km (8 n miles) at 2.5 Mach; height envelope 9-3,048 m (29.5-10,000 ft); warhead 50 kg.

Guns: 4 USSR 3 in (76 mm)/59 AK 726 (2 twin) (1 mounting only in 33 and 34) ●, 90 rds/min to 16 km (8.5 n miles); weight of shell 6.8 kg.
 4 USSR 30 mm/65 (2 twin) ●, 500 rds/min to 5 km (2.7 n miles); weight of shell 5.9 kg.

A/S mortars: 2 RBL 6000 12-barrelled trainable ●, range 6,000 m; warhead 31 kg.
Mines: Can lay mines.

Countermeasures: Decoys: 2 Wallop Barricade double layer chaff launchers.



KOTOR CLASS

(Scale 1 : 900), Ian Sturton / 0506341

Radars: Air/surface search: Strut Curve ●, F-band. Navigation: Palm Front; I-band.
Fire control: PEAB 9LV200 ●, I-band (for 76 mm and SSM). Drum Tilt ●, H/I-band (for 30 mm).
**Pop Group ●, F/M-I-band (for SAM).
 IFF: High Pole; 2 Square Head.
Sonars: Bull Nose; hull-mounted; active search and attack; medium frequency.**

Programmes: Built under licence. Type name, VPB (Veliki Patrolni Brod).

Modernisation: Combat data system fitted in 2000. SS-N-2C missiles, SA-N-4 missiles and RBU 6000 rocket launchers are to be removed. Following a refit, which may include installation of a flight deck aft, *Novi Sad* is to be employed as an offshore patrol vessel.

Structure: The hull is similar to the Russian Koni class but are to a Yugoslavian design

Operational: VPB 33 *Kotor* has been decommissioned but may be re-activated subject to funding. Based at Bar



KOTOR CLASS

6/1998, Yugoslav Navy / 0050746

PATROL FORCES

Notes: Acquisition of two Minerva-class corvettes from Italy was reported in 2007 to be under consideration but there have been no indications of progress.

2 KONČAR CLASS (TYPE 240) (PTFG)

Name	No	Builders	Launched	Commissioned
JORDAN NIKOLOV ORCE	405	Tito Shipyard, Kraljevica	26 Apr 1979	Aug 1979
ANTE BANINA	406	Tito Shipyard, Kraljevica	23 Nov 1979	Nov 1980

Displacement, tons: 271 full load
Dimensions, feet (metres): 147.6 × 22.6 × 8.5 (45 × 8.4 × 2.8)
Main machinery: CODAG; 2 RR Proteus gas turbines; 7,100 hp (5.29 MW) sustained; 2 MTU 16V 538 TB91 diesels; 6,000 hp(m) (4.41 MW) sustained; 4 shafts; cp props
Speed, knots: 38
Range, n miles: 490 at 38 kt; 670 at 23 kt (diesels)
Complement: 30 (5 officers)

Missiles: SSM: 2 SS-N-2B Styx, active radar or IR homing to 46 km (25 n miles) at 0.9 Mach; warhead 513 kg.

Guns: 2 Bofors 57 mm/70; 200 rds/min to 17 km (9.3 n miles); weight of shell 2.4 kg
 2—128 mm rocket launchers for illuminants.
 2—30 mm/65 (twin) or 1—30 mm/65 AK 630 may be fitted in place of the after 57 mm.

Countermeasures: 2 Wallop Barricade double layer chaff launchers.

Weapons control: PEAB 9LV 202 GFCS

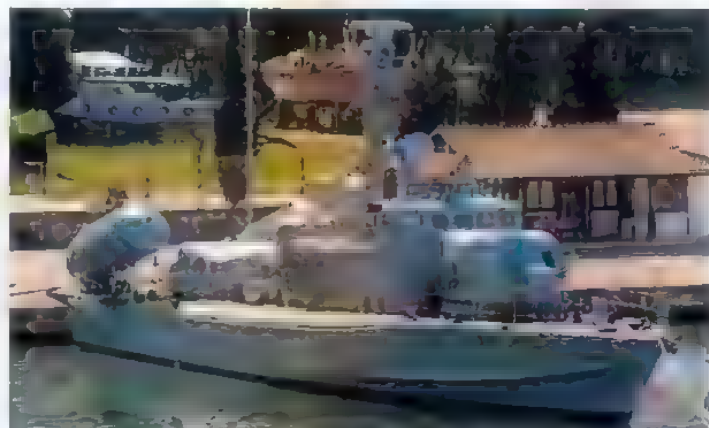
Radars: Surface search: Decca 1226; I-band.

Fire control: Philips TAB; VJ-band.

Programmes: Type name, Raketna Topovnjaca

Structure: Aluminium superstructure. Designed by the Naval Shipping Institute in Zagreb based on Swedish Spica class with bridge amidships like Malaysian boats. The after 57 mm gun is replaced by a twin 30 mm mounting in at least one of the class.

Operational: 402 was taken by Croatia in 1991. 401 and 404 have been decommissioned but may be re-activated subject to funding, 403 has been decommissioned 405 and 406 are to remain in service but the SS-N-2B missile system is likely to be removed.



JORDAN NIKOLOV ORCE

9/2006, Freivogel Collection / 1164682



ANTE BANINA

9/2006, Freivogel Collection / 1164681

AMPHIBIOUS FORCES

1 SILBA CLASS (LCT/ML)

Name — (ex-Silba)	No DBM 241	Builders Brodosplit Shipyard, Split	Commissioned 1990
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Displacement, tons: 880 full load
Dimensions, feet (metres): 163.1 oa; 144 wl × 33.5 × 8.5 (49.7; 43.9 × 10.2 × 2.6)
Main machinery: 2 Burmeister & Wain Alpha 10V23LVO diesels; 3,100 hp(m) (2.28 MW) sustained; 2 shafts, cp props
Speed, knots: 12
Range, n miles: 1,200 at 12 kt
Complement: 33 (3 officers)
Military lift: 460 tons or 6 medium tanks or 7 APCs or 4—130 mm guns plus towing vehicles or 300 troops with equipment
Missiles: 1 SA-N-5 Grail quad mounting.
Guns: 4—30 mm/65 (2 twin) AK 230, 4—20 mm M75 (quad), 2—128 mm illuminant launchers.
Mines: 94 Type SAG-1
Radars: Surface search: Racal Decca; I-band.

Comment: Ro-ro design with bow and stern ramps. Can be used for minelaying, transporting weapons or equipment and troops. Two further craft, launched in 1992 and 1994, are in the Croatian Navy and this final craft is to be sold, possibly to Egypt.



KFK

6/1998, MoD Bonn / 0050751

7 TYPE 22 (LCU)

DJC 627	DJC 411 (ex-DJC 632)	DJC 413 (ex-DJC 630)	DJC 415 (ex-DJC 631)
DJC 628	DJC 412 (ex-DJC 625)	DJC 414 (ex-DJC 621)	

Displacement, tons: 48 full load
Dimensions, feet (metres): 73.2 × 15.7 × 3.3 (22.3 × 4.8 × 1)
Main engines: 2 MTU diesels; 1,740 hp(m) (1.28 MW); 2 water-jets
Speed, knots: 30. **Range, n miles:** 320 at 22 kt
Complement: 8
Military lift: 40 troops or 15 tons cargo
Guns: 2—20 mm M71, 1—30 mm grenade launcher.
Radars: Navigation: Decca 101; I-band.

Comment: Built of polyester and glass fibre. Last one completed in 1987. Based in Danube Flotilla. All are likely to be sold



DJC 411

6/2006*, Freivogel Collection / 1335396

3 TYPE 21 (LCU)

DJC 614	DJC 616	DJC 618
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Displacement, tons: 32 full load
Dimensions, feet (metres): 69.9 × 15.7 × 5.2 (21.3 × 4.8 × 1.6)
Main machinery: 1 diesel; 1,450 hp(m) (1.07 MW); 1 shaft
Speed, knots: 23
Range, n miles: 320 at 22 kt
Complement: 6
Military lift: 8 tons
Guns: 1—20 mm M71.

Comment: The survivors of a class of 20 built between 1976 and 1979. Four held by Croatia in 1991 of which three have paid off. Others sunk or scrapped. Some of these may be laid up and all are likely to be offered for sale.



DJC 616 and 618

4/2007, Marco Ghilino / 1167915

AUXILIARIES

Notes: (1) Two 22 m inshore survey vessels BH 12 and CH 1 are operated by the Naval Hydrological Institute. BH 11 has been donated to a civilian institute.
 (2) There are seven tenders BM 58, BM 65, BM 66, BM 67, BM 70 and BS 22. Most of these are reported to have been sold.
 (3) There are five diving tenders BRM 81, BRM 84, BRM 85, BRM 87 and BRM 88.
 (4) Alga PV 17 is a 44 m water tanker which is laid-up.

1 SAIL TRAINING SHIP (AXS)

JADRAN

Displacement, tons: 737 full load
Dimensions, feet (metres): 198.9 × 29.2 × 13.3 (60.0 × 8.9 × 4.05)
Main machinery: 1 Burmeister Alpha diesel; 353 hp (263 kW)
Speed, knots: 10.4
Radars: 1 FR 2120 and 1 FR 7061, I-band

Comment: The contract for a barquentine sail training ship was signed on 4 September 1930 with the German shipbuilding company H C Stülcken & Son of Hamburg. She was launched on 25 June 1931 and arrived in Tivat on 16 July 1933. During the Second World War, she was used by the Italian Navy under the name of *Marco Polo* before being allowed to fall into disrepair. She returned to Yugoslavia in 1946 and was reconstructed in her original form at Tivat.



JADRAN

6/2005, John Mortimer / 1151398

530 Montenegro/Auxiliaries — Morocco/Introduction

1 LUBIN CLASS (TRANSPORT SHIP) (AKR)

LUBIN PO 91

Displacement, tons: 860 full load
Dimensions, feet (metres): 190.9 × 36.1 × 9.2 (58.2 × 11.0 × 2.8)
Main machinery: 2 diesels; 3,500 hp(m) (2.57 MW); 2 shafts; cp props
Speed, knots: 16
Range, n miles: 1,500 at 16 kt
Complement: 43
Military lift: 150 troops; 6 tanks
Guns: 1 Bofors 40 mm/70, 4–20 mm M75, 128 mm rocket launcher for illuminants

Comment: Fitted with bow doors and two upper-deck cranes. Ro-Ro cargo ship built in Split in the 1980s and used as an ammunition transport. Based at Bar. This ship had been assessed decommissioned in the early 1990s but has been officially reported as being in good condition and operational. The ship is likely to be sold



LUBIN

5/2004, Sieche Collection / 1044503

1 DRINA CLASS (AOTL)

SIPA PN 27

Displacement, tons: 430 full load
Dimensions, feet (metres): 151 × 23.6 × 10.2 (46 × 7.2 × 3.1)
Main machinery: 1 diesel; 300 hp(m) (220 kW); 1 shaft
Speed, knots: 7
Complement: 12
Missiles: SAM 1 SA-N-5
Guns: 6 Hispano 20 mm (1 quad, 2 single)

Comment: Built at Kraljevica in mid-1950s. Based at Bar. The ship is likely to be sold.



SIPA

6/2003, Serbia and Montenegro Navy / 1044504

TUGS

Notes: There are three coastal tugs PR 37, PR 38 and PR 41 (armed with a 20 mm gun) and seven harbour tugs LR 23, LR 72, LR 74, LR 75, LR 77 and LR 80



PR 41

6/2007, Freivogel Collection / 1167938

POLICE

2 MIRNA CLASS (TYPE 140) (PB)

BAR (ex-Učka) P 01 (ex-174)
 HERCEG NOVI (ex-Kosmaj) P 03 (ex-178)

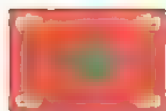
Displacement, tons: 142 full load
Dimensions, feet (metres): 104.9 × 22 × 7.5 (32 × 6.7 × 2.3)
Main machinery: 2 SEMT-Pielstick 12 PA4 200 VGDS diesels; 5,292 hp(m) (3.89 MW) sustained; 2 shafts
Speed, knots: 28
Range, n miles: 400 at 20 kt
Complement: 19 (3 officers)
Guns: 1 Bofors 40 mm/70, 4–20 mm (quad), 2–128 mm illuminant launchers.
Depth charges: 8 DCs
Radars: Surface search: Racal Decca 1216C, i-band.
Sonars: Simrad SQS 3D/3F; active, high frequency

Comment: Builders, Kraljevica Yard. Launched between June 1981 and December 1983. An unusual feature of this design is the fitting of an electric outboard motor giving a speed of up to 6 kt. One sunk possibly by a limpet mine in November 1991. Four held by Croatia, five have been sold to civilian use and two transferred from the Montenegrin Navy to the Police in 2006.



HERCEG NOVI

4/2007, Marco Ghiglino / 1167914



Morocco

MARINE ROYALE MAROCAINE

Country Overview

Formerly divided into French and Spanish protectorates, the Kingdom of Morocco gained independence in 1956. Situated in north-western Africa, it has an area of 172,414 square miles and is bordered to the east by Algeria; it occupies 80 per cent of Western Sahara (formerly Spanish Sahara), the country to the south. Two Spanish exclaves, Ceuta and Melilla, are located on the Mediterranean coast. It has coastlines with Atlantic Ocean (756 n miles) and Mediterranean Sea (238 n miles). The capital is Rabat while Casablanca is the largest city and principal port. Other ports are at Tangier, Agadir, Kenitra, Mohammedia, and Safi. Territorial seas (12 n miles) are claimed. An EEZ

(200 n mile) has also been claimed but its limits have not been fully defined.

Headquarters Appointments

Inspector of the Navy:
 Rear Admiral Mohamed Berrada Kouzi

Personnel

(a) 2009: 7,800 officers and ratings (including 1,500 Marines)
 (b) 18 months' national service

Bases

Casablanca (HQ), Safi, Agadir, Kenitra, Tangier, Dakhla, Al Hocaïma

Aviation

The Ministry of Fisheries operates 11 Pilatus Britten-Norman Defender maritime surveillance aircraft

FRIGATES

2 FLOREAL CLASS (FFGHM)

Name	No	Builders	Laid down	Launched	Commissioned
MOHAMMED V	611	Chantiers de L'Atlantique, St Nazaire	June 1999	9 Mar 2001	12 Mar 2002
HASSAN II	612	Chantiers de L'Atlantique, St Nazaire	Dec 1999	11 Feb 2002	20 Dec 2002

Displacement, tons, 2,950 full load
 Dimensions, feet (metres): 306.8 x 45.9 x 14.1
 (93.5 x 14 x 4.3)

Main machinery: CODAD; 4 SEMT Pielstick 6 PA6 L 280 diesels; 9,800 hp(m) (706 MW) sustained; 2 shafts, LIPS cp props, bow thruster, 340 hp(m) (250 kW)

Speed, knots: 20
 Range, n miles: 10,000 at 15 kt
 Complement: 89 (11 officers)

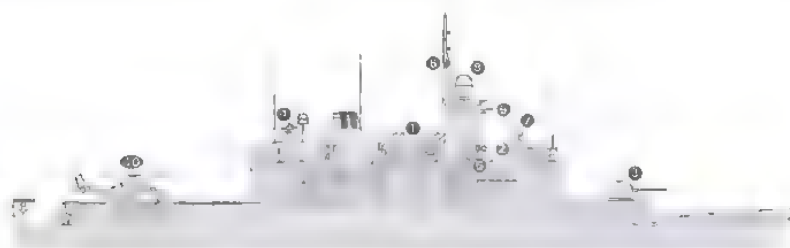
Missiles: SSM: 2 Aerospatiale MM 38 Exocet ●
 SAM: 2 Matra Simbad twin launchers ● can rep ace 20 mm guns or Dagaie launcher.

Guns: 1 Otobreda 76 mm/62 ●
 2 Giat 20 F2 20 mm ● (fitted for but not with)

Countermeasures: Decoys: 2 CSEE Dagaie Mk II ●;
 10-barrelled trainable launchers; chaff and IR flares.

ESM: Thomson-CSF AR8R 17 ●; radar intercept

Weapons control: CSEE Najir 2000 optronic director ●.
 Radars: Surface search/Fire control: Thales WM28 ●;
 I/J band.



MOHAMMED V

(Scale 1 : 900), Ian Sturton / 11510/1

Navigation: 2 Decca Bridgemaster E ●; I-band (1 for helicopter control).

Programmes: Contract signed with Alstom on 12 July 1999. 611 delivered on 12 March 2002 and 612 on 20 December 2002.

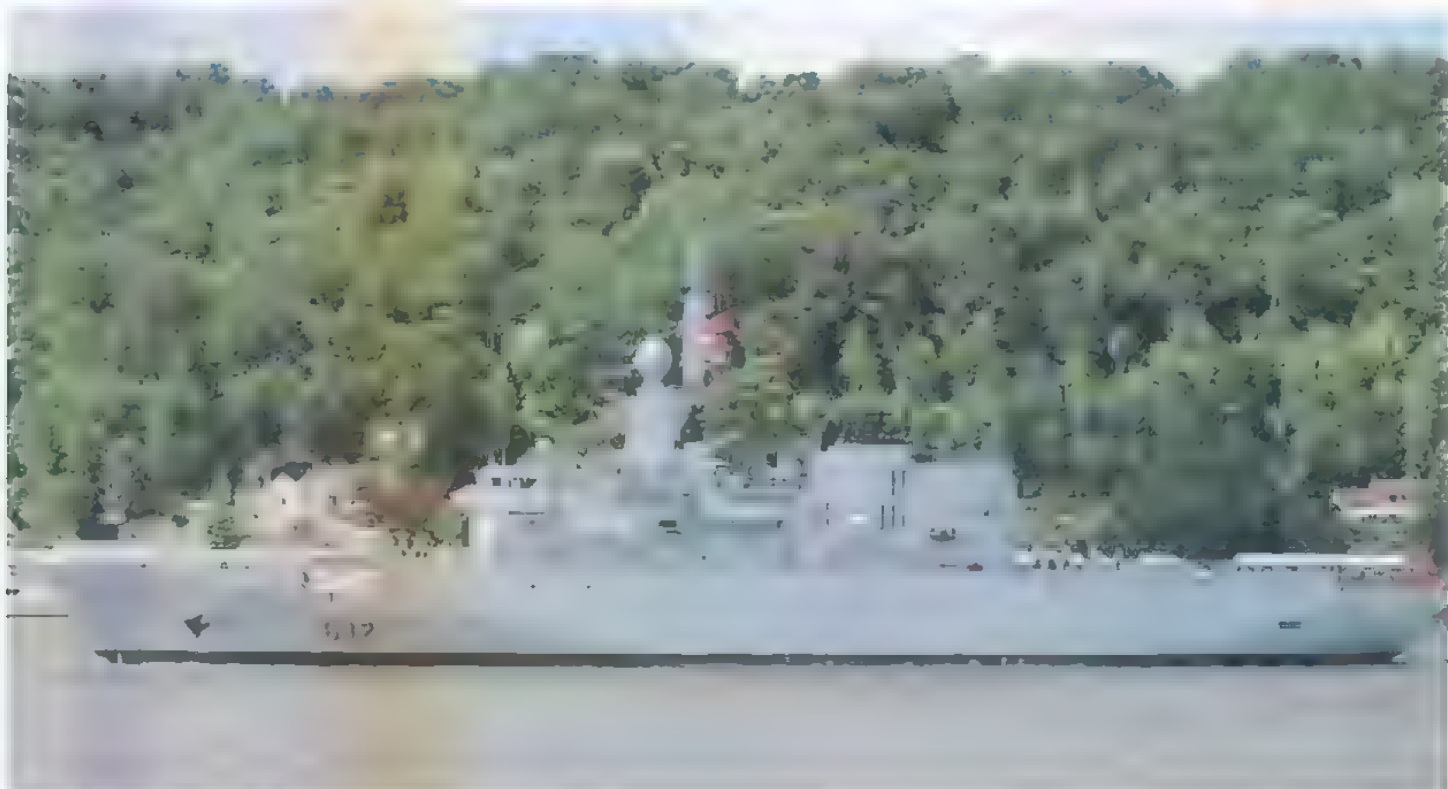
Helicopters: 1 Aerospatiale AS 565MA Panther ●.

Structure: Constructed to DNV standards. Very similar to ships in French service with 76 mm in place of 100 mm gun.



HASSAN II

3/2006, M Declerck / 1164056



HASSAN II

7/2008*, M Declerck / 1153793

1 MODIFIED DESCUBIERTA CLASS (FFGM)

Name	No	Builders	Laid down	Launched	Commissioned
LIEUTENANT COLONEL ERRHAMANI	501	Bazan, Cartagena	20 Mar 1979	26 Feb 1982	28 Mar 1983

Displacement, tons: 1,233 standard; 1,479 full load
Dimensions, feet (metres) 291.3 × 34 × 12.5
 (88.9 × 10.4 × 3.8)
Main machinery: 4 MTU-Bazán 16V 956 T891 diesels,
 15,000 hp(m) (11 MW) sustained; 2 shafts; cp props
Speed, knots: 25.5
Range, n miles: 4,000 at 18 kt (1 engine)
Complement: 100

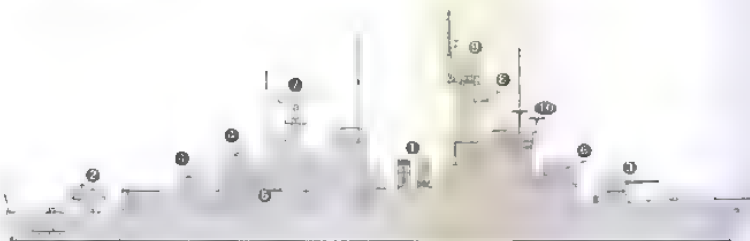
Missiles, SSM: 4 Aerospatiale MM 38 Exocet ●; inertial
 cruise; active radar homing to 42 km (23 n miles) at 0.9
 Mach; warhead 165 kg, sea-skimmer. Frequently not
 embarked.

SAM: Selenia/Elsag Albatros octuple launcher ●; 24
 Aspide; semi-active radar homing to 13 km (8 n miles)
 at 2.5 Mach; height envelope 15-5,000 m (49.2-16,405 ft);
 warhead 30 kg

Guns: 1 OTO Melara 3 in (76 mm)/62 compact ●, 85 rds/min
 to 16 km (8.6 n miles) anti-surface; 12 km (6.5 n miles)
 anti-aircraft; weight of shell 6 kg.
 2 Breda Bofors 40 mm/70 ●; 300 rds/min to 12.5 km
 (6.7 n miles); weight of shell 0.96 kg.

Torpedoes: 6—324 mm Mk 32 (2 triple) tubes ● Honeywell
 Mk 46 Mod 1; anti-submarine; active/passive homing to
 11 km (5.9 n miles) at 40 kt; warhead 44 kg.

A/S mortars: 1 Bofors SR 375 mm twin trainable launcher ●,
 range 3.6 km (1.9 n miles); 24 rockets.



LIEUTENANT COLONEL ERRHAMANI

(Scale 1 : 900), Ian Sturton / 11510/2

Countermasures: Decoys: 2 CSEE Degaie double trainable
 mounting, IR flares and chaff; H/J-band.
ESM/ECM: Electronica ELT 715; intercept and jammer.

Combat data systems: Signaal SEWACO-MR action data
 automation, SATCOM.

Radars: Air/surface search: Signaal DA05 ●; E/F-band
 (see *Operations*).

Surface search: Signaal ZW06 ●; I-band.
Fire control: Signaal WM25/41 ●; I/J-band; range 48 km
 (25 n miles).

Navigation: 2 Decca ●; I-band.

Sonars: Raytheon DE 1160 B; hull-mounted; active/passive;
 medium range; medium frequency

Programmes: Ordered 7 June 1977

Modernisation: New 40 mm guns fitted in 1995. Refit in
 Spain in 1996.

Operational: The ship is fitted to carry Exocet but the
 missiles are seldom embarked. The air search radar was
 removed in 1998 but reinstated in 1999.



LIEUTENANT COLONEL ERRHAMANI

6/2006, B Prézeln / 10406/3



LIEUTENANT COLONEL ERRHAMANI

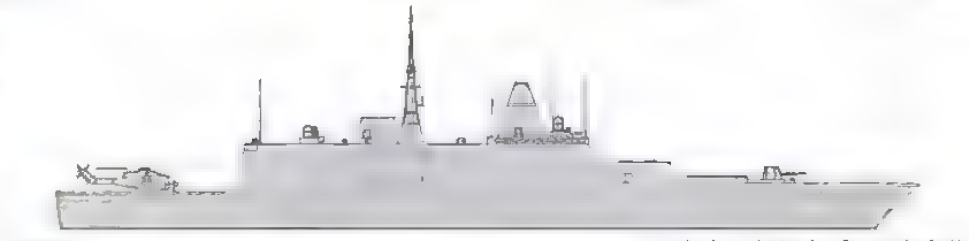
6/2006, B Prézeln / 10406/4

0 + 1 FREMM CLASS (FSG)

Name	No	Builders	Laid down	Launched	Commissioned
-	-	DCNS, Lorient	2009	2011	2013

Displacement, tons: 4,500 standard; 6,000 full load
Dimensions, feet (metres): 449.5 oa; 419.9 wl × 62.3 × 16.4 (1370; 128.0 × 19.0 × 5.0)
Main machinery: CODLOG; 1 Fiat/GE LM 2500+ G4 gas turbine; 47,370 hp(m) (34.8 MW); 2 Jeumont motors; 2 shafts
Speed, knots: 28
Range, n miles: 6,000 at 15 kt
Complement: 108 (22 officers) (accommodation for 145)

Missiles: SAM: 16 (2 octuple) cell Sylver A43 VLS for MBDA Aster 15; inertial guidance, mid-course update and final active homing to 30 km (16.2 n miles) at 3 Mach.
SSM: 8 MBDA MM 40 Exocet Block III; inertial cruise; active radar homing to 180 km (100 n miles) at 0.9 Mach; warhead 165 kg; sea-skimmer.
Guns: 1 OTO Melara 3 in (76 mm)/62 Super Rapid; 120 rds/min to 16 km (8.7 n miles); weight of shell 6 kg. 2—12.7 mm MGs.
Torpedoes: 6—324 mm (2 B 515 triple) tubes; Eurotorp Mu-90; active/passive homing to 25 km (13.5 n miles) at 29/50 kt
Countermeasures: Decoys: 2 EADS NGDS 12-barrelled chaff, IR and anti-torpedo decoy launchers.
ESM: ARBR 21; intercept
ECM: To be announced
Combat data systems: DCN/Thales SETIS CMS
Weapons control: 1 optronic FCS
Radars: Air/Surface search: Thales Herakles 3-D multifunction; E/F-band



(Scale 1 : 1,200), Ian Sturton / 1304075

FREMM

Navigation: To be announced
Fire control: Alenia Marconi NA-25XP; J-band.
Sonars: Thales TUS 4110CL; hull mounted (bow dome); active search and attack.
Thales Captas UMS-4249 active/passive towed array (to be confirmed).

Helicopters: To be announced.

Programmes: The order for one FREMM frigate was first announced on 22 October 2007 and later confirmed by French Prime Minister François Fillon on 18 April 2008. The ship, to be delivered by 2013, is the first export order for the 27-ship Franco-Italian joint programme. The ship is required to extend the patrol capabilities of the Moroccan

Navy and to enable joint operations with NATO and other navies. Details are based on the ships being procured for the French Navy and may be different.

Structure: FREMM has a conventional hull design. The main engine room contains the gas turbine and two diesel generators while the aft machinery space contains the motors. Particular attention has been paid to signature reduction. The radar signature is expected to be comparable to that of the La Fayette class while exhaust cooling measures are expected to achieve a comparatively low IR signature. Acoustic quietening is to be achieved by the rating of engines and motors and the use of electric propulsion. The Herakles radar is housed in the foremast and communications and IFF in the after mast.

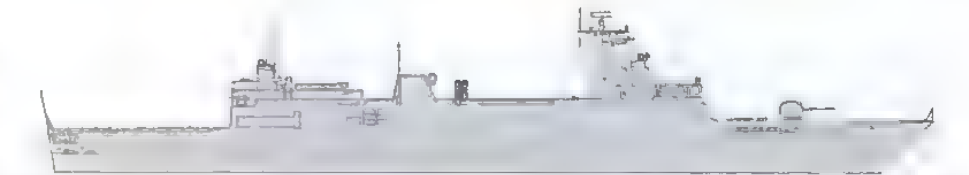
CORVETTES

0 + 3 SIGMA CLASS (FSG)

Name	No	Builders	Laid down	Launched	Commissioned
-	-	Schelde Shipbuilding, Vlissingen	15 Apr 2008	2009	2010
-	-	Schelde Shipbuilding, Vlissingen	2009	2011	2011
-	-	Schelde Shipbuilding, Vlissingen	2008	2010	2012

Displacement, tons: 2,100 (2,300 Sigma 10513) full load
Dimensions, feet (metres): 321.2 (344.8) × 42.7 × 13.1 (97.9; 105.1 Sigma 10513 × 13.0 × 4.0)
Main machinery: 2 Pielstick 20PA6B STC diesels; 22,030 hp (16.2 MW); 2 shafts; cp props
Speed, knots: 28. **Range, n miles:** 4,000 at 18 kt
Complement: 81 (101 Sigma 10513)

Missiles: SAM 12 (2 sextuple) MBDA VL MICA; command/inertial guidance; radar/IR homing to 20 km (10.8 n miles); warhead 12 kg.
SSM: 4 MBDA MM40 Exocet Block II; inertial cruise; active radar homing to 70 km (40 n miles) at 0.9 Mach; warhead 165 kg; sea-skimmer.
Guns: 1 OTO Melara 3 in (76 mm)/62 Super Rapid; 120 rds/min to 16 km (8.7 n miles); weight of shell 6 kg. 2 Gat 20 mm
Torpedoes: 6—324 mm (2 B 515 triple) tubes; Eurotorp Mu-90; active/passive homing to 25 km (13.5 n miles) at 29/50 kt.
Countermeasures: Decoys: To be announced
ESM: Thales Vigile.



(Scale 1 : 900), Ian Sturton / 1353231

SIGMA 10513

ECM: Thales Scorpion.
Torpedo defence: To be announced.
Combat data systems: Thales Tactics.
Weapons control: Thales LIROD Mk 2 optronic tracker.
Radars: Air/Surface search: Thales SMART-S; 3D, E/F-band.
Navigation: To be announced.
Sonars: Thales Kinglip.

Helicopters: To be announced.

Programmes: Contract for the construction of three corvettes, all to be built in the Netherlands, announced on 8 February 2008. Two ships are 88 m Sigma 9813 and one is a lengthened 105 m Sigma 10513. First steel was cut for the lead (105 m) ship on 27 February 2008. The ships, which are to have common systems, are required to extend the patrol capabilities of the Moroccan Navy and to enable joint operations with NATO and other navies.

SHIPBORNE AIRCRAFT

Numbers/Type: 3 Eurocopter AS 565MB Panther
Operational speed: 165 kt (305 km/h)
Service ceiling: 16,700 ft (5,100 m)
Range: 483 n miles (895 km).
Role/Weapon systems: Procured from France for operation from Floréal class. Sensors: Thomson-CSF Varan radar. FLIR. Weapons: 7.62 mm MG.



PANTHER (French colours)

9/1998, M Declerck / 0052167

2 OKBA (PR 72) CLASS (LARGE PATROL CRAFT) (PG)

Name	No	Builders	Commissioned
OKBA	302	SFCN, Villeneuve la Garenne	16 Dec 1976
TRIKI	303	SFCN, Villeneuve la Garenne	12 July 1977

Displacement, tons: 375 standard; 445 full load
Dimensions, feet (metres): 168.8 × 25 × 7.1 (57.5 × 7.6 × 2.1)
Main machinery: 2 SACM AGO V16 ASHR diesels; 5,520 hp(m) (4.1 MW); 2 shafts
Speed, knots: 20
Range, n miles: 2,500 at 16 kt
Complement: 53 (5 officers)
Guns: 1 OTO Melara 3 in (76 mm)/62 compact; 85 rds/min to 16 km (8.8 n miles) anti-surface; 12 km (6.5 n miles) anti-aircraft; weight of shell 6 kg.
 1 Bofors 40 mm/70; 300 rds/min to 12.5 km (6.7 n miles); weight of shell 0.96 kg.
Weapons control: 2 CSEE Panda optical directors.
Radars: Surface search: Racal Decca 1226; I-band

Comment: Ordered June 1973. Okba launched 10 October 1975, Triki 1 February 1976. Can be Exocet fitted (with Vega control system). Triki refitted at Lorient 2002–03. Modifications included installation of a funnel and removal of two diesels and two shafts. Speed reduced to 20 kt. Similar refit for Okba completed in early 2005



TRIKI

6/2003, B Prézeltin / 0589781

PATROL FORCES

Notes: There are two patrol craft, pennant numbers 105-106, of unknown type



106

3/2006, M Declerck / 1164949

4 LAZAGA CLASS (FAST ATTACK CRAFT—MISSILE) (PGG)

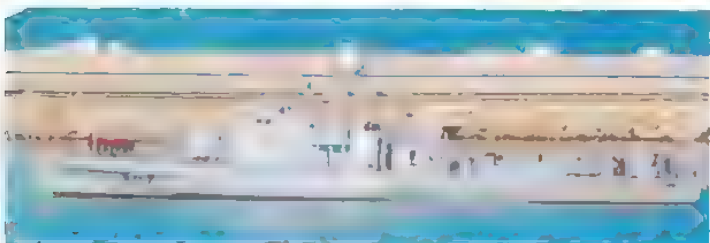
Name	No	Builders	Commissioned
COMMANDANT EL KHATTABI	304	Bazán, San Fernando	26 July 1981
COMMANDANT BOUTOUBA	305	Bazán, San Fernando	2 Aug 1982
COMMANDANT EL HARTY	306	Bazán, San Fernando	20 Nov 1981
COMMANDANT AZOUGGARH	307	Bazán, San Fernando	26 Feb 1982

Displacement, tons: 425 full load
 Dimensions, feet (metres): 190.6 × 24.9 × 8.9 (58.1 × 7.6 × 2.7)
 Main machinery: 2 MTU-Bazán 16V 956 TB91 diesels; 7,500 hp(m) (5.51 MW) sustained; 2 shafts
 Speed, knots: 30
 Range, n miles: 3,000 at 15 kt
 Complement: 41
 Missiles: SSM: 4 Aerospatiale MM 38 Exocet, inertial cruise; active radar homing to 42 km (23 n miles); at 0.9 Mach, warhead 165 kg; sea-skimmer.
 Guns: 1 OTO Melara 3 in (76 mm)/62 compact; 85 rds/min to 16 km (8.6 n miles) anti-surface; 12 km (6.5 n miles) anti-aircraft; weight of shell 6 kg.
 1 Breda Bofors 40 mm/70; 300 rds/min to 12.5 km (6.7 n miles); weight of shell 0.95 kg.
 2 Oerlikon 20 mm/90 GAM-BO1; 800 rds/min to 2 km.
 Weapons control: CSEE Panda optical director.
 Radars: Surface search: Signaal ZW06; I-band; range 26 km (14 n miles).
 Fire control: Signaal WM25; I/J-band; range 46 km (25 n miles).
 Navigation: Furuno; I-band.

Comment: Ordered from Bazán, San Fernando (Cadiz), Spain 14 June 1977. New Bofors guns fitted aft in 1996/97. 76 mm gun removed from 305 in 1998. *El Harty* and *Azouggarh* refitted by Navantia, Cartagena, 2008–09.



COMMANDANT BOUTOUBA 9/2008*, Diego Quevedo / 1453740



COMMANDANT AZOUGGARH 2/2005, Marco Ghiglino / 1133095

4 OSPREY MK II CLASS (LARGE PATROL CRAFT) (PBO)

Name	No	Builders	Commissioned
EL HAHIQ	308	Danyard A/S, Frederikshavn	11 Nov 1987
EL TAWFIQ	309	Danyard A/S, Frederikshavn	31 Jan 1988
EL HAMISS	316	Danyard A/S, Frederikshavn	9 Aug 1990
EL KARIB	317	Danyard A/S, Frederikshavn	23 Sep 1990

Displacement, tons: 475 full load
 Dimensions, feet (metres): 179.8 × 34 × 8.5 (54.8 × 10.5 × 2.6)
 Main machinery: 2 MAN Burmeister & Wain Alpha 12V23/30-DVO diesels; 4,440 hp(m) (3.23 MW) sustained; 2 water-jets
 Speed, knots: 22
 Range, n miles: 4,500 at 16 kt
 Complement: 15 plus 20 spare berths
 Guns: 1 Bofors 40 mm/60. 2 Oerlikon 20 mm.
 Radars: Surface search. Racal Decca; I-band.
 Navigation: Racal Decca, I-band

Comment: First two ordered in September 1986; two more on 30 January 1989. There is a stern ramp with a hinged cover for launching the inspection boat. Used for Fisheries Protection duties.



EL HAMISS 3/2006, M Declercq / 116495b

6 CORMORAN CLASS (LARGE PATROL CRAFT) (PBO)

Name	No	Builders	Launched	Commissioned
LV RABHI	310	Bazan, San Fernando	23 Sep 1987	16 Sep 1988
ERRACHIQ	311	Bazan, San Fernando	23 Sep 1987	16 Dec 1988
EL AKID	312	Bazan, San Fernando	29 Mar 1988	4 Apr 1989
EL MAHER	313	Bazan, San Fernando	29 Mar 1988	20 June 1989
EL MAJID	314	Bazan, San Fernando	21 Oct 1988	26 Sep 1989
EL BACHIR	315	Bazan, San Fernando	21 Oct 1988	19 Dec 1989

Displacement, tons: 425 full load
 Dimensions, feet (metres): 190.6 × 24.9 × 8.9 (58.1 × 7.6 × 2.7)
 Main machinery: 2 MTU-Bazán 16V 956 TB82 diesels; 8,340 hp(m) (6.13 MW) sustained; 2 shafts
 Speed, knots: 22. Range, n miles: 6,100 at 12 kt
 Complement: 36 (4 officers) plus 15 spare
 Guns: 1 Bofors 40 mm/70. 2 Giat 20 mm.
 Weapons control: CSEE Lynx optronic director.
 Radars: Surface search: Racal Decca; I band.

Comment: Three ordered from Bazán, Cadiz in October 1985 as a follow on to the Lazaga class of which these are a slower patrol version with a 10 day endurance. Option on three more taken up. Used for fishery protection. Armament removed from some. *El Akid*, *El Majid* and *El Bachir* refitted by Raidco Marine 2007–08.



EL AKID 6/2006, B Prézelin / 1040659

5 RAÏS BARGACH CLASS (TYPE OPV 64) (PSO)

Name	No	Builders	Launched	Commissioned
RAÏS BARGACH	318	Leroux & Lotz, Lorient	9 Oct 1995	14 Dec 1995
RAÏS BRITEL	319	Leroux & Lotz, Lorient	19 Mar 1996	14 May 1996
RAÏS CHARKAOUI	320	Leroux & Lotz, Lorient	25 Sep 1995	10 Dec 1996
RAÏS MAANINOU	321	Leroux & Lotz, Lorient	7 Mar 1997	21 May 1997
RAÏS AL MOUNASTIRI	322	Leroux & Lotz, Lorient	15 Oct 1997	17 Dec 1997

Displacement, tons: 580 full load
 Dimensions, feet (metres): 210 × 37.4 × 9.8 (64 × 11.4 × 3)
 Main machinery: 2 Wärtsilä Nohab 25 V16 diesels; 10,000 hp(m) (7.36 MW) sustained; 2 Löröy auxiliary motors; 326 hp(m) (240 kW); 2 shafts; cp props
 Speed, knots: 24, 7 (on motors)
 Range, n miles: 4,000 at 12 kt
 Complement: 24 (3 officers) + 30 spare
 Guns: 1 Bofors 40 mm/60. 1 Oerlikon 20 mm. 4—14.5 mm MGs (2 twin).
 Radars: Surface search: Racal Decca Bridgmaster; I-band.

Comment: First pair ordered to a Sertre design from Leroux & Lotz, Lorient in December 1993, second pair in October 1994. Option on fifth taken up in 1996. There is a stern door for launching a 7 m RIB, a water gun for firefighting and two passive stabilisation tanks. This version of the OPV 64 does not have a helicopter deck and the armament is fitted after delivery. Manned by the Navy for the Fisheries Department. Based at Agadir.



RAÏS BRITEL 4/2007, Rafael Carrera Gonzalez / 1170199



RAÏS AL MOUNASTIRI 9/2005, S Dominguez Llosá / 1040670

**6 EL WACIL (P 32) CLASS
(COASTAL PATROL CRAFT) (PB)**

Name	No	Builders	Launched	Commissioned
EL WACIL	203	CMN, Cherbourg	12 June 1975	8 Oct 1975
EL JAIL	204	CMN, Cherbourg	10 Oct 1975	3 Dec 1975
EL MIKDAM	205	CMN, Cherbourg	1 Dec 1975	30 Jan 1976
EL KHAFIR	206	CMN, Cherbourg	21 Jan 1976	16 Apr 1976
EL HARIIS	207	CMN, Cherbourg	31 Mar 1976	30 June 1976
EL ESSAHIR	208	CMN, Cherbourg	2 June 1976	16 July 1976

Displacement, tons: 74 light; 89 full load
Dimensions, feet (metres): 106 x 17.7 x 4.6 (32 x 5.4 x 1.4)
Main machinery: 2 SACM MGO 12V BZSHR diesels, 2,700 hp (m) (1.98 MW); 2 shafts
Speed, knots: 28
Range, n miles: 1,500 at 15 kt
Complement: 17
Guns: 1 Oerlikon 20 mm.
Radars: Surface search: Decca, I-band.

Comment: Ordered in February 1974. In July 1985 a further four of this class were ordered from the same builders but for the Customs Service. Wooden hull sheathed in plastic.



EL JAIL 3/2004, S D Lloyd / 1044135

10 VCSM CLASS (PATROL CRAFT) (PB)

P 107-116

Displacement, tons: 40 full load
Dimensions, feet (metres): 65.6 x 16.4 x 4.9 (20.0 x 5.0 x 1.5)
Main machinery: 2 MAN V12 diesels; 2,000 hp (1.47 MW); 2 shafts
Speed, knots: 25
Range, n miles: 530 at 15 kt
Complement: 5
Guns: 1—7.62 mm MG
Radars: Navigation: Furuno; I-band.

Comment: Coastal Surveillance craft ordered from Raidco Marine in 2005 (4) and 2006 (6), built at l'Herbaudière and delivered in 2006-08. Raidco RPB 20 design. GRP hull and superstructure. A 4.9 m RIB can be embarked on an inclined ramp at the stern. There are 24 similar 'Vedettes' craft in service with the French Navy.



P 107 6/2006, B Prézelin / 1040671

1 PATROL VESSEL (PBO)

Name	No	Builders	Commissioned
— (ex-Cygnat)	323 (ex-P 261)	R Dunstan Ltd, Hesse	8 July 1976

Displacement, tons: 194 full load
Dimensions, feet (metres): 120 x 23.6 x 6.5 (36.6 x 7.2 x 2.0)
Main machinery: 2 Paxman 16VJCM diesels; 4,200 hp (3.1 MW); 2 shafts
Speed, knots: 21
Range, n miles: 2,000 at 14 kt
Complement: 21 (4 officers)
Guns: 1—12.7 mm MG
Radars: Navigation: I-band

Comment: Former Royal Navy Bird class patrol craft sold to a private buyer and delivered to Agadir on 11 April 1997. The ship was later implicated in a counter-drugs operation and the vessel was confiscated by the Moroccan authorities. It has since been operated by the Moroccan Navy.

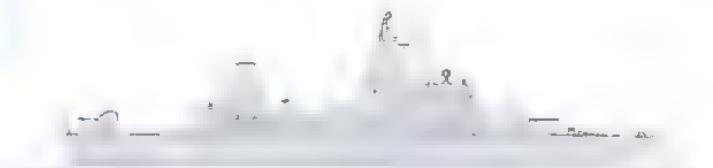


323 3/2006, M Declerck / 1164950

0 + 4 OFFSHORE PATROL VESSELS (PSO)

Displacement, tons: To be announced
Dimensions, feet (metres): 229.7 x 37.1 x 7 (70.0 x 11.3 x 7)
Main machinery: 2 Wärtsilä diesels; 2 shafts
Speed, knots: 22
Range, n miles: To be announced.
Complement: 64
Guns: 1—76 mm, 1—40 mm
Radars: Surface search: To be announced.
Navigation: I-band.

Comment: The order for four patrol vessels was announced on 30 May 2008. Designed by Raidco Marine, the ships are to be built by Aker Yards, Lanester. Delivery of the first vessel is to be made in 2010 and the remainder at one-year intervals.



RAIDCO OPV (Scale 1 : 900), Ian Sturton / 1353238

AMPHIBIOUS FORCES

1 NEWPORT CLASS (LSTH)

Name	No	Builders	Commissioned
SIDI MOHAMMED BEN ABDALLAH (ex-Bristol County)	407 (ex-1198)	National Steel, San Diego	5 Aug 1972

Displacement, tons: 4,975 light; 8,450 full load
Dimensions, feet (metres): 522.3 (hull) x 69.5 x 17.5 (aft) (159.2 x 21.2 x 5.3)
Main machinery: 6 ALCO 16-251 diesels; 18,500 hp (12.3 MW) sustained, 2 shafts, cp props; bow thruster
Speed, knots: 20
Range, n miles: 14,250 at 14 kt
Complement: 257 (13 officers)
Military lift: 400 troops (20 officers); 500 tons vehicles; 3 LCVPs and 1 LCPL on davits
Guns: 1 GE/GD 20 mm 8-barrelled Vulcan Phoenix Mk 15.
Radars: Surface search: Raytheon SPS-67; G-band.
Navigation: Marconi LN66; I/J-band.
Helicopters: Platform only.

Comment: Received from the US by grant transfer on 16 August 1994. Has replaced *Arrafiq*. The ship was non-operational by late 1996 and although back in service, has so far proved to be a poor bargain. The bow ramp is supported by twin derrick arms. A ramp just forward of the superstructure connects the lower tank deck with the main deck and a vehicle passage through the superstructure provides access to the parking area amidships. A stern gate to the tank deck permits unloading of amphibious tractors into the water, or unloading of other vehicles into an LCU or on to a pier. Vehicle stowage covers 19,000 sq ft. Length over derrick arms is 562 ft (171.3 m); full load draught is 11.5 ft forward and 17.5 ft aft. Based at Casablanca.



SIDI MOHAMMED BEN ABDALLAH 7/2007, Shaun Jones / 1170195

3 BATRAL CLASS (LSMH)

Name	No	Builders	Commissioned
DAOUD BEN AICHA	402	Dubigeon, Normandie	28 May 1977
AHMED ES SAKALI	403	Dubigeon, Normandie	Sep 1977
ABOU ABDALLAH EL AYACHI	404	Dubigeon, Normandie	Mar 1978

Displacement, tons: 750 standard; 1,409 full load
 Dimensions, feet (metres): 262.4 x 42.6 x 7.9 (80 x 13 x 2.4)
 Main machinery: 2 SACM Type 196 V12 CSHR diesels, 3,600 hp(m) (2.65 MW) sustained; 2 shafts

Speed, knots: 16
 Range, n miles: 4,500 at 13 kt
 Complement: 47 (3 officers)
 Military lift: 140 troops; 12 vehicles or 300 tons
 Guns: 2 Bofors 40 mm/70, 2—81 mm mortars, 2—12.7 mm MGs.
 Radars: Surface search-Thomson-CSF DRBN 32 (Racal Decca 1226); I-band
 Helicopters: Platform only.

Comment: Two ordered on 12 March 1975. Third ordered 19 August 1975. Of same type as the French *Champlain*. Vehicle-stowage above and below decks. *Daoud Ben Aicha* was refitted in Lorient by Leroux & Lotz in 1995 and *Abou Abdallah el Ayachi* in 1997.

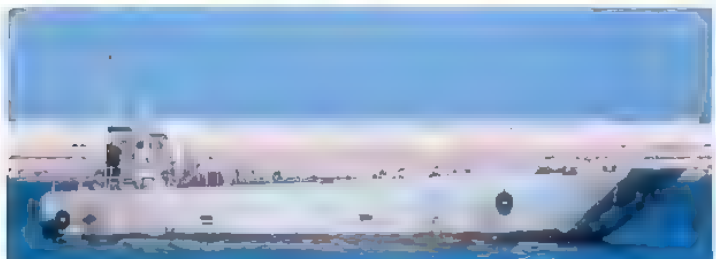


DAOUD BEN AICHA 10/2004, Carlos Pardo Gonzalez / 1133132

1 CTM (LCM)

Displacement, tons: 59 standard, 150 full load
 Dimensions, feet (metres): 78.0 x 21.0 x 4.2 (23.8 x 6.4 x 1.3)
 Main machinery: 2 Poyaud V8520NS diesels; 450 hp (331 kW); 2 shafts
 Speed, knots: 9.5
 Range, n miles: 380 at 8 kt
 Complement: 4 plus 200 passengers
 Military lift: 90 tons (maximum); 48 tons normal
 Guns: 1—12.7 mm MG
 Radars: Navigation: I-band.

Comment: Ex-CTM-5 transferred from France in August 2000.



LCM 6/2006, S Dominguez Llosá / 1040668

SURVEY AND RESEARCH SHIPS

1 ROBERT D CONRAD CLASS (AGOR)

Name	No	Builders	Commissioned
ABU AL BARAKAT	802 (ex-702)	Northwest Marine Iron Works,	31 Mar 1969
AL BARBARI (ex-Bartlett)	ex-T-AGOR 13)	Portland, OR	

Displacement, tons: 1,200 light, 1,370 full load
 Dimensions, feet (metres): 208.9 x 40 x 15.3 (63.7 x 12.2 x 4.7)
 Main machinery: Diesel-electric; 2 Caterpillar D 378 diesel generators; 1 motor; 1,000 hp (746 kW); 1 shaft; bow thruster
 Speed, knots: 13.5
 Range, n miles: 12,000 at 12 kt
 Complement: 41 (9 officers, 15 scientists)
 Radars: Navigation. TM 1660/12S; I-band.

Comment: Leased from the USA on 26 July 1993. Fitted with instrumentation and laboratories to measure gravity and magnetism, water temperature, sound transmission in water, and the profile of the ocean floor. Special features include 10 ton capacity boom and winches for handling over-the-side equipment; bow thruster; 620 hp gas turbine (housed in funnel structure) for providing 'quiet' power when conducting experiments; can propel the ship at 6.5 kt. Ships of this class are in service with Brazil, Mexico, Chile, Tunisia and Portugal.



ABU EL BARAKAT AL BARBARI 11/2004, Marco Ghiglini / 1133094

AUXILIARIES

Notes: (1) There is also a yacht, *Essaouira*, 60 tons, from Italy in 1967, used as a training vessel for watchkeepers.
 (2) Bazán delivered a harbour pusher tug, similar to Spanish Y 171 class, in December 1993.
 (3) There are two sail training craft *Al Massira* and *Boujdour*
 (4) There is a stern trawler used as a utility and diver support vessel (803 (ex-YFU 14)).



803 9/2004, S D Llosá / 1044141

1 LOGISTIC SUPPORT SHIP (AKS)

EL AIGH (ex-Merc Nordia) 405

Measurement, tons: 1,500 grt
 Dimensions, feet (metres): 252.6 x 40 x 15.4 (77 x 12.2 x 4.7)
 Main machinery: 1 Burmeister & Wain diesel; 1,250 hp(m) (919 kW); 1 shaft
 Speed, knots: 11
 Complement: 25
 Guns: 2—14.5 mm MGs

Comment: Logistic support vessel with four 5 ton cranes. Former cargo ship with ice-strengthened bow built by Fredrickshavn Vaerft in 1973 and acquired in 1981



EL AIGH 5/1994, M Declerck / 0506199

1 DAKHLA CLASS (LOGISTIC SUPPORT SHIP) (AKS)

Name	No	Builders	Launched	Commissioned
DAKHLA	408	Leroux & Lotz, Lorient	5 June 1997	1 Aug 1997

Displacement, tons: 2,160 full load
 Dimensions, feet (metres): 226.4 x 37.7 x 13.8 (69 x 11.5 x 4.2)
 Main machinery: 1 Wärtsilä Nohab 8V25 diesel; 2,300 hp(m) (1.69 MW) sustained; 1 shaft; cp prop
 Speed, knots: 12
 Range, n miles: 4,300 at 12 kt
 Complement: 24 plus 22 spare
 Cargo capacity: 800 tons
 Guns: 2—12.7 mm MGs
 Radars: Navigation: 2 Racal Decca Bridgemaster ARPA, I-band.

Comment: Ordered from Leroux & Lotz, Nantes in 1995. Side entry for vehicles. One 15 ton crane. Based at Agadir.



DAKHLA 8/1997, Leroux & Lotz / 0012789

CUSTOMS/COAST GUARD/POLICE

Notes: (1) The Coast Guard was created by Royal Decree on 9 September 1997. Responsibility for Search and Rescue conferred on the Ministère des Pêches Maritimes (MPM). Operational control is exercised from the National Rescue Service HQ at Rabat in co-ordination with the Merchant Marine HQ at Casablanca.
 (2) There is a 17 m SAR craft *Al Fida* delivered in August 2002.
 (3) There are four SAR craft: *Rif, Loukouss, Souss* and *Dghira*



AL WHADA 7/2004, S D Lloás / 1044137



SOUSS 7/1995, Zamacona / 1044138

2 SAR CRAFT (SAR)

AL AMANE 2344 AIT BAÄMRANE 2345

Displacement, tons: 68 full load
 Dimensions, feet (metres): 51.7 x 14.7 x 3.4 (15.75 x 4.48 x 1.05)
 Main machinery: 2 Volvo D12; 1,300 hp (970 kW); Hamilton waterjets
 Speed, knots: 34
 Complement: 4

Comment: Constructed by Auxnaval Shipbuilders, Spain and delivered in March 2003. Aluminium hull.



AL AMANE 7/2003, Auxnaval / 1044136

2 SAR CRAFT (SAR)

AL WHADA 12-64 SEBOU 12-65

Displacement, tons: 70 full load
 Dimensions, feet (metres): 68.0 x 19.2 x 5.9 (20.7 x 5.8 x 1.8)
 Main machinery: 2 MAN D2842 LE401 diesels, 2,000 hp (1.49 MW); 2 shafts
 Speed, knots: 20
 Complement: 4

Comment: Constructed by Auxnaval, Asturias, Spain and delivered in 2004.



AL WHADA 7/2004, Auxnaval / 1044139

4 ERRAID (P 32) CLASS (COASTAL PATROL CRAFT) (WPB)

Name	No	Builders	Launched	Commissioned
ERRAID	209	CMN, Cherbourg	20 Dec 1987	18 Mar 1988
ERRACED	210	CMN, Cherbourg	21 Jan 1988	16 Apr 1988
EL KACED	211	CMN, Cherbourg	10 Mar 1988	17 May 1988
ESSAID	212	CMN, Cherbourg	19 May 1988	4 July 1988

Displacement, tons: 89 full load
 Dimensions, feet (metres): 105 x 17.7 x 4.6 (32 x 5.4 x 1.4)
 Main machinery: 2 SACM MGO 12V BZSHR diesels; 2,700 hp(m) (1.98 MW); 2 shafts
 Speed, knots: 28
 Range, n miles: 1,500 at 15 kt
 Complement: 17
 Guns: 1 Oerlikon 20 mm.
 Radars: Navigation: Decca; I-band.

Comment: Similar to the El Wacil class listed under Patrol Forces. Ordered in July 1985.



EL KACED 6/1999, 0081779

18 ARCOR 46 CLASS (COASTAL PATROL CRAFT) (WPB)

Displacement, tons: 15 full load
 Dimensions, feet (metres): 47.6 x 13.8 x 4.3 (14.5 x 4.2 x 1.3)
 Main machinery: 2 SACM UD18V8 M5D diesels; 1,010 hp(m) (742 kW) sustained; 2 shafts
 Speed, knots: 32
 Range, n miles: 300 at 20 kt
 Complement: 6
 Guns: 2 Browning 12.7 mm MGs.
 Radars: Surface search: Furuno 701; I-band.

Comment: Ordered from Arcor, La Teste In June 1985. GRP hulls. Delivered in groups of three from April to September 1987. Used for patrolling the Mediterranean coastline.



ARCOR 46 CLASS 9/2004, S D Lloás / 1044140

3 SAR CRAFT (SAR)

HAOUZ ASSA TARIK

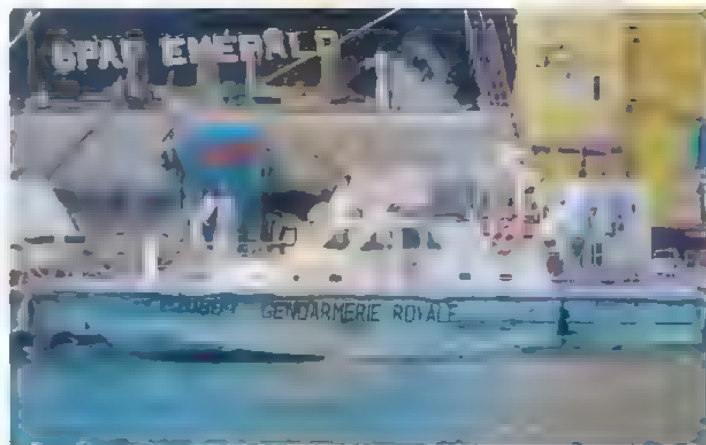
Displacement, tons: 40 full load
 Dimensions, feet (metres): 63.6 × 15.7 × 4.3 (19.4 × 4.8 × 1.3)
 Main machinery: 2 diesels; 1,400 hp(m) (1.03 MW); 2 shafts
 Speed, knots: 20
 Complement: 6

Comment: Rescue craft built by Schwaers, Bardoniafleth and delivered in 1991

15 ARCOR 53 CLASS (COASTAL PATROL CRAFT) (WPBF)

Displacement, tons: 17 full load
 Dimensions, feet (metres): 52.5 × 13 × 3.9 (16 × 4 × 1.2)
 Main machinery: 2 Saab DSI-14 diesels; 1,250 hp(m) (919 kW); 2 shafts
 Speed, knots: 35. Range, n miles: 300 at 20 kt
 Complement: 6
 Guns: 1—12.7 mm MG.
 Radars: Surface search: Furuno; I-band

Comment: Ordered from Arcor, La Teste in 1990 for the Police Force. Delivered at one month from October 1992.



ARCOR 53 CLASS

3/2006, M Declerck / 1164948



Mozambique

MARINHA MOÇAMBIQUE

Country Overview

The Republic of Mozambique gained independence from Portugal in 1975. Situated in south-eastern Africa, it has an area of 308,642 square miles and is bordered to the north by Tanzania, to the south by South Africa and Swaziland and to the west by Zimbabwe, Zambia, and Malawi. It has a 1,334 n mile coastline with the Mozambique Channel of the Indian Ocean. Maputo (formerly Lourenço Marques) is the capital, largest city and principal port. There is another major port at Beira. Territorial Seas (12 n miles) are claimed.

A 200 n mile EEZ has also been claimed but the limits are not fully defined by boundary agreements.

All the Russian built Zhuks and Yevgenyas have sunk alongside or been sold. There are some motorboats operational on Lake Malawi.

Headquarters Appointments

Commander of the Navy:
 Rear Admiral Patricio Jotamo

Personnel

2009: 200

Bases

Maputo (Naval HQ); Nacala, Beira; Pamba (Porto Amélia); Metangula (Lake Malawi); Tete (River Zambesi); Inhambane.

PATROL FORCES

Notes: A total of eight patrol craft have been reported donated by the US. Probably the widely exported Defender class, three were delivered on 21 December 2006, three on 19 March 2007 and the remaining two in late 2007.

2 NAMACURRA CLASS (INSHORE PATROL CRAFT) (PB)

Y 07 (ex-Y 1507) Y 30 (ex-Y 1530)

Displacement, tons: 5 full load
 Dimensions, feet (metres): 29.5 × 9 × 2.8 (9 × 2.7 × 0.8)
 Main machinery: 2 Yamaha outboards; 380 hp(m) (2.79 kW)
 Speed, knots: 32
 Range, n miles: 180 at 20 kt
 Complement: 4
 Guns: 1—12.7 mm MG. 2—7.62 mm MGs.
 Depth charges: 1 rack
 Radars: Surface search: Furuno; I-band

Comment: Built in South Africa in 1980–81. Can be transported by road. Donated by South Africa in 2004.



NAMACURRA (South African colours)

8/2001, van Ginderen Collection / 0132/83



Myanmar

TATMADAW YAY

Country Overview

The Union of Myanmar, also known as the Republic of Burma, gained independence in 1948. Situated in South East Asia, it has an area of 261,218 square miles, is bordered to the north-east by China, to the north-west by India and Bangladesh and to the south-east by Laos and Thailand. It has a 1,042 n mile coastline with the Andaman Sea and the Bay of Bengal. The administrative capital became Pyin Oung Uye on 6 November 2005. Rangoon (Yangon) is the commercial capital, largest city and principal port. Some 6,900 n miles of navigable inland waterways are important transport arteries. Territorial waters (12 n miles) are claimed. A 200 n mile EEZ has been claimed although the limits have only been partly defined by boundary agreements.

Headquarters Appointments

Commander in Chief:
 Rear Admiral Nyan Tun

Personnel

- (a) 2009: 13,000 (this may include 800 naval infantry)
 (b) Voluntary service

Bases

There are five regional commands with principal bases as indicated:
 Ayeyarwady (Irawaddy): Monkey Point (Navy HQ), Yangon (Rangoon), Thilawa (dockyard), Great Coco Island
 Taninthayri (Tenasserim): Myeik (Mergui) (Regional HQ), Zadetgyi Island (Base 58, St Matthew's Island), Kathayun (Kathayin), Pale Island, Thekaton (Kadan Island)
 Danyawady: Haingyi Island (Regional HQ), Pathain
 Mawrawady: Mawlamyine (Moulmein) (Regional HQ), Kyaikkami, Dawei (Tavoy)
 Panmawady: Kyaikpyu (Regional HQ), Akyab (Base 18, Sittwe), Thandwe
 The Headquarters of Training Command is at Thilawa in Rangoon. The main training depot is currently at Syriam

(Thanlyin), but is to be transferred to Seikkyi, near the mouth of the Hlaing (Rangoon) River. The Pathain base will reportedly be moved to Pyadatgyi Island, where an expanded airfield will permit the basing of air force equipment and personnel as well as navy. The Great Coco Island base has also been expanded through the construction of a large landing jetty to replace the existing small pier. It is also the site of a Chinese surveillance installation.

Organisations

Naval units are usually commanded directly from Rangoon, but operational control is occasionally delegated to regional commands.

Naval Infantry

The existence of 800 naval infantry has been previously reported but not confirmed.

FRIGATES

Notes. A programme for the procurement of a 110 m frigate of about 3,000 tons has reportedly been initiated. While further details are not known and it is unclear whether construction has started, the project is likely to have received Chinese assistance. This is reported to have included supply of diesel engines in 2007.

CORVETTES

3 ANAWRAHTA CLASS (CORVETTES) (FSG)

Name	No	Builders	Laid down	Launched	Commissioned
ANAWRAHTA	771	Sinmalaik Shipyard, Rangoon	1998	2000	2001
BAYINTNAUNG	772	Sinmalaik Shipyard, Rangoon	1998	2001	2003
	-	Sinmalaik Shipyard, Rangoon	1998	2001	2005

Displacement, tons: 1,088 full load
Dimensions, feet (metres): 252.6 x 7 x ?
(77.0 x 7 x ?)

Main machinery: To be announced

Speed, knots: To be announced

Complement: 101 (15 officers)

Missiles: SSM: 4 C-802; mid-course guidance and active radar homing to 150 km (81 n miles) at 0.9 Mach; warhead 165 kg.

Guns: 1 OTO Breda 3 in (76 mm)/62 compact, 85 rds/min to 16 km (8.7 n miles) anti-surface; 12 km (6.5 n miles) anti-aircraft; weight of shell 6 kg

2 Breda 40 mm/70 (twin), 300 rds/min to 12.5 km (6.8 n miles); weight of shell 0.96 kg.

Countermeasures: To be announced.

Radars: Surface search. To be announced

Navigation: To be announced

Fire control: To be announced

Sonars: To be announced

Helicopters: Platform for 1 medium.

Programmes: The programme to acquire ships to replace the now decommissioned PCE-827 and Admirable class corvettes was probably instituted in the 1990s. As frigates initially proved to be too expensive, three Chinese hulls are believed to have been acquired in about 1998 for fitting out at Sinmalaik Shipyard. There have been reports that Israeli electronic systems (radars and sonar) have been fitted. The details of the programme are speculative.



ANAWRAHTA

12/2004 0581402

Operational: There has been speculation that these vessels were to be armed with four C-801 anti-ship missiles but is unclear as to whether they have been fitted. The first ship conducted sea trials in 2001 when the second ship was reportedly nearing completion.

Three ships were reported in commission by 2004 although there have been no known sightings of the second two ships. *Anawrahta* visited Port Blair in January 2006 and *Bayintnaung* participated in Exercise Milan 2008.



ANAWRAHTA

1/2006, Indian Navy / 1158724

PATROL FORCES

Notes: There is a new class of river patrol craft known as the Ngaman class. These 8 m craft are of a Boston Whaler type and are armed with a 12.5 mm gun in the bow and a twin 7.62 mm aft. Locally built, the craft have probably replaced the PBR Mk II class which have been decommissioned

6 HOUXIN (TYPE 037/1G) CLASS (FAST ATTACK CRAFT – GUN) (PTG)

MAGA 471 SAITRA 472 DUWA 473 ZEYDA 474 475 476

Displacement, tons: 478 full load
Dimensions, feet (metres): 206 × 23.6 × 7.9 (62.8 × 7.2 × 2.4)
Main machinery: 4 PR 230ZC diesels; 4,000 hp(m) (2.94 MW); 4 shafts
Speed, knots: 28 **Range, n miles:** 1,300 at 15 kt
Complement: 71

Missiles: SSM: 4 YJ-1 (C-801) (2 twin); active radar homing to 40 km (22 n miles) at 0.9 Mach; warhead 165 kg; sea skimmer C-802 may be fitted in due course.

Guns: 4 – 37 mm/63 Type 76A (2 twin); 180 rds/min to 8.5 km (4.6 n miles); weight of shell 1.42 kg.

4 – 14.5 mm Type 69 (2 twin).

Countermeasures: ESM/ECM, Intercept and jammer.

Radars: Surface search: Square Tie, I-band

Fire control: Rice Lamp; I-band.

Programmes: First pair arrived from China in December 1995, second pair in mid-1996 and last two in late 1997. The first four were wrongly reported as Heinan class.

Structure: Details given are for this class in Chinese service.

Operational: 475 damaged in a collision during sea trials in August 1996. All based at Rangoon.



ZEYDA

6/2001 / 0130747



MYANMAR CLASS 556

6/2007 / 1170700



MYANMAR CLASS 563

6/2001 / 0130746

2 OSPREY CLASS (OFFSHORE PATROL VESSELS) (PBO)

Name	No	Builders	Commissioned
INDAW	FV 55	Frederikshavn Dockyard	30 May 1980
INVA	FV 57	Frederikshavn Dockyard	25 Mar 1982

Displacement, tons: 385 standard; 505 full load

Dimensions, feet (metres): 164 × 34.5 × 9 (50 × 10.5 × 2.8)

Main machinery: 2 Burmeister and Wain Alpha diesels; 4,640 hpt(m) (3.4 MW); 2 shafts; cp props

Speed, knots: 20. **Range, n miles:** 4,500 at 16 kt

Complement: 20 (5 officers)

Guns: 1 Bofors 40 mm/60. 2 Oerlikon 20 mm.

Comment: Operated by Burmese Navy for the People's Pearl and Fishery Department. Helicopter deck with hangar in *Indaw*. Carry David Still craft or RIBs capable of 25 kt. *Inva* reported to be in poor condition. Both based at Rangoon. A third of class, *Inma*, reported to have sunk in 1987. A similar ship is in service in Namibia.



INVA

1980 / 0056642



MYANMAR CLASS 556-558

11/2005 / 1151121

3 PB 90 CLASS (COASTAL PATROL CRAFT) (PB)

424–426

Displacement, tons: 92 full load

Dimensions, feet (metres): 89.9 × 21.5 × 7.2 (27.4 × 6.6 × 2.2)

Main machinery: 3 diesels; 4,290 hp(m) (3.15 MW); 3 shafts

Speed, knots: 32

Range, n miles: 400 at 25 kt

Complement: 17

Guns: 8 – 20 mm M75 (two quad). 2 – 128 mm launchers for illuminants.

Radars: Surface search: Decca 1226; I band.

Comment: Built by Brodotekhnika, Yugoslavia for an African country and completed in 1986–87. Laid up when the sale did not go through and shipped to Burma arriving in October 1990. All are active. Based at Rangoon.



PB 90 (Yugoslav colours)

1990, Yugoslav FDSP 0056643

9 MYANMAR CLASS (COASTAL PATROL CRAFT) (PGG)

551–558 560

Displacement, tons: 213 full load

Dimensions, feet (metres): 147.3 × 23 × 8.2 (45 × 7 × 2.5)

Main machinery: 2 Mercedes-Benz diesels; 2 shafts

Speed, knots: 30+

Complement: 34 (7 officers)

Missiles: 4 YJ-1 (Eagle Strike) (C-801) (2 twin) launchers, active radar homing to 40 km (22 n miles) at 0.9 Mach; warhead 165 kg.

Guns: 2 – 37 mm (twin), 4 – 23 mm (2 twin) (gun-armed variant)

4 – 30 mm AK 230 (2 twin), 4 – 14.5 mm (1 quad) (missile-armed variant).

Radars: Surface search: I-band

Fire control: Rice Lamp; I-band.

Comment: First ship under construction at the Naval Engineering Depot, Rangoon in 1991. 551 launched on 2 January 1996 and 552 on 4 January 1996. Four further vessels reported in service by 2004, a further two in 2005 and a further one by 2007. There appear to be three variants of the class. Possibly four (556–558 and 560) have missile launchers believed to house C-801. These have a higher mainmast and an additional radar. The remainder (551–552 and 553–555) are gun-armed but with differences in superstructure.

9 HAINAN (TYPE 037) CLASS (COASTAL PATROL CRAFT) (PC)

YAN YE AUNG 445 YAN NYEIN AUNG 443
 YAN WIN AUNG 448 YAN PAING AUNG 447
 YAN MYAT AUNG 442 YAN ZWE AUNG 450
 YAN MIN AUNG 446 YAN KHWIN AUNG 444
 YAN AYE AUNG 449

Displacement, tons: 375 standard; 392 full load
Dimensions, feet (metres): 192.8 × 23.6 × 7.2 (58.8 × 7.2 × 2.2)
Main machinery: 4 PCR/Kolomna Type 9-D-8 diesels, 4,000 hp(m) (2.94 MW) sustained; 4 shafts
Speed, knots: 30.5
Range, n miles: 1,300 at 15 kt
Complement: 69
Guns: 4 China 57 mm/70 (2 twin); 120 rds/min to 12 km (6.5 n miles); weight of shell 6.31 kg
 4 USSR 25 mm/60 (2 twin); 270 rds/min to 3 km (1.6 n miles) anti-aircraft; weight of shell 0.34 kg
A/S mortars: 4 RBU 1200 5-tubed fixed launchers, range 1,200 m; warhead 34 kg
Depth charges: 2 BMB-2 projectors; 2 racks.
Mines: Rails fitted.
Countermeasures: ESM; Intercept.
Radars: Surface search: Pot Head, I-band
 Navigation: Raytheon Pathfinder; I-band.
 IFF: High Pole.
Sonars: Stag Ear; hull-mounted, active search and attack; high frequency.

Comment: First six delivered from China in January 1991, four more in mid-1993. The first six originally had double figure pennant numbers which have been changed to three figures. These ships are the later variant of this class with tripod masts. Based at Rangoon. *Yan Sit Aung* (441) reported sunk during cyclone Nargis (May 2008).



YAN WIN AUNG

9/1993 / 0056641



YAN KHWIN AUNG

3/2008* / 1353241

4 RIVER GUNBOATS (EX-TRANSPORTS) (PBR)

SAGU SEINDA SHWETHIDA SINMIN

Displacement, tons: 98 full load
Dimensions, feet (metres): 94.5 × 22 × 4.5 (28.8 × 6.7 × 1.4)
Main machinery: 1 Crossley ERL 6-cyl diesel; 160 hp (119 kW); 1 shaft
Speed, knots: 12
Complement: 32
Guns: 1—40 mm/60 (*Sagu*), 1—20 mm (3 in *Sagu*)

Comment: Built in mid-1950s. *Sinmin*, *Seinda* and *Shwethida* have a roofed-in upper deck with a 20 mm gun forward of the funnel. *Sagu* has an open upper deck aft of the funnel but with a 40 mm gun forward and mountings for 20 mm aft on the upper deck and midships either side on the lower deck. Based at Moulmein and at least two are operational. Four other ships of the same type are unarmed and are listed under *Auxiliaries*.



SEINDA

8/1994 / 0056649

6 BURMA PGM TYPE (COASTAL PATROL CRAFT) (PB)

PGM 412-415 THHAYARZAR I THHAYARZAR II

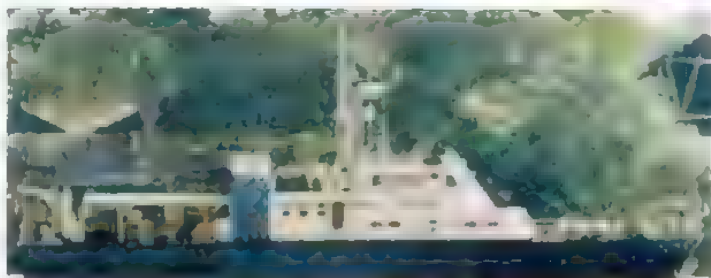
Displacement, tons: 168 full load
Dimensions, feet (metres): 110 × 22 × 6.5 (33.5 × 6.7 × 2)
Main machinery: 2 Deutz SBA16MB816 LLKR diesels; 2,720 hp(m) (2 MW); 2 shafts
Speed, knots: 16. **Range, n miles:** 1,400 at 14 kt
Complement: 17
Guns: 2 Bofors 40 mm/60.

Comment: Built by Burma Naval Dockyard modelled on the US PGM 43 type. First two completed 1983. Two more craft with different superstructure but with identical dimensions and named *Thuhayzar I* and *II* were delivered by Myanmar Shipyard to the Customs on 27 June 1993. Both craft may be lightly armed.



PGM 415

4/1993 / 0056644



THHAYARZAR CLASS

11/2005 / 1151118

1 IMPROVED Y 301 CLASS (RIVER GUNBOAT) (PBR)

Y 311

Displacement, tons: 250 full load
Dimensions, feet (metres): 121.4 × 24 × 3.9 (37 × 7.3 × 1.2)
Main machinery: 2 MTU MB diesels; 1,000 hp(m) (735 kW); 2 shafts
Speed, knots: 12
Complement: 37
Guns: 2 Bofors 40 mm/60, 4 Oerlikon 20 mm.
Radars: Surface search: Raytheon; I-band.

Comment: Built at Simmilak in 1969 and based on similar Yugoslav craft which have been scrapped. Y 312 sunk during cyclone Nargis (May 2008). Based at Sittwe.



Y 311

11/2005 / 1151120

6 CARPENTARIA CLASS (RIVER PATROL CRAFT) (PBR)

112-117

Displacement, tons: 26 full load
Dimensions, feet (metres): 51.5 × 15.7 × 4.3 (15.7 × 4.8 × 1.3)
Main machinery: 2 MTU 8V 331TC92 diesels; 1,770 hp(m) (1.3 MW) sustained; 2 shafts
Speed, knots: 29. **Range, n miles:** 950 at 18 kt
Complement: 10
Guns: 1 Oerlikon 20 mm, 1—12.7 mm MG.

Comment: Built by De Havilland Marine, Sydney. First two delivered 1979, remainder in 1980. Similar to craft built for Indonesia. Based at Rangoon.



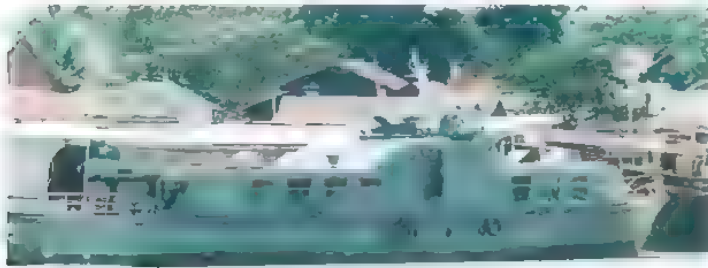
CARPENTARIA 113

1991 / 0056651

25 MICHAO CLASS (PBR)

001-025

Comment: Small craft, 52 ft (15.8 m) long, acquired from Yugoslavia in 1965. Also used to ferry troops and two are used as VIP launches. 1 to 7 based at Rangoon; 8 to 16 at Moulmein and 17 to 25 at Sittwe.



MICHAO CLASS

5/1995 / 0056650

2 CGCTYPE (RIVER GUNBOATS) (PBR)

MGB 102

MGB 110

Displacement, tons: 49 standard; 66 full load
Dimensions, feet (metres): 83 x 16 x 5.5 (25.3 x 4.9 x 1.7)
Main machinery: 4 GM diesels, 800 hp (596 kW); 2 shafts
Speed, knots: 11
Complement: 16
Guns: 1 Bofors 40 mm/60. 1 Oerlikon 20 mm.

Comment: Ex-USCG type cutters with new hulls built in Burma. Completed in 1960. Based at Rangoon but have not been seen recently.



MGB 110

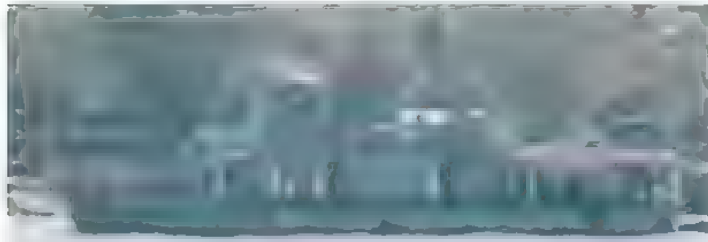
0505966

10 Y 301 CLASS (RIVER GUNBOATS) (PBR)

Y 301-310

Displacement, tons: 120 full load
Dimensions, feet (metres): 104.8 x 24 x 3 (32 x 7.3 x 0.9)
Main machinery: 2 MTL MB diesels; 1,000 hp(m) (735 kW); 2 shafts
Speed, knots: 13
Complement: 29
Guns: 2 Bofors 40 mm/60 or 1 Bofors 40 mm/60 and 1 Vickers 2-pdr.

Comment: All of these boats were completed in 1958 at the Uljanik Shipyard, Pula, Yugoslavia. Y 301, 303 and 307 based at Moulmein. The remainder at Rangoon.



Y 306

3/2008* / 1353242

3 SWIFT TYPE PGM (COASTAL PATROL CRAFT) (PB)

PGM 421-423

Displacement, tons: 128 full load
Dimensions, feet (metres): 103.3 x 23.8 x 6.9 (31.5 x 7.2 x 3.1)
Main machinery: 2 MTU 12V 331 TC81 diesels; 2,450 hp(m) (1.8 MW) sustained; 2 shafts
Speed, knots: 27
Range, n miles: 1,800 at 18 kt
Complement: 25
Guns: 2 Bofors 40 mm/60. 2 Oerlikon 20 mm. 2-12.7 mm MGs.
Radars: Surface search: Raytheon 1500; I-band.

Comment: Swiftships construction completed between March and September 1979. Acquired 1980 through Vosper, Singapore. PGM 421 previously reported sunk in 1990s but reported to have been repaired. Based at Rangoon.



PGM

6/1991 / 0056645

6 PGM 43 TYPE (COASTAL PATROL CRAFT) (PB)

PGM 401-406

Displacement, tons: 141 full load
Dimensions, feet (metres): 101 x 21.1 x 7.5 (30.8 x 6.4 x 2.3)
Main machinery: 8 GM 6-71 diesels; 1,392 hp (1.04 MW) sustained; 2 shafts
Speed, knots: 17
Range, n miles: 1,000 at 15 kt
Complement: 17
Guns: 1 Bofors 40 mm/60. 2 Oerlikon 20 mm (twin). 2-12.7 mm MGs.
Radars: Surface search: Raytheon 1500 (PGM 405-406).
 EDO 320 (PGM 401-404); I/J-band

Comment: First four built by Marinette Marine in 1959, last pair by Peterson Shipbuilders in 1961. PGM 401-403 based at Moulmein and 404-405 at Rangoon. PGM 406 at Sittwe.



PGM 406

3/1992 / 0056646

9 RIVER PATROL CRAFT (PBR)

RPC 11-19

Displacement, tons: 37 full load
Dimensions, feet (metres): 50 x 14 x 3.5 (15.2 x 4.3 x 1.1)
Main machinery: 2 Thornycroft RZ 6 diesels; 250 hp (186 kW); 2 shafts
Speed, knots: 10
Range, n miles: 400 at 8 kt
Complement: 8
Guns: 1 Oerlikon 20 mm or 2-12.7 mm MGs (twin). 1-12.7 mm MG

Comment: Built by the Naval Engineering Depot, Rangoon. First five in mid-1980s; second batch of a modified design in 1990-91. Sometimes used by the Naval Infantry and can carry up to 35 troops. Based at Rangoon.

AMPHIBIOUS FORCES

1 LCU

AIYAR LULIN 603

Displacement, tons: 360 full load
Dimensions, feet (metres): 119 x 34 x 6 (36.3 x 10.4 x 1.8)
Main machinery: 4 GM diesels; 600 hp (448 kW); 2 shafts
Speed, knots: 10
Range, n miles: 1,200 at 8 kt
Complement: 14
Military lift: 168 tons
Guns: 1-12.7 mm MG

Comment: Completed in Rangoon in 1968 to the US 1610 design. Based at Rangoon.



AIYAR LULIN

1990 / 0056654

10 LCM 3 TYPE

LCM 701-710

Displacement, tons: 52 full load
Dimensions, feet (metres): 50 x 14 x 4 (15.2 x 4.3 x 1.2)
Main machinery: 2 Gray Marine 64 HN9 diesels; 330 hp (246 kW); 2 shafts
Speed, knots: 9
Complement: 5

Comment: US-built LCM type landing craft. Used as local transports for stores and personnel. Cargo capacity, 30 tons. Guns have been removed. Based at Sittwe.



LCM 704

5/1994 / 0056655

4 ABAMIN CLASS (LCU)

AIYAR MAI 604 AIYAR MAUNG 605 AIYAR MINTHAMEE 606 AIYAR MINTHAR 607

Displacement, tons: 250 full load
 Dimensions, feet (metres): 125.6 × 29.8 × 4.6 (38.3 × 9.1 × 1.4)
 Main machinery: 2 Kubota diesels; 600 hp(m) (441 kW); 2 shafts
 Speed, knots: 10
 Complement: 10
 Military lift: 100 tons
 Guns: 1—12.7 mm MG.

Comment: All built by Yokohama Yacht in 1969. Based at Rangoon.



AIYAR MAUNG 1991 / 0056653

3 LCU

001-003

Comment: Operated by the Army. Dimensions not known.



LANDING CRAFT 003 7/1992 / 0056652

MINE WARFARE FORCES

Notes: Up to two Chinese-built minesweepers are expected to be acquired when funds are available.

SURVEY SHIPS

Notes: Thu Tay Thi means 'survey vessel'.

1 SURVEY CRAFT (AGSC)

Name	No	Builders	Commissioned
YAY BO	807	Damen, Netherlands	1958

Displacement, tons: 108 full load
 Dimensions, feet (metres): 98.4 × 22.3 × 4.9 (30 × 6.8 × 1.5)
 Main machinery: 2 diesels; 2 shafts
 Speed, knots: 10
 Complement: 34 (2 officers)
 Guns: 1—12.7 mm MG

Comment: Used for river surveys. Based at Rangoon.



YAY BO 1990 / 0056658

AUXILIARIES

Notes: As well as the ships listed below there is a small coastal oil tanker, a harbour tug and several harbour launches and personnel carriers.

1 TRANSPORT VESSEL (AK)

AYIDAWAYA

Displacement, tons: 805 full load
 Dimensions, feet (metres): 163.4 × 27.6 × 12.1 (49.8 × 8.4 × 3.7)
 Main machinery: 1 diesel; 600 hp(m) (441 kW); 1 shaft
 Speed, knots: 12
 Complement: 30

Comment: Built in Norway in 1975. Acquired in 1991 and used as transport for stores and personnel.



AYIDAWAYA 12/1991 / 0056658

1 BUOYTENDER (ABU)

HSAD DAN

Displacement, tons: 706 full load
 Dimensions, feet (metres): 130.6 × 37.1 × 8.9 (39.8 × 11.3 × 2.7)
 Main machinery: 2 Deutz B48M816 diesels; 1,341 hp(m) (985 kW); 2 shafts
 Speed, knots: 10
 Complement: 23

Comment: Built by Italhai in 1986. Operated by the Rangoon Port Authority but manned by the Navy.



HSAD DAN 8/1992 / 0056662

8 MFVS

811 520-523 801 905-906

Comment: Armed vessels of approximately 200 tons (801), 80 tons (905, 906) and 50 tons (remainder) with a 12.7 mm or 6.72 mm MG mounted above the bridge in some. All have navigational radars. Based at Rangoon.



MFV 8/1990 / 0104255

For details of the latest updates to *Jane's Fighting Ships* online and to discover the additional information available exclusively to online subscribers please visit jfs.janes.com

4 TRANSPORT VESSELS (AKL)

SABAN SETHYA SHWEPAZUN SETYAHAT

Displacement, tons: 98 full load
Dimensions, feet (metres): 94.5 x 22 x 4.5 (28.8 x 6.7 x 1.4)
Main machinery: 1 Crossley ERL 6-cyl diesel; 160 hp (119 kW); 1 shaft
Speed, knots: 12
Complement: 30

Comment: These are sister ships to the armed gunboats shown under *Patrol Forces*. It is possible that a 20 mm gun may be mounted on some occasions. Based at Rangoon.



SHWEPAZUN 1991 / 005661

1 TRANSPORT VESSEL (AKL)

PYI DAW AYE

Displacement, tons: 850 full load
Dimensions, feet (metres): 163 x 27 x 11.5 (49.7 x 8.3 x 3.5)
Main machinery: 2 diesels; 600 hp (447 kW); 2 shafts
Speed, knots: 11
Complement: 12

Comment: Completed in about 1975. Dimensions are approximate. Naval manned.



PYI DAW AYE 1991 / 005663

PRESIDENTIAL YACHT

1 TRANSPORT SHIP (YAC)

YADANABON

Comment: Built in Burma and used for VIP cruises on the Irrawaddy river and in coastal waters. Armed with 2-7.62 mm MGs and manned by the Navy.



PRESIDENT'S YACHT 1990 / 005665



Namibia

Country Overview

Formerly South West Africa and governed by South Africa, Namibia gained independence in 1990 although South Africa continued to administer an enclave containing the principal seaport, Walvis Bay, until 1994. With an area of 318,252 square miles, it has borders to the north with Angola and to the south with South Africa. It has an 848 n mile coastline with the south Atlantic Ocean. The capital and largest city is Windhoek and there is another port at Luderitz. Territorial seas (12 n miles) are claimed; it also claims a 200 n mile Exclusive Economic Zone (EEZ)

but its limits have not been fully defined by boundary agreements.

The Maritime Wing became the Navy on 7 October 2004.

Headquarters Appointments

Head of Navy:
 Captain Peter Vilho

Bases

Walvis Bay

Personnel

2009: 350

Aviation

Five ex-US Air Force Cessna O-2A observation aircraft operate in a maritime surveillance role.

PATROL FORCES

1 IMPERIAL MARINHEIRO CLASS (COASTAL PATROL SHIP) (PB)

Name	No	Builders	Commissioned
LIEUTENANT GENERAL DIMO HAMAAMBO (ex-Purus)	C 11 (ex-V 23)	Smit, Kinderdijk, Netherlands	17 Apr 1965

Displacement, tons: 911 standard, 1,025 full load
Dimensions, feet (metres): 184 x 30.5 x 11.7 (56 x 9.3 x 3.6)
Main machinery: 2 Sulzer 6TD36 diesels; 2,160 hp(m) (1.69 MW); 2 shafts
Speed, knots: 18
Complement: 64 (6 officers)
Guns: 1—3 in (76 mm)/50 Mk 33; 50 rds/min to 12.8 km (6.9 n miles); weight of shell 6 kg. 2 or 4 Oerlikon 20 mm.
Radars: Surface search: Racal Decca; I-band.

Comment: Built for Brazilian Navy as fleet tug but subsequently classified as a corvette. Withdrawn from Brazilian service in 2002 and recommissioned into the Namibian Navy on 27 August 2004.



LIEUTENANT GENERAL DIMO HAMAAMBO 2/2006, W Clements / 1040664

1 GRAJAÚ CLASS (LARGE PATROL CRAFT) (PBO)

Name	No	Builders	Laid down	Launched	Commissioned
BRENDAN SIMBWAYE	P 48	Inace, Fortaleza	25 Feb 2005	1 May 2008	Dec 2008

Displacement, tons: 263 full load
Dimensions, feet (metres): 152.8 x 24.6 x 7.5 (46.5 x 7.5 x 2.3)
Main machinery: 2 MTU 16V 396 TB94 diesels; 5,800 hp(m) (4.26 MW) sustained, 2 shafts
Speed, knots: 26
Range, n miles: 2,200 at 12 kt
Complement: 29 (4 officers)
Guns: 1 Bofors 40 mm/70; 2 Oerlikon 20 mm.
Radars: Surface search: Racal Decca 1290A; I-band.

Comment: Following an agreement between the governments of Namibia and Brazil in November 2003, the project for a new patrol ship is being conducted by EMGEPRON which contracted Inace for the construction of the vessel. The ship is to be similar to Guanabara built for the Brazilian Navy in 1999, and on which details are based.



GRAJAÚ CLASS (Brazilian colours) 2/2001, Mario R V Carneiro / 0130468

0 + 4 TRACKER II CLASS (COASTAL PATROL CRAFT) (PB)

Displacement, tons: 31 standard; 45 full load
Dimensions, feet (metres): 68.6 × 17 × 4.8 (20.9 × 5.2 × 1.5)
Main machinery: 2 MTU 8V 396 TB83 diesels; 2,100 hp(m) (1.54 MW) sustained; 2 shafts
Speed, knots: 25. **Range, n miles:** 600 at 15 kt
Complement: 8 (2 officers)
Guns: 2—12.7 mm MGs
Radars: Surface search: Racal Decca RM 1070A; I-band.

Comment: Construction of four new craft is to begin once the patrol ship *Brenden Simbwaye* is completed in late 2008. The first two are to be delivered in 2009 and the second pair in 2010.



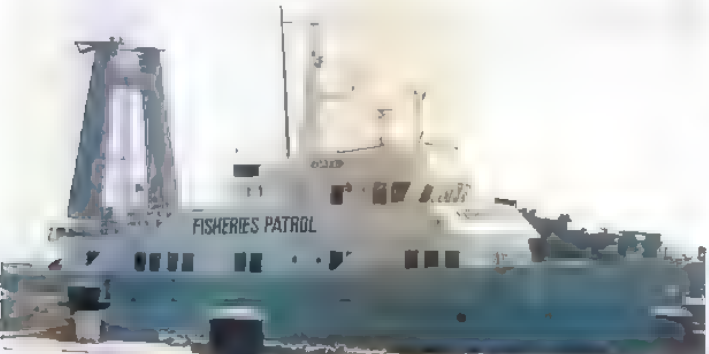
TRACKER II CLASS (Brazilian colours) 10/2003, Gomet/Marsan / 0569150

1 PATROL SHIP (PBO)

Name	No	Builders	Commissioned
ORYX (ex-S to S)	P 01	Burmeister/Abeking & Rasmussen	May 1975

Displacement, tons: 406 full load
Dimensions, feet (metres): 149.9 × 28.9 × 7.9 (45.7 × 8.8 × 2.4)
Main machinery: 2 Deutz RSBA 16M diesels; 2,000 hp(m) (1.47 MW); 1 shaft; cp prop; bow thruster
Speed, knots: 14. **Range, n miles:** 4,100 at 11 kt
Complement: 20 (6 officers)
Guns: 1—12.7 mm MG
Radars: Surface search: Furuno ARPA FR 1525; I-band
Navigation: Furuno FR 805D; I-band.

Comment: Built for the Nautical Investment Company, Penama and used as a yacht by the Managing Director of Fiat. Acquired in 1993 by Namibia. Replaced by *Nathanael Maxwellili* in fishery protection role and transferred to the navy as a patrol ship in 2002.



ORYX 6/1997 / 0081282

2 NAMACURRA CLASS (INSHORE PATROL CRAFT) (PB)

—(ex-Y 1501) —(ex-Y 1510)

Displacement, tons: 5 full load
Dimensions, feet (metres): 29.5 × 9 × 2.8 (9 × 2.7 × 0.8)
Main machinery: 2 Yamaha outboards; 380 hp(m) (2.79 kW)
Speed, knots: 32. **Range, n miles:** 180 at 20 kt
Complement: 4
Guns: 1—12.7 mm MG. 2—7.62 mm MGs.
Depth charges: 1 rack.
Radars: Surface search: Furuno; I-band.

Comment: Built in South Africa in 1980–81. Can be transported by road. Donated by South Africa on 29 November 2002.



NAMACURRA 8/2001, van Ginderen Collection / 0132/83

GOVERNMENT MARITIME FORCES

Notes: There are also four research ships. *Benguela, Walwitschis, Nautilus II* and *Kuiseb*.

1 OSPREY FV 710 CLASS (PBOH)

Name	No	Builders	Commissioned
TOBIAS HAINYEKO (ex-Havørnen)	—	Frederikshavn Vaertt	July 1979

Displacement, tons: 505 full load
Dimensions, feet (metres): 164 × 34.5 × 9 (50 × 10.5 × 2.8)
Main machinery: 2 Burmeister & Wain Alpha 16V23L diesels; 4,640 hp(m) (3.41 MW); 2 shafts, cp props
Speed, knots: 20. **Range, n miles:** 4,000 at 15 kt
Complement: 15 plus 20 spare
Radars: Surface search: Furuno ARPA FR 1525; I-band.
Navigation: Furuno FRM 64; I-band.

Comment: Donated by Denmark in late 1993, retaining some Danish crew. Recommissioned 15 December 1994. The helicopter deck can handle up to Lynx size aircraft and there is a slipway on the stern for launching an RIB. Similar ships in service in Greece, Morocco and Myanmar.



TOBIAS HAINYEKO 6/2008* / 133539/

2 PATROL SHIPS (PBOH)

Name	Builders	Commissioned
NATHANAEL MAXWILILI	Moen Slip AS, Kolvereid, Norway	14 May 2002
ANNA KAKURUKAZE MUNGUNDA	Freire Shipyards, Vigo	10 Feb 2004

Displacement, tons: 1,500
Dimensions, feet (metres): 189.0 × 41.0 × 13.8 (57.6 × 12.5 × 4.2)
Main machinery: 2 Deutz SBV8M diesel; 4,063 hp (3.03 MW); 2 shafts; Kamewa Ulstein bow thruster; 385 hp (285 kW)
Speed, knots: 17. **Range, n miles:** 8,200 at 16 kt
Radars: Furuno FR-2125; I-band
Helicopters: Platform only.

Comment: *Nathanael Maxwellili* ordered in 1999. Financed by NORAD (Norwegian Agency for Development Co-Operation). *Anna Kakurukaze Mungunda* was financed by the Spanish government. Equipped with inspection craft for fishery protection role.



NATHANAEL MAXWILILI 2/2006, W Clements / 1041065



ANNA KAKURUKAZE MUNGUNDA 3/2005, W Clements / 1041067

NATO**Overview**

The North Atlantic Treaty Organisation (NATO) was formed under Article 9 of the North Atlantic Treaty signed on 4 April 1949. Now comprising 26 members, the original signatories

were Belgium, Canada, Denmark, France, Iceland, Italy, Luxembourg, Netherlands, Norway, Portugal, UK and US. Greece and Turkey were admitted to the alliance in 1952, West Germany in 1955, and Spain in 1982. In 1990 the newly unified Germany replaced West Germany. Three former

members of the Warsaw Pact, Czech Republic, Hungary and Poland were admitted in 1999. Seven further countries: Bulgaria, Estonia, Latvia, Lithuania, Romania, Slovakia and Slovenia, became members on 29 March 2004. A new NATO-Russia council was inaugurated on 28 May 2002.

SUBMARINES

Notes: Operational analysis to establish the requirements for a future submarine capability, to enter service from about 2025, has been initiated.

4 WALRUS CLASS (SSK)

Name	No	Builders	Laid down	Launched	Commissioned
WALRUS	S 802	Rotterdamse Droogdok Mij, Rotterdam	11 Oct 1979	26 Oct 1985 (13 Sep 1989)	25 Mar 1992
ZEELEEUW	S 803	Rotterdamse Droogdok Mij, Rotterdam	24 Sep 1981	20 June 1987	25 Apr 1990
DOLFIJN	S 808	Rotterdamse Droogdok Mij, Rotterdam	12 June 1986	25 Apr 1990	29 Jan 1993
BRUINVIS	S 810	Rotterdamse Droogdok Mij, Rotterdam	14 Apr 1988	25 Apr 1992	5 July 1994

Displacement, tons: 2,465 surfaced; 2,800 dived

Dimensions, feet (metres): 223.1 x 27.6 x 23
(677 x 8.4 x 7)

Main machinery: Diesel-electric; 3 SEMT Pielstick 12 PA4
200 VG diesels; 6,300 hp(m) (4.63 MW); 3 alternators;
2.88 MW; 1 Holec motor; 6,910 hp(m) (5.1 MW); 1 shaft

Speed, knots: 12 surfaced; 20 dived

Range, n miles: 10,000 at 9 kt snorting

Complement: 52 (7 officers)

Missiles: SSM: McDonnell Douglas Sub Harpoon; active
radar homing to 130 km (70 n miles); at 0.9 Mach,
warhead 227 kg.

Torpedoes: 4 - 21 in (533 mm) tubes. Honeywell Mk 48 Mod 4;
wire-guided; active/passive homing to 38 km (20.5 n
miles) active at 55 kt; 50 km (27 n miles) passive at 40 kt;
warhead 267 kg; 20 torpedoes or missiles carried. Mk 19
Turbine ejection pump. Mk 67 water-ram discharge

Mines: 40 in lieu of torpedoes.

Countermeasures: ESM L3 DR 3000; radar warning.

Weapons control: Signaal SEWACO VIII action data
automation. Signaal Gipsy data system. GTHW integrated
Harpoon and Torpedo FCS.

Radars: Surface search. Signaal/Racal. ZW07; I-band.

Sonars: Thomson Sintra TSM 2272 Eledone Octopus; hull-
mounted; passive/active search and attack; medium
frequency

GEC Avionics Type 2026; towed array; passive search;
very low frequency.

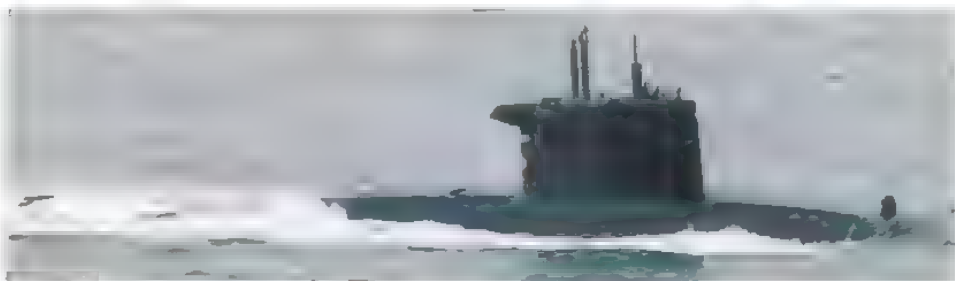
Thomson Sintra DUUX 5; passive ranging and intercept.

Programmes: Contract for the building of the first was
signed 16 June 1979, the second was on 17 December
1979. In 1981 various changes to the design were made
which resulted in a delay of one to two years. *Dolfijn* and
Bruinvis ordered 16 August 1985, prefabrication started
late 1985. Completion of *Walrus* delayed by serious fire
14 August 1986, hull undamaged but cabling and computers
destroyed. *Walrus* relaunched 13 September 1989.

Modernisation: A snort exhaust diffuser was fitted to
Zeeleeuw in 1996. The rest of the class have been
similarly modified. A life-extension programme for all
four boats is planned to start in 2011 and to be completed
in 2018. Upgrades are likely to include platform (including
pressure hull) preservation measures, replacement
of the combat management system, installation of an
optronic mast (to replace one periscope) and upgrade of
the sonar.

Structure: These are improved *Zwaardvis* class with similar
dimensions and silhouettes except for X stern. Use of H T
steel increases the diving depth by some 50 per cent.
Diving depth, 300 m (984 ft). Pilkington Optronics CK 24
search and CH 74 attack periscopes.

Operational: Weapon systems evaluations completed
1990-93. Sub Harpoon is not carried.



BRUINVIS

8/2006, J Brodie / 1166675



DOLFIJN

8/2006, Maritime Photographic / 1335285



BRUINVIS

7/2007, Michael Nitz / 1166835



WALRUS

4/2008, Van Zaalen / 1335286

FRIGATES

4 DE ZEVEN PROVINCIEI CLASS (FFGHM)

Name	No	Builders	Laid down	Launched	Commissioned
DE ZEVEN PROVINCIEI	F 802	Royal Schelde, Vlissingen	1 Sep 1998	8 Apr 2000	26 Apr 2002
TROMP	F 803	Royal Schelde, Vlissingen	3 Sep 1999	7 Apr 2001	14 Mar 2003
DE RUYTER	F 804	Royal Schelde, Vlissingen	1 Sep 2000	13 Apr 2002	22 Apr 2004
EVERTSEN	F 805	Royal Schelde, Vlissingen	6 Sep 2001	19 Apr 2003	10 June 2005

Displacement, tons: 6,048 full load
Dimensions, feet (metres): 473.1 oa; 428.8 wl x 61.7 x 17.1 (144.2; 130.7 x 18.8 x 5.2)
Flight deck, feet (metres): 88.6 x 61.7 (27 x 18.8)
Main machinery: CODOG; 2 RR SM1C Spey; 52,300 hp (39 MW) sustained; 2 Stork-Wärtsilä 16V 26 ST diesels; 13,600 hp(m) (10 MW); 2 shafts; LIPS; cp props
Speed, knots: 28 **Range, n miles:** 5,000 at 18 kt
Complement: 204 (32 officers) including staff

Missiles: SSM: 8 McDonnell Douglas Harpoon Block 1D; active radar homing to 240 km (130 n miles) at 0.9 Mach; warhead 227 kg

SAM: Mk 41 VLS (40 cells); 32 Raytheon Standard SM2-MR (Block IIIA); command/inertial guidance; semi-active radar homing to 167 km (90 n miles) at 2.5 Mach. 32 Evolved Sea Sparrow RIM 162B (quad pack); semi-active radar homing to 18 km (9.7 n miles) at 3.6 Mach; warhead 38 kg.

Guns: 1 Otobreda 5 in (127 mm) M54; 45 rds/min to 23 km (12.42 n miles) anti-surface; weight of shell 32 kg. 2 Thales Goalkeeper 30 mm; 4,200 rds/min to 1.5 km. 2 Browning 12.7 mm MGs.

Torpedoes: 4—323 mm (2 twin) Mk 32 Mod 9 fixed launchers. Mk 46 Mod 5 torpedoes.

Countermeasures: 4 SRBOC Mk 36 chaff launchers, Nixie torpedo decoy.

ESM/ECM: Racal Sabre; intercept/jammer.

Combat data systems: CAMS Force Vision SEWACO XI; Link 11/16; SATCOMS

Weapons control: Thales Sirius IRST optronic director. Thales Mirador Tractable Electro-Optical Observation System (TEODS)



DE ZEVEN PROVINCIEI

(Scale 1 : 1,200), Ian Sturton / 0569296

Radars: Air search: Thales SMART L; 3D; D-band. Air/surface search/fire control: Thales APAR; I/J-band. Surface search: Thales Scout; I band. IFF Mk XII

Sonars: STN Atlas DSQS 24C, bow-mounted; active search and attack; medium frequency.

Helicopters: 1 NH90 NFH/Lynx

Programmes: Project definition awarded to Royal Schelde on 15 December 1993 with a contract for first two ships and detailed design following on 30 June 1995. Second pair ordered 5 February 1997. Shipyards in Germany (ARGE for Type 124) collaborated to achieve some commonality of design and equipment.

Modernisation: Plans to install an additional 8-cell Mk 41 VLS launcher for Tactical Tomahawk IV were

cancelled on 14 May 2007. Other improvements to achieve a TBMD capability remain under consideration. TBMD trials were conducted by Tromp at the Pacific Missile Test Range Facility, Hawaii, in November-December 2006. A test version of an Extended Long-Range (ELR) mode of SMART L was assessed. A long-range guided munitions capability is also under consideration.

Structure: As well as the listed equipment the ship is to have an electro-optic surveillance system and a navigation radar. The Scout radar is a Low Probability Intercept (LPI) set. High standards of stealth and NBC protection are part of the design. DCN Samahé helicopter handling system. Space exists to retrofit an additional 8-cell Mk 41 launcher alongside the four already fitted.

Operational: All ships fitted with command facilities. NFH 90 helicopter planned for 2009.



DE ZEVEN PROVINCIEI

7/2008*, B Sullivan / 1335784



EVERTSEN

7/2008*, Camil Busquets / Vilanova / 1335783



DE RUYTER

3/2007, M Declerck / 1166533



TROMP

2/2006, Herald Carstens / 1164988



DE ZEVEN PROVINCIEËN

6/2008, J Brodie / 1335257

2 KAREL DOORMAN CLASS (FFGHM)

Name	No	Builders	Laid down	Launched	Commissioned
VAN AMSTEL	F 831	Koninklijke Maatschappij De Schelde, Flushing	3 May 1988	19 May 1990	27 May 1993
VAN SPEIJK	F 828	Koninklijke Maatschappij De Schelde, Flushing	1 Oct 1991	26 Mar 1994	7 Sep 1995

Displacement, tons: 3,320 full load
Dimensions, feet (metres): 401.2 oa; 374.7 wl x 47.2 x 14.1 (122.3; 114.2 x 14.4 x 4.3)
Flight deck, feet (metres): 72.2 x 47.2 (22 x 14.4)
Main machinery: CODOG; 2 RR Spey SM1C; 33,800 hp (25.2 MW) sustained; 2 Stork-Wärtsilä 12SW280 diesels, 9,790 hp(m) (7.2 MW) sustained; 2 shafts; LIPS cp props
Speed, knots: 30 (Speys); 21 (diesels)
Range, n miles: 5,000 at 18 kt
Complement: 158 (18 officers) (accommodation for 163)

Missiles: SSM: 8 McDonnell Douglas Harpoon Block 1C (2 quad) launchers ●; active radar homing to 124 km (67 n miles) at 0.9 Mach; warhead 227 kg.

SAM: Raytheon Sea Sparrow RIM 7P Mk 48 vertical launchers ●; semi-active radar homing to 16 km (8.5 n miles) at 2.5 Mach; warhead 38 kg; 16 missiles. Canisters mounted on port side of hangar

Guns: 1—3 in (76 mm)/62 OTO Melara compact Mk 100 ●; 100 rds/min to 16 km (8.6 n miles) anti-surface; 12 km (6.5 n miles) anti-aircraft; weight of shell 6 kg. This is the version with an improved rate of fire.

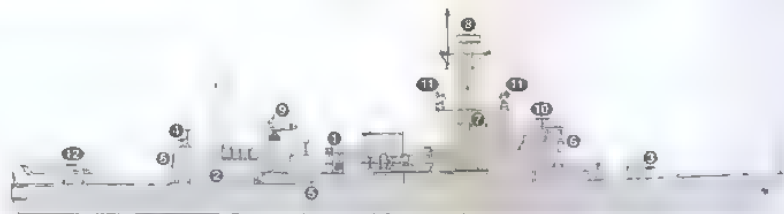
1 Signaal SGE-30 Goalkeeper with General Electric 30 mm 7-barrelled ●; 4,200 rds/min combined to 2 km
 2 Oerlikon 20 mm; 800 rds/min to 2 km

Torpedoes: 4—324 mm US Mk 32 Mod 9 (2 twin) tubes (mounted inside the after superstructure) ● Honeywell Mk 46 Mod 5, anti-submarine; active/passive homing to 11 km (5.9 n miles) at 40 kt; warhead 44 kg

Countermeasures: Decoys: 2 Loral Hycor SRBOC 6-tubed fixed Mk 36 quad launchers; IR flares and chaff to 4 km (2.2 n miles).

SLQ-25 Nixie towed torpedo decoy
ESM/ECM: Argo APECS II (includes AR 700 ESM) ●; intercept and jammers.

Combat data systems: Signaal SEWACO VIIB action data automation, Link 11. SATCOM ● WSC-6 twin aeri-



VAN SPEIJK

(Scale 1 : 1,200), Ian Sturton / 0012800

Weapons control: Signaal IRSCAN infra-red detector (fitted in F 829 for trials and may be retrofitted in all in due course). Signaal VESTA helo transponder

Radars: Air/surface search Signaal SMART ●; 3D; F-band.

Air search: Signaal LW08 ●; D-band

Surface search: Signaal Scout ●; I-band.

Navigation: Racal Decca 1226, I-band

Fire control: 2 Signaal STIR ●; I/J/K-band; range 140 km (76 n miles) for 1 m² target

Sonars: Signaal PHS-36; hull-mounted, active search and attack; medium frequency.

Thomson Sintra Anaconda DSBV 61; towed array; passive low frequency. LFAS may be fitted in due course.

Helicopters: 1 Westland SH-14 Lynx ●

Programmes: Declaration of intent signed on 29 February 1984 although the contract was not signed until 29 June 1985 by which time the design had been completed.

A further four ordered 10 April 1986. Names were shuffled to make the new *Van Speijk* the last of the class but she retained her allocated pennant number.

Modernisation: SEWACO VIII(A) operational from January 1992 and VIII(B) from mid-1994. By 1994 all fitted with

APECS II EW system and DSBV 61 towed array. SHF SATCOM based on the USN WSC-6, with twin aeri-als providing a 360° coverage even at high latitudes. Scout radar fitted on bridge roof in 1997. A mid-life modernisation is planned for F 831 and F 828 2010-12. Upgrades are to include modifications to operate the NH-90 helicopter, replacement of the combat data system by Guardian MFF; addition of a Thales Seastar radar, installation of a low-frequency active sonar and replacement of SATCOM systems. Platform systems are also to be upgraded.

Structure: The VLS SAM is similar to Canadian Halifax and Greek MEKO classes. The ship is designed to reduce radar and IR signatures and has extensive NBCD arrangements. Full automation and roll stabilisation fitted. The APECS jammers are mounted starboard forward of the bridge and port aft corner of the hangar. The SAM launchers have been given added protection and better stealth features with a flat screen in some of the class.

Operational: F 832 and F 830 sold to Chile and transferred in November 2005 and mid-2006 respectively. F 827 and F 829 transferred to Belgium in March 2007 and March 2008 respectively and F 833 to Portugal in December 2008. F 834 is to transfer to Portugal in November 2009.



VAN SPEIJK

7/2008*, Linda de Kruijf / 1335287



VAN AMSTEL

7/2008*, Frank Findler / 1335298

SHIPBORNE AIRCRAFT

Numbers/Type: 12/8 NH Industries NH 90 NFH/NH 90 MTTH.

Operational speed: 157 kt (291 km/h).

Service ceiling: 13,940 ft (4,250 m).

Range: 621 n miles (1,150 km).

Role/Weapon systems: Twelve NH 90 NFH to enter service from 2009 and eight troop-carrying TTH from 2013. NFH variant equipped for ASW/ASuW duties and for SAR. Sensors: Thales Oceanmaster radar, Elac Nautic HELRAS dipping sonar, FLIR and ESM. Weapons: 2 Mk 46 torpedoes.



NH 90

4/2008*, RNLN / 1335281

Numbers/Type: 21 Westland Lynx Mk 25B/27A/81A.

Operational speed: 125 kt (232 km/h).

Service ceiling: 12,500 ft (3,810 m).

Range: 320 n miles (590 km).

Role/Weapon systems: ASW, SAR and utility helicopter series all converted to SH-14D type. Mk 25B, Mk 27A and Mk 81A can all be embarked for ASW duties in escorts. To be replaced by NH 90 NFH from 2009. Sensors: Ferranti Sea Spray radar, Alcatel DUAV-4 dipping sonar, FLIR Model 2000; Ferranti AWARE-3 ESM. Weapons: Two Mk 46 torpedoes or depth bombs.



LYNX

7/2006*, Frank Findler / 1335259

PATROL FORCES

0 + 4 HOLLAND CLASS (OFFSHORE PATROL VESSELS) (PSO)

Name	No	Builders	Laid down	Launched	Commissioned
HOLLAND	P 840	Schelde, Vlissingen	2008	2008	2011
ZEELAND	P 841	Schelde, Vlissingen	2008	2010	2011
FRIESLAND	P 842	Damen Shipyard, Galatz	2009	2011	2012
GRONINGEN	P 843	Damen Shipyard, Galatz	2010	2012	2013

Displacement, tons: 3,750 full load

Dimensions, feet (metres): 355.6 oa; 336.9 wl x 50.0 x 14.9 (108.4, 102.7 x 15.24 x 4.55)

Main machinery: Diesel-hybrid: 2 MAN 12V 28/33D diesels; 14,480 hp (10.8 MW); 3 Caterpillar 3508B generators; 3,895 hp (2.9 MW); 2 motors; 1,070 hp (800 kW); 2 shafts; cp props; 1 bow thruster; 536 hp (400 kW)

Speed, knots: 22

Range, n miles: 5,000 at 16 kt

Complement: 50 plus 40 non-permanent

Guns: 1 OTO Melara 3 in (76 mm)/62 compact; 85 rds/min to 16 km (8.7 n miles); weight of shell 6 kg. 1 OTO Melara 30 mm/70 (remotely operated); 200 rds/min; 2 OTO Melara Hitrole (remotely operated); 12.7 mm MGs; 6 x 7.62 mm MGs

Combat data systems: SEWACO CMS Link 11/16 SATCOM.

Electro-optic systems: Thales Gatekeeper; IR and TV.

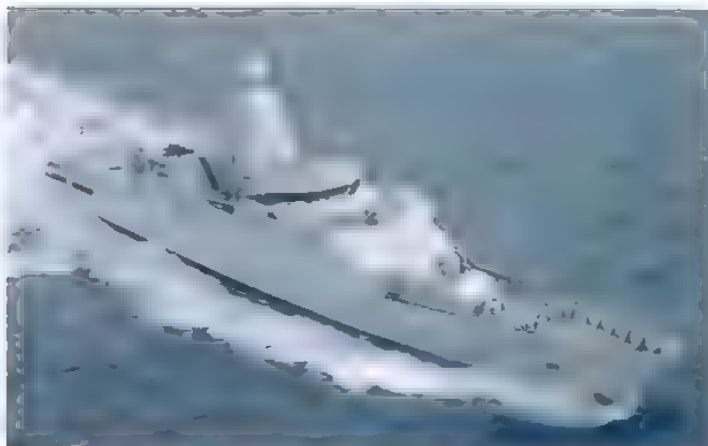
Radars: Thales SMILE, E/F-band.

Surface search: Thales SEASTAR; I-band

Navigation: 2 (to be announced), I-band

Helicopters: 1 NH 90

Comment: Contract for the design and build of four patrol ships awarded to Schelde Naval shipbuilding on 20 December 2007. The role of the ships is to conduct low-intensity military operations including maritime interdiction, counter-terrorism and humanitarian assistance. The ships are to be fitted with two water guns. Design features include an integrated mast for sensors and communications and provision to accommodate additional payloads, including stowage for two 20 ft containers or pallets in a multifunction space beneath the flight deck. A 10 tonne crane is fitted on the starboard side for cargo handling. Two 12 m RHIBs can be embarked: one may be launched and recovered via a stern slipway, the other from a boat davit on the port side.



HOLLAND CLASS

12/2007, Thales / 1170067

AMPHIBIOUS FORCES

5 LCU MK IX (LCU)

L 9525-L 9529

Displacement, tons: 260 full load

Dimensions, feet (metres): 118.4 x 22.4 x 4.3 (36.1 x 6.8 x 1.3)

Main machinery: Diesel-electric; 2 Caterpillar 3412C diesel generators; 1,496 hp (m) (1.1 MW); 2 Alconza D400 motors; 2 Schottel pumpjets; 2 pump jets

Speed, knots: 9. **Range, n miles:** 400 at 8 kt

Complement: 5 plus 2 spare

Military lift: 130 troops or 2 Warriors or 1 BARV or up to 3 trucks

Guns: 1—12.7 mm MG; 1—7.62 mm MG

Radars: Navigation: I-band

Comment: Ordered from Visser Dockyard, Den Helder on 19 July 1998. Steel vessels of which the first commissioned 7 April 1998. The others have been fabricated in Romania and fitted out by Visser in 1999/2000. Embarked in Rotterdam. L 9526 lengthened by 8.8 m at Visser dockyard in 2004 and the remainder in 2005–06.



L 9528

7/2008*, A A de Kruijf / 1335270

6 LCVP MK III (LCVP)

L 9536-L 9541

Displacement, tons: 30 full load

Dimensions, feet (metres): 55.4 x 16.7 x 3.6 (16.9 x 4.8 x 1.1)

Main machinery: 2 diesels; 750 hp (m) (551 kW); 2 shafts

Speed, knots: 14 (full load), 16.5 (light)

Range, n miles: 200 at 12 kt

Complement: 3

Military lift: 34 troops or 7 tons or 2 Land Rovers or 1 Snowcat

Guns: 1—7.62 mm MG

Radars: Navigation: Raca Decca 110; I-band.

Comment: Ordered from van der Giessen-de Noord 10 December 1988. First one laid down 10 August 1989, commissioned 16 October 1990. Last one commissioned 19 October 1992.



L 9539

7/2008*, Frank Findler / 1335262

1 ROTTERDAM CLASS (LPD)

Name	No	Builders	Laid down	Launched	Commissioned
ROTTERDAM	L 800	Royal Schelde, Vlissingen	25 Jan 1996	22 Feb 1997	18 Apr 1998

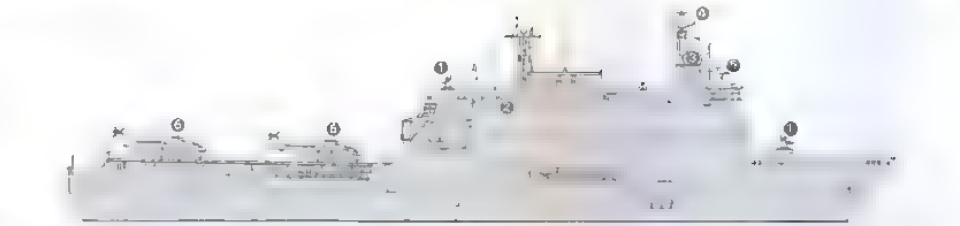
Displacement, tons: 12,750 full load
Dimensions, feet (metres): 544.6 x 82 x 19.3
 (166 x 25 x 5.9)
Flight deck, feet (metres): 183.7 x 82 (56 x 25)
Main machinery: Diesel-electric; 4 Stork Wärtsilä 12SW28 diesel generators; 14.6 MW sustained; 2 Holec motors; 16,320 hp(m) (12 MW); 2 shafts; bow thruster
Speed, knots: 19
Range, n miles: 6,000 at 12 kt
Complement: 113 (13 officers) + 611 (41 officers) Marines
Military lift: 611 troops; 170 APCs or 33 MBTs, 8 LCVP Mk 3 or 4 LCU Mk 9 or 4 LCM 8

Guns: 2 Signaal Goalkeeper 30 mm ●, 8–12.7 mm MGs.
Countermeasures: Decoys: 4 SRBOC chaff launchers ●, Nixie torpedo decoy system.
ESM/ECM: Intercept and jammer.
Combat data systems: SATCOM ●, Link 11, MCCIS.
Weapons control: Signaal IRSCAN infra-red director.
Radars: Air/surface search: Signaal DA08 ●, E/F-band.
Surface search: Signaal Scout/Kelvin Hughes ARPA ●, I-band.
Navigation and CCA: 2 sets; I-band.

Helicopters: 6 NH90 ● or 4 Merlin/Sea King.

Programmes: Project definition for a joint design with Spain completed in December 1993. Contract signed with Royal Schelde 25 April 1994.

Structure: Facilities to transport a fully equipped Marine battalion with docking facilities for landing craft and a two spot helicopter flight deck with hangar space for six NH 90, 25 ton crane for disembarkation. Full hospital facilities. Built to commercial standards with military



ROTTERDAM

(Scale 1 : 1,500), Ian Sturton / 0534086



ROTTERDAM

7/2007, M Declerck / 1166627

command and control and NBCD facilities. Can carry up to 30 torpedoes and 300 sonobuoys.

Operational: Alternative employment as an SAR ship for environmental and disaster relief tasks.



ROTTERDAM

5/2007, J Brodie / 1166680



ROTTERDAM

6/2008*, Richard Scott / 1336280

1 JOHAN DE WITT CLASS (LPD)

Name	No	Builders	Laid down	Launched	Commissioned
JOHAN DE WITT	L 801	Royal Schelde, Vlissingen	18 June 2003	13 May 2006	30 Nov 2007

Displacement, tons: 16,680 full load
 Dimensions, feet (metres): 578.7 × 95.8 × 18.0
 (176.4 × 29.2 × 5.5)

Flight deck, feet (metres): 190.3 × 82.0 (58 × 25)

Main machinery: Diesel-electric; 4 Wärtsilä 12V26A diesel generators; 19,310 hp (14.4 MW) sustained; 2 Schottel SEP 5 podded propulsors; 14,750 hp (11 MW); 2 Schottel bow thrusters; 2,400 hp (1.8 MW)

Speed, knots: 19

Range, n miles: 10,000 at 12 kt

Complement: 146 (17 officers) + 555 Marines or 402 CJTF
 Military lift: 555 troops, 170 APCs or 33 MBTs, 4 LCVPs and 2 LCU or 2 LCM

Guns: 2 Signaal Goalkeeper 30 mm ● 4—12.7 mm MGs.
 Countermeasures: Decoys: 4 SRBOC chaff/IR launchers ●, Nixie torpedo decoy system.

ESM: ARGO Systems AR-900; intercept

Combat data systems: 1 CAMS/Force Vision CMS, 2 Raytheon SHF SATCOM ●, 2 Sursom UHF SATCOM, 1 AEHF SATCOM; Link 11 (16 and 22 planned), MCCIS

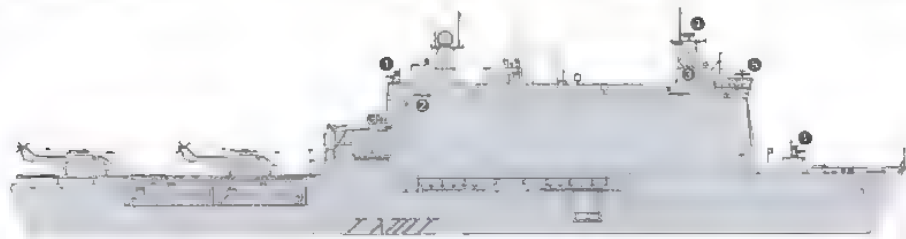
Radars: Air/surface search: Thales VARIANT 2 ●, G/I-band
 Surface search: Thales/Kelvin Hughes ARPA ●, I-band
 Navigation: 1 Consilium Selesmar; I-band, 2 Consilium Selesmar ●, E/F-band.

Helicopters: 6 NH 90 ● or 4 Merlin.

Programmes: Contract signed with Royal Schelde 3 May 2002. The hull was constructed at the Damen-owned Galati yard in Romania and arrived at the Schelde yard on 3 December 2004 for completion. To be fitted with command and control facilities for an afloat CJTF-HQ.

Structure: Facilities to transport a fully equipped Marine battalion with docking facilities for landing craft and a two spot helicopter flight deck with hangar space for six NH90. 25-ton crane for disembarkation. Full hospital facilities. Built to commercial standards with military command and control and NBCD facilities. Can carry up to 30 torpedoes and 300 sonobuoys. Based on the L 800 design but larger and wider. The flight deck is also stronger.

Operational: Alternative employment as an SAR ship for environmental and disaster relief tasks



JOHAN DE WITT

(Scale 1 : 1,500), Ian Sturton / 11/0084



JOHAN DE WITT

11/2007, J Brodie / 1135/60



JOHAN DE WITT

7/2007, Michael Nitz / 1166628



JOHAN DE WITT

7/2007, Michael Nitz / 1166628

554 Netherlands/Amphibious forces – Survey ships

6 LCVP MK 2 (LANDING CRAFT) (LCVP)

L 9530–L 9535

Displacement, tons: 13.6 full load
Dimensions, feet (metres): 52.5 × 14.4 × 4.3 (16.0 × 4.4 × 1.3)
Main machinery: 1 DAF diesel; 260 hp (194 kW); 1 Schottel swivelling prop
Complement: 3 plus 25 troops
Guns: 1–7.62 mm MG.
Raders: Furuno; I-band.

Comment: Built at the Naval Shipyard Den Helder and entered service 1984–86. GRP construction.



L 9534

7/2008*, Frank Findler / 1335261

4 + 8 LCVP MK V (LANDING CRAFT) (LCVP)

L 9565–L 9576

Displacement, tons: 23.7 full load
Dimensions, feet (metres): 50.8 × 14.0 × 5.25 (15.5 × 4.27 × 1.6)
Main machinery: 2 Volvo D9 575 diesels; 2 Ultrajet 410 waterjets
Speed, knots: 17. **Range, n miles:** 200 at 15 kt
Complement: 3
Military lift: 35 troops or 8.2 tons of vehicles and stores
Guns: 2–7.62 mm MGs.
Raders: Raymarine; I-band.

Comment: Contract signed on 13 December 2006 with Damen Shipyards Gorinchem for the construction and delivery of 12 Landing Craft Vehicle Personnel (LCVP). The craft are being built by Scheepswerf Visser in Den Helder. The first four are to be delivered by 2009 and the remaining eight by 2011.



L 9565

8/2008*, RNLN / 1335270

MINE WARFARE FORCES

10 ALKMAAR (TRIPARTITE) CLASS (MINEHUNTERS) (MHC)

Name	No	Laid down	Launched	Commissioned
HAARLEM	M 853	16 June 1981	6 May 1983	12 Jan 1984
MAASSLUIS	M 856	7 Nov 1982	6 May 1984	12 Dec 1984
MAKKUM	M 857	25 Feb 1983	27 Sep 1984	13 May 1985
MIDDELBURG	M 858	11 July 1983	23 Feb 1985	10 Dec 1986
HELLEVOETSLOUIS	M 859	12 Dec 1983	18 July 1985	20 Feb 1987
SCHIEDAM	M 860	6 May 1984	20 Dec 1985	9 July 1986
URK	M 861	1 Oct 1984	2 May 1986	10 Dec 1986
ZIERIKZEE	M 862	25 Feb 1985	4 Oct 1986	7 May 1987
VLAARDINGEN	M 863	6 May 1986	4 Aug 1988	15 Mar 1989
WILLEMSTAD	M 864	3 Oct 1986	27 Jan 1989	20 Sep 1989

Displacement, tons: 620 standard; 650 full load
Dimensions, feet (metres): 168.9 × 29.2 × 8.5 (51.5 × 8.9 × 2.6)
Main machinery: 1 Stork Wärtsilä A-RUB 215X-12 diesel; 1,860 hp(m) (1.36 MW) sustained, 1 shaft; LIPS cp prop; 2 active rudders; 2 motors; 240 hp(m) (179 kW); 2 bow thrusters
Speed, knots: 15 diesel; 7 electric
Range, n miles: 3,000 at 12 kt
Complement: 29–42 depending on task

Guns: 3–12.7 mm MGs.
Countermeasures: MCM, Atlas Seafox MIDS.
Combat data systems: Atlas Elektronik IMCMS SATCOM
Raders: Navigation: Consilium Selesmar MM 950; I-band.
Sonars: Thales TSM 2022 Mk III; hull-mounted; minehunting; 100, 200 and 400 kHz and Double Eagle Mk III Mod 1 variable depth sonar

Programmes: The two Indonesian ships ordered in 1985 took the place of M 863 and 864 whose laying down was delayed as a result. This class is the Netherlands' part of a tripartite co-operative plan with Belgium and France for GRP hulled minehunters. The whole class built by van der Giessen-de Noord. Ships were launched virtually ready for trials.

Modernisation: An extensive modernisation programme is underway at Den Helder between mid-2003 and 2010 to extend service life to 2020. Upgrades include a MCM command and control system, an Integrated Mine Countermeasures System (comprising hull-mounted and self-propelled variable-depth sonar (installed in Double Eagle Mk III Mod 1 RoV)) and a Mine-Identification and Disposal System (MIDS) based on the Atlas Seafox. Linked to the ship by a 3,000 m fibre optic tether, one variant (Seafox-C) is used for mine disposal and the other (Seafox-I) is used for identification. Modernisation of eight ships had been completed by late 2008. M 864 and M 857 are to be completed by 2010.

Structure: A 5 ton container can be shipped, stored for varying tasks—research; patrol; extended diving; drone control.

Operational: Endurance, 15 days. MHCs are sometimes assigned to coast guard operations.

Sales: Two of a modified design to Indonesia, completed March 1988. M 850–852 decommissioned in 2000. M 854 and M 855 decommissioned in 2003. All five have been sold to Latvia and transfer is to be completed by 2009.



WILLEMSTAD

6/2008*, Michael Wirtler / 1335263



MAASSLUIS

6/2008*, Michael Nitz / 1335278

SURVEY SHIPS

2 SNELLIUS CLASS (SURVEY SHIPS) (AGSH)

Name	No	Builders	Launched	Commissioned
SNELLIUS	A 802	Royal Schelde, Vlissingen	30 Apr 2003	11 Dec 2003
LUYMES	A 803	Royal Schelde, Vlissingen	22 Aug 2003	3 June 2004

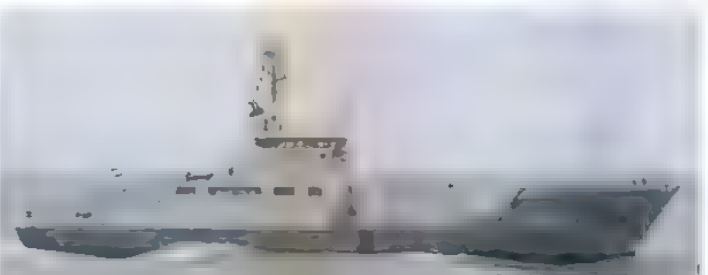
Displacement, tons: 1,875 full load
Dimensions, feet (metres): 246.1 × 43.0 × 13.1 (75 × 13.1 × 4)
Main machinery: Diesel electric; 3 diesel generators; 2,652 hp(m) (1.95 MW); 1 motor; 1,360 hp(m) (1 MW); 1 shaft; cp prop
Speed, knots: 12. **Range, n miles:** 4,300 at 12 kt
Complement: 13 plus 5 scientists plus 24 spare
Raders: Navigation, E/F and I-band.
Sonars: Multi and single beam; high frequency; active

Comment: Designed for military and civil hydrographic surveys. Both laid down on 25 June 2002.



SNELLIUS

7/2007, Michael Nitz / 1166642



LUYMES

7/2007, M Declercq / 1166643

TRAINING SHIPS

Notes: Two Dokkum class minesweepers are used by Sea Cadets.

1 TRAINING SHIP (AXL)

Name	No	Builders	Commissioned
VAN KINSBERGEN	A 902	Damen Shipyards	2 Nov 1999

Displacement, tons: 630 full load
Dimensions, feet (metres): 136.2 x 30.2 x 10.8 (41.5 x 9.2 x 3.3)
Main machinery: 2 Caterpillar 3508 B1-TA; 1,572 hp(m) (1.16 MW) sustained; 2 shafts; bow thruster, 272 hp(m) (200 kW)
Speed, knots: 13
Complement: 5 plus 3 instructors and 16 students
Radars: Navigation; Consilium Selesmar; I-band

Comment: Launched 30 August 1999. Has replaced *Zeefakkel* as the local training ship at Den Helder. Carries a 25 kt RIB.



VAN KINSBERGEN

6/2008*, Michael Nitz / 1335277

1 SAIL TRAINING SHIP (AXS)

Name	No	Builders	Commissioned
URANIA (ex-Tromp)	Y 8050	Haarlem	23 Apr 1938

Displacement, tons: 75 full load
Dimensions, feet (metres): 87.9 x 19.8 x 8.5 (26.8 x 6.05 x 2.7)
Main machinery: 1 Caterpillar diesel, 235 hp(m) (186 kW); 1 shaft
Speed, knots: 10 diesel, 12 sail
Complement: 3 + 14 trainees

Comment: Schooner used for training in seamanship. Refit 2001-04 included a new hull and aluminium masts.



URANIA

5/2008*, A A de Kruiff / 1335775

AUXILIARIES

Notes: (1) In addition to the vessels listed there are large numbers of non self-propelled craft with Y pennant numbers, and six harbour launches Y 8200-8203 and 9001-9002 (2) An Accommodation Ship *Thetis* (A 887) is based at Den Helder and provides harbour training for divers and underwater swimmers.

1 AMSTERDAM CLASS (FAST COMBAT SUPPORT SHIP) (AORH)

Name	No	Builders	Laid down	Launched	Commissioned
AMSTERDAM	A 836	Merwede, Hardinxveld, and Royal Schelde, Vlissingen	25 May 1992	11 Sep 1993	2 Sep 1995

Displacement, tons: 17,040 full load
Dimensions, feet (metres): 544.6 x 72.2 x 26.2 (166 x 22 x 8)
Main machinery: 2 Bazán/Burmeister & Wain 16V 40/45 diesels; 24,000 hp(m) (17.6 MW) sustained; 1 shaft; LIPS cp prop
Speed, knots: 20
Range, n miles: 13,440 at 20 kt
Complement: 160 (23 officers) including 24 aircrew plus 20 spare

Cargo capacity: 6,815 tons diesel; 1,660 tons aviation fuel; 290 tons solids
Guns: 2 Oerlikon 20 mm. 1 Signaal Goalkeeper 30 mm CIWS
Countermeasures: Decoys. 4 SRBOC Mk 36 chaff launchers. Nixie towed torpedo decoy.
Weapons control: Signaal IRSCAN infrared director.
Radars: Surface search and helo control: 2 Kelvin Hughes, F-band.

Helicopters: 3 Lynx or 3 SH-3D or 3 NH90 or 2 EH 101
Programmes: NP/SP AOR 90 replacement for *Poolster* ordered 14 October 1991. Hull built by Merwede, with fitting out by Royal Schelde from October 1993. A similar ship has been built for the Spanish Navy
Structure: Close co-operation between Dutch Navalbu and Spanish Bazán led to this design which has maintenance workshops as well as four abeam and one stern RAS/FAS station, and one Vertrep supply station. Built to merchant ship standards but with military NBC damage control.



AMSTERDAM

11/2007, Derek Fox / 1335265

1 SUBMARINE SUPPORT SHIP AND TORPEDO TENDER (ASL/YTT)

Name	No	Builders	Commissioned
MERCUUR	A 900	Koninklijke Maatschappij de Schelde	21 Aug 1987

Displacement, tons: 1,400 full load
Dimensions, feet (metres): 212.6 x 39.4 x 14.1 (64.8 x 12 x 4.3)
Main machinery: 2 Brons 61-20/27 diesels; 1,100 hp(m) (808 kW); 2 shafts; bow thruster
Speed, knots: 14
Complement: 39 (6 officers)
Torpedoes: 3-324 mm (triple) tubes. 1-21 in (533 mm) underwater tube.
Mines: Can lay mines.
Radars: Navigation; Racal Decca 1229, I-band.
Sonars: SQR-01; hull-mounted; passive search.

Comment: Replacement for previous ship of same name. Ordered 13 June 1984. Laid down 6 November 1985. Floated out 25 October 1986. Can launch training and research torpedoes above and below the waterline. Services, maintains and recovers torpedoes.



MERCUUR

6/2008*, Martin Mokrus / 1335266

1 MODIFIED POOLSTER CLASS (FAST COMBAT SUPPORT SHIP) (AORH)

Name	No	Builders	Laid down	Launched	Commissioned
ZUIDERKRUIS	A 832	Verolme Shipyards, Alblasserdam	16 July 1973	15 Oct 1974	27 June 1975

Displacement, tons: 16,900 full load
Measurement, tons: 10,000 dwt
Dimensions, feet (metres): 556 x 66.6 x 27.6 (169.6 x 20.3 x 8.4)
Main machinery: 2 Stork-Werkspoor TM410 diesels, 21,000 hp(m) (15.4 MW); 1 shaft; LIPS cp props
Speed, knots: 21
Complement: 266 (17 officers)
Cargo capacity: 10,300 tons including 8-9,000 tons oil fuel

Guns: 1 Signaal Goalkeeper 30 mm CIWS, 5 Oerlikon 20 mm
Countermeasures: Decoys: 2 Loral Hycor SRBOC Mk 36 fixed 6-barrelled launchers; IR flares and chaff
ESM: Ferranti AWARE-4; radar warning
Weapons control: Signaal IRSCAN
Radars: Air/surface search: Racal Decca 2459, F1-band.
Navigation: 2 Racal Decca TM 1226C, Signaal SCOUT; I-band

Helicopters: 1 Westland UH-14A Lynx.
Structure: Helicopter deck aft. Funnel heightened by 4.5 m (14.8 ft). 20 mm guns, containerised Goalkeeper CIWS and SATCOM, fitted for operational deployments
Operational: Capacity for five helicopters with A/S weapons. Two fuelling stations each side for underway replenishment. Planned to remain in commission until replaced by the Joint Support Ship in about 2014.
Sales: Poolster sold to Pakistan in June 1994.



ZUIDERKRUIS

9/2006, M Declerck / 1164979

0 + 1 JOINT LOGISTIC SUPPORT SHIP (AFSH)

Name	No	Laid down	Launched	Commissioned
-	-	2010	2013	2015

Displacement, tons: 27,000 full load
Dimensions, feet (metres): 672.5 x 98.4 x 21.3 (205.0 x 30.0 x 6.5)
Main machinery: Diesel-electric; 2 shafts; 2 bow thrusters; 1 stern thruster
Speed, knots: 20
Complement: 175 plus 300 embarked force
Guns: 2 Thales Goalkeeper 30 mm, 2-300 mm, 4-12.7 mm MGs.
Countermeasures: Decoys: To be announced.
Combat data systems: Link 11. Provision for Link 16/22 SATCOM
Electro-optic systems: Thales Gatekeeper; IR and TV.
Radars: Air/Surface search/navigation: Thales SMILE; E/F-band.
Surface search: Thales SEASTAR; I-band.
Navigation: I-band.
Helicopters: 6 NH 90 or 2 Chinooks.

Comment: A contract is expected in 2009 for the construction of a multipurpose ship capable of maritime logistic support, strategic sealift and support of land-based forces. Secondary tasks are to be disaster relief, humanitarian aid and civil operations. There are to be three replenishment (fuel, water, solids) stations (two abeam and one astern). The ship will have 2,000 lane metres of space for vehicles/containers, weapons for an infantry company and or 9,000 m³ of fuel and 125 m³/day water. Fitted with two 40 ton cranes and a number of cargo lifts, the ship is also to be capable of embarking two LCVPs. There are to be two vehicle ramps, one on the starboard side and one on the quarter. A medical support facility, workshops and a logistics support centre are also to be included. The flight deck has two spots for Chinook-sized helicopters.



PATRIA

7/2005, A A de Kruijt / 1151128

1 LOGISTIC SUPPORT VESSEL (AP)

Name	No	Builders	Laid down	Launched	Commissioned
PELIKAAN	A 804	Damen Shipyard	25 Aug 2005	7 Feb 2006	12 June 2006

Displacement, tons: 1,700 full load
Dimensions, feet (metres): 214.6 x 43.5 x 9.8 (65.4 x 13.25 x 3.0)
Main machinery: 2 Caterpillar 3516B TA diesels; 4,000 hp (3 MW); 2 shafts
Speed, knots: 14.5
Complement: 14 (2 officers) plus 15 extra plus 45 temporary
Guns: 4-12.7 mm MGs.
Radars: Navigation: I-band.

Comment: In January 2005 a contract was signed between the Royal Netherlands Navy and Damen Shipyards for the design and construction of a Logistic Support Vessel (LSV) to provide sealift for the RNLMC in the Caribbean. The ship has replaced the old vessel of the same name. Following construction of the hull at the Damen-owned Galatz shipyard in Romania, the ship was completed at Gonnchem. A large cargo area is located at main deck level and can accommodate six rigid raiding craft, four trucks and a range of support equipment. Loading and unloading is facilitated by a deck crane.



JOINT SUPPORT SHIP (artist's impression)

8/2007, Royal Netherlands Navy / 1165650

1 TANKER (AOTL)

Name	No	Builders	Commissioned
PATRIA	Y 8780	De Hoop, Schiedam	9 June 1998

Displacement, tons: 681 full load
Dimensions, feet (metres): 145.3 x 22.4 x 8.9 (44.4 x 6.9 x 2.8)
Main machinery: 1 Volvo Penta TADM 122A; 381 hp(m) (280 kW); 1 shaft
Speed, knots: 9.5
Complement: 2
Radars: Navigation: Furuno RHRS-2002R, I-band.



PELIKAAN

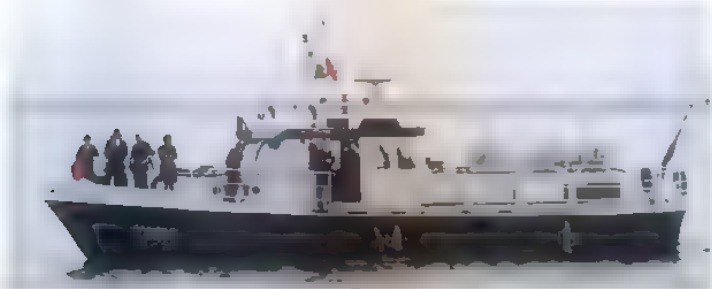
6/2006, I J Plokker / 1040762

1 SUPPORT CRAFT (YFL)

Name	No	Builders	Commissioned
NIEUWEDIJEP	Y 8005	Akerboom, Leiden	Feb 1972

Displacement, tons: 27 full load
 Dimensions, feet (metres): 58.4 x 14.1 x 4.9 (17.8 x 4.3 x 1.5)
 Main machinery: 2 Volvo Penta diesels; 600 hp(m) (441 kW); 2 shafts
 Speed, knots: 10
 Complement: 4

Comment: Acquired by the Navy in February 1992 as a passenger craft



NIEUWEDIJEP 7/2008*, Frank Findler / 1335764

4 CERBERUS CLASS (DIVING TENDERS) (YDT)

Name	No	Builders	Commissioned
CERBERUS	A 851	Visser, Den Helder	28 Feb 1992
ARGUS	A 852	Visser, Den Helder	2 June 1992
NAUTILUS	A 853	Visser, Den Helder	18 Sep 1992
HYDRA	A 854	Visser, Den Helder	20 Nov 1992

Displacement, tons: 223 full load
 Dimensions, feet (metres): 89.9 x 27.9 x 4.9 (27.4 x 8.5 x 1.5)
 Main machinery: 2 Volvo Penta TAMD122A diesels, 760 hp(m) (560 kW); 2 shafts
 Speed, knots: 12 Range, n miles: 750 at 12 kt
 Complement: 8 (2 officers)
 Radars: Navigation Racal Decca; I-band.

Comment: Ordered 29 November 1990. Capable of maintaining 10 kt in Sea State 3. Can handle a 2 ton load at 4 m from the ship's side. Hydra lengthened by 10.5 m to provide more accommodation and recommissioned on 13 March 1998.



NAUTILUS 10/2007, A A de Kruiff / 1166651



HYDRA 6/2008*, A A de Kruiff / 1335275

TUGS

7 HARBOUR TUGS (YTL)

BREEZAND Y 8018	SHELDE Y 8055	MALZWIN Y 8057	WESTWAL Y 8059
BALGZAND Y 8019	WIERBALG Y 8056	ZUIDWAL Y 8058	

Comment: Breezand completed December 1989, Balgzand January 1990. The others are smaller pusher tugs and were completed December 1986 to February 1987. All built by Delta Shipyard.



MALZWIN 7/2008*, Frank Findler / 1335268

5 COASTAL TUGS (YTM)

Name	No	Builders	Commissioned
LINGE	A 874	Delta SY, Sliedrecht	20 Feb 1987
REGGE	A 875	Delta SY, Sliedrecht	6 May 1987
HUNZE	A 876	Delta SY, Sliedrecht	20 Oct 1987
ROTTE	A 877	Delta SY, Sliedrecht	20 Oct 1987
GOUWE	A 878	Delta SY, Sliedrecht	21 Feb 1997

Displacement, tons: 380 full load
 Dimensions, feet (metres): 90.2 x 27.2 x 8.9 (27.5 x 8.3 x 2.7)
 Main machinery: 2 Stork-Werkspoor or 2 Caterpillar (A 878) diesels; 1,600 hp(m) (1.18 MW); 2 Kort nozzle props
 Speed, knots: 11
 Complement: 7
 Radars: Racal Decca, I-band

Comment: Order for first four placed in 1986. Based at Den Helder. A fifth of class was ordered in June 1996 to replace Westgat.



ROTTE 7/2008*, Frank Findler / 1335269

ARMY

Notes: Six craft are operated by the Corps of Military Police: RV 160, RV 161, RV 162, RV 168, RV 169 and RV 180



RV 162 7/2008*, Michael Winter / 1335267

1 DIVING VESSEL (YDT)

RV 50
 Dimensions, feet (metres): 137.3 x 31.2 x 4.9 (41.8 x 9.5 x 1.5)
 Main machinery: 2 diesels; 476 hp(m) (350 kW); 2 shafts; 1 bow thruster
 Speed, knots: 8
 Complement: 21
 Radars: Navigation: JRC JMA 606; I-band.

Comment: Built by Vervako as a diving training ship and commissioned 3 November 1989. There is a moonpool aft with a 50 m diving bell, and a decompression chamber.



RV 50 10/2004, Bram Plokker / 1047865

COAST GUARD (KUSTWACHT)

Notes: (1) On 26 February 1987, many of the maritime services were merged to form a Coast Guard with its own distinctive colours. Included were assorted craft of the Ministries that signed the Coast Guard Agreement. From 1 June 1995 the operational command of the Coast Guard became the responsibility of the Royal Netherlands Navy. On 1 January 2007 the Coast Guard became an independent civil organisation under the Ministry of Defence.

(2) The following ships, craft and aircraft are permanently available for Coast Guard duties: *Waker*, *Visarend*, *Zocarend*, *Barend Biesheuvel* and two Dornier-228 surveillance.

(3) In addition, the Coast Guard can call upon the following ships and craft:

- Ministry of Transport and Public Works: *Frans Naerabout*, *Rotterdam*, *Terschelling*, *Nieuwediep*, *Schuitgat*, *Vlietstroom*, *Waddenzee*, *Zirfaes*, *Jan van Gent*, *Stormmeeuw*.
- Ministry of Defence: Minehunters of the Alkmaar class and military police vessel R-180.
- Ministry of Home Affairs: P 41, P 42, P 44, P 48, P 49.
- Royal Netherlands Sea-Rescue organisation: 65 lifeboats in 42 stations.



WAKER

6/2008*, MOD Netherlands / 1335774



VISAREND (Finance)

7/2006, A A de Krulff / 1164974



BAREND BIESHEUVEL (Agriculture)

6/2002, Imtech Marine and Offshore / 0534130



Do 228

6/2008*, MOD Netherlands / 1335273

COAST GUARD (ANTILLES AND ARUBA)

Notes: (1) Netherlands Antilles and Aruba Coast Guard (NAACG) formed 23 January 1996. Headquarters is co-located with the RNLN at Parera, Curaçao. There are three sub-stations at Curaçao, Aruba and St Maarten.

(2) Twelve 12 m Super RHIB, capable of 40 kt, have been procured for counter-drug operations. In 2004, two were stationed at Aruba, two at Curaçao and one at St Maarten. Four followed in 2005 and the final three in 2006.

(3) Maritime patrol duties in the Caribbean are undertaken by two de Havilland DASH 8 aircraft and one Eurocopter AS 355 helicopter.



SUPER RHIB

6/2008*, RNLN / 1335777



DASH 8

9/2008*, Larry Every / 1335271

3 STAN PATROL 4100 CUTTERS (PB)

Name	No	Builders	Commissioned
JAGUAR	P 810	Damen Shipyards	2 Nov 1998
PANTER	P 811	Damen Shipyards	18 Jan 1999
POEMA	P 812	Damen Shipyards	19 Mar 1999

Displacement, tons: 205 full load

Dimensions, feet (metres): 140.4 x 22.3 x 8.2 (42.8 x 6.8 x 2.5)

Main machinery: 2 Caterpillar 3516B diesels; 5,685 hp(m) (4.18 MW); 2 shafts; LIPS cp props, bow thruster

Speed, knots: 26

Range, n miles: 2,000 at 12 kt

Complement: 11 plus 6 police

Guns: 1—12.7 mm MG

Radars: Surface search: Signal Scout; I-band

Navigation: Kelvin Hughes; I-band

Comment: Ordered from Damen shipyards in March 1997 for delivery in late 1998. Equipped with surveillance passive sensors. The cutters have a gas citadel. A 30 kt RIB is launched through a transom door. Based at Willemstad, Curaçao.



JAGUAR

6/2006, M Declercq / 1164973

New Zealand



Country Overview

New Zealand is an independent island country situated in the south Pacific Ocean with which it has a 8,170 n mile coastline. The British monarch, represented by a governor-general, is head of state. Situated about 865 n miles south-east of Australia, it comprises two main islands, North and South islands, which are separated by the Cook Strait. In addition there are numerous smaller islands including Stewart Island and the Auckland Islands. The overall area is 104,454 square miles. Overseas territories include Ross Dependency (Antarctica) and Tokelau (north of Samoa). In addition, the Cook Islands and Niue are self-governing territories in free association. The capital is Wellington and largest city is Auckland; both are ports located on North Island. Other principal ports are Tauranga, Lyttelton (near Christchurch), and Port Chalmers (Dunedin). Territorial seas (12 n miles) are claimed. An EEZ (200 n mile) is also claimed.

Headquarters Appointments

Chief of Navy:
Rear Admiral D I Ledson, ONZM
Deputy Chief of Navy:
Commodore B Pepperell, MBE

Headquarters Appointments — continued

Commander Joint Forces:
Major General R R Jones
Maritime Component Commander:
Commodore A J Parr, MVO

Diplomatic Representation

Defence Adviser, Washington:
Commodore P J Williams
Naval Adviser, London:
Commander C J Hoey
Naval Adviser, Canberra:
Commander K A Robb
Naval Adviser, Washington:
Commander M R Worstfold

Personnel

2009: 2,014 regulars and 308 reserves

Bases

Headquarters Joint Forces New Zealand (established 1 July 2001)

Naval Staff: HMNZS Wakefield (Wellington)
HMNZS Philomet (Auckland)

RNZNVR Divisions

Auckland: HMNZS Ngapona
Wellington: HMNZS Ophert
Christchurch: HMNZS Pegasus
Dunedin: HMNZS Toroa

Prefix to Ships' Names

HMNZS

DELETIONS

Patrol Forces

2007 *Moa, Kiwi, Wakakura, Hinau*

FRIGATES

2 ANZAC (MEKO 200) CLASS (FFHM)

Name	No	Builders	Laid down	Launched	Commissioned
TE KAHA	F 77	Transfield Defence Systems, Williamstown	19 Sep 1994	22 July 1995	22 July 1997
TE MANA	F 111	Tenix Defence Systems, Williamstown	28 June 1996	10 May 1997	10 Dec 1999

Displacement, tons: 3,600 full load
Dimensions, feet (metres): 387.1 oa, 357.6 wL x 48.6 x 14.3 (118; 109 x 14.8 x 4.4)

Main machinery: CODOG; 1 GE LM 2500 gas turbine; 30,172 hp (22.5 MW) sustained; 2 MTU 12V 1163 TB83 diesels; 8,840 hp(m) (6.5 MW) sustained; 2 shafts; cp props
Speed, knots: 27 **Range, n miles:** 6,000 at 18 kt
Complement: 163

Missiles: SAM: Raytheon Sea Sparrow RIM-7P; Lockheed Martin Sea Sparrow Mk 41 Mod 5 octuple cell vertical launcher; semi-active radar homing to 16 km (8.5 n miles) at 2.5 Mach, warhead 38 kg. ESSM in due course.

Guns: 1 FMC 5 in (127 mm)/54 Mk 45 Mod 2; 20 rds/min to 23 km (12.6 n miles); weight of shell 32 kg. 1 GE/GD 20 mm Vulcan Phalanx 6 barrelled Mk 15 Block 1 Baseline 2B; 4,500 rds/min combined to 1.5 km. 2 Rafael Mini-Typhoon 12.7 mm remote-controlled guns.

Torpedoes: 6—324 mm US Mk 32 Mod 5 (2 triple) tubes; Mk 46 Mod 2; anti-submarine; active/passive homing to 11 km (5.9 n miles) at 40 kt; warhead 44 kg.

Countermeasures: Decoys: 2 Loral Hycor Mk 36 Mod 1 chaff launchers; SLO-25A torpedo decoy system.
ESM: DASA Maigret; Racal Thorn Sceptre A, intercept (to be replaced by Racal Centaur in 2005).

Combat data systems: CelsiusTech 9LV 453 Mk 3. Link 11; GCCS-M

Weapons control: CelsiusTech 9LV 453 optronic director; Raytheon CWI Mk 73 Mod 1 (for SAM)

Radars: Air search: Raytheon SPS-49(V)8; C/D-band. Air/surface search: CelsiusTech 9LV 453 TIR (Ericsson Tx/Rx); G-band

Navigation: Atlas Elektronik 9600 ARPA; I-band. Fire control: CelsiusTech 9LV 453; G-band.

IFF: Cossor Mk XII

Sonars: Thomson Sintra Spherion B Mod 5; hull-mounted; active search and attack; medium frequency.

Helicopters: 1 SH-2G (NZ) Super Seasprite

Programmes: Contract signed with Amec consortium on 19 November 1989 to build eight Blohm + Voss designed MEKO 200 ANZ frigates for Australia and two



TE KAHA

(Scale 1 : 1,200), Ian Sturton / 0081317



TE MANA

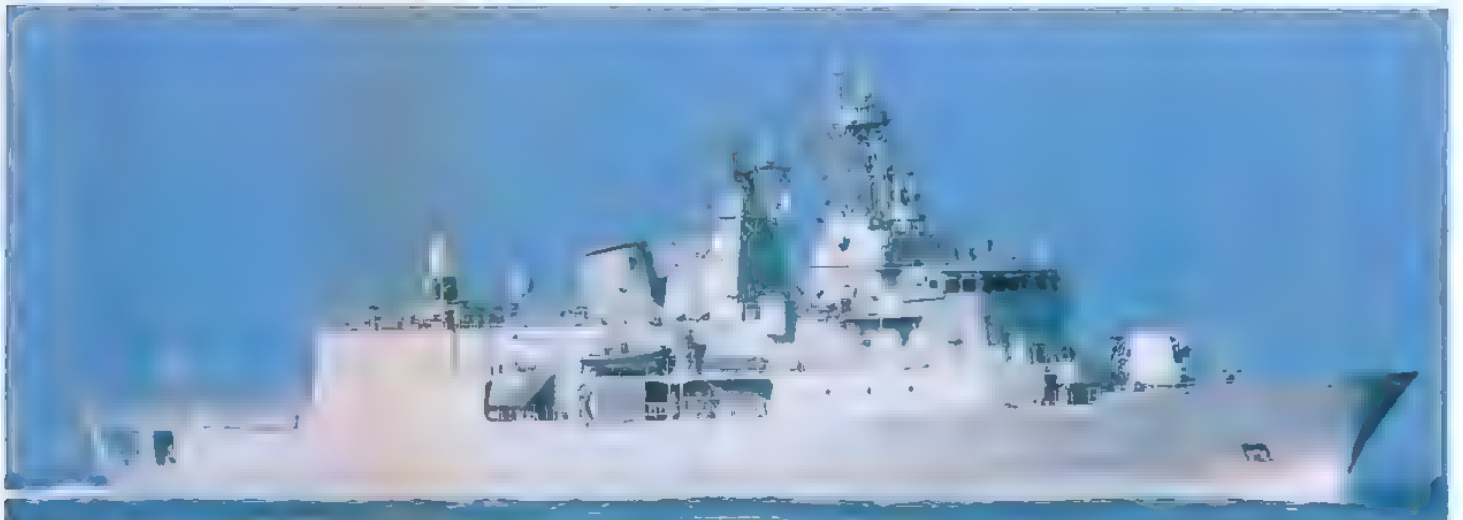
4/2005, Chris Sattler / 1133137

for New Zealand. Options on a third of class were turned down in November 1998. Modules constructed at Newcastle, Australia and Whangarei, New Zealand, and shipped to Melbourne for final assembly. The two New Zealand ships are the second and fourth of the class. First steel cut on *Te Kaha* on 11 February 1993. *Te Kaha* means Prowess. *Te Mana* means Power.

Modernisation: The ANZAC Ship will undergo a series of modifications during the period 2009–2014. In Phase I, the CIWS is being upgraded to Block 1B status. Concurrently, the diesel engines are to be replaced with an updated version and a new integrated propulsion management system is to be fitted. Other platform

modifications are being undertaken to enhance services and stability margins. Phase II is to be an upgrade of weapon systems and sensors. The combat data system is to be replaced and the point-defence missile is to be upgraded. There are also to be improvements to ISR systems and measures to improve interoperability.

Structure: The ships include space and weight provision for considerable enhancement including canister-launched SSM, an additional fire-control channel and ECM Signature suppression features are incorporated in the design. All-steel construction. Fin stabilisers, McTaggart Scott Trigon 3 helicopter traversing system. Two RHIBs are carried.



TE KAHA

9/2006, Ships of the World / 1158744

SHIPBORNE AIRCRAFT

Numbers/Type: 5 Kaman SH-2G (NZ) Super Seasprite.

Operational speed: 130 kt (241 km/h).

Service ceiling: 22,500 ft (6,860 m).

Range: 400 n miles (740 km).

Role/Weapon systems: Last of five delivered in February 2003. Sensors: Litton ASN 150 C2; Telephonics APS 143 radar; AAG 32 Safire IRDS; ALR 100 ESM, ALE 47 ECM. Weapons: ASW; 2 Mk 46 torpedoes or Mk 11 depth bomb, ASV; 2 Hughes Maverick AGM 85D (NZ); 1–7.62 mm M60 MG.



SUPER SEASPRITE

5/2003, A Sharma / 0567466

Numbers/Type: 8 NH Industries NH 90.

Operational speed: 165 kt (305 km/h).

Service ceiling: 9,720 ft (2,960 m).

Range: 430 n miles (796 km).

Role/Weapon systems: Eight helicopters, similar to the MH 90s ordered by Australia, planned to enter service between 2010 and 2013. Four will be able to embark in Canterbury. Sensors: Likely to include NR-90 radar, FLIR. Flash dipping sonar. Weapons: Mu 90 torpedoes and possible ASM.



NH 90

4/2006, NH Industries / 0062373

LAND-BASED MARITIME AIRCRAFT

Numbers/Type: 6 Lockheed P-3K2 Orion.

Operational speed: 405 kt (750 km/h).

Service ceiling: 30,000 ft (9,146 m).

Range: 4,000 n miles (7,410 km).

Role/Weapon systems: Purchased in 1966. Long-range surveillance and reconnaissance patrol; updated 1984. Modernisation of airframes (Project Kestrel) undertaken 1995–2001 for 20 year extension. Upgrade project in progress to modernise mission avionics, sensors and communication/navigation systems. The upgrade is to include an Elta EL/M-2022(V)3 radar and Wescam MX-20 FLIR. Contract signed with L-3 communications on 4 October 2004. The first upgraded aircraft is to be delivered in 2008 and programme is to be completed by 2010. Operated by RNZAF. Sensors: APS-134 radar, ASQ-10 MAD, acoustic processor, AYK 14 computers, IFF, ESM, SSQ 53/62 sonobuoys. Weapons: ASW; eight Mk 46 torpedoes, Mk 80 series depth bombs.



P-3K2

7/2004, Paul Jackson / 0589788

PATROL FORCES

1 + 1 PROTECTOR CLASS (OFFSHORE PATROL VESSELS) (PBO)

Name	No	Builders	Laid down	Launched	Commissioned
OTAGO	P 148	Tenix Defence Systems, Williamstown	16 Dec 2005	18 Nov 2006	2009
WELLINGTON	P 55	Tenix Defence Systems, Williamstown	2 June 2007	27 Oct 2007	2009

Displacement, tons: 1,600

Dimensions, feet (metres): 278.9 × 45.9 × 11.8 (86.0 × 14.0 × 3.6)

Main machinery: 2 MAN Burmeister & Wain 12 RK 280 diesels; 2 shafts, cp props

Speed, knots: 22

Range, n miles: 6,000 at 15 kt

Complement: 35 plus 44 spare

Guns: 1 MSI DS 25M Autsig 25 mm, 2 -12.7 mm MGs.

Radars: Navigation: I band.

Helicopters: 1 SH-2G Super Seasprite

Programmes: Following selection as 'Project Protector' prime contractor in April 2004, Tenix Defence awarded contract for final design and construction on 28 July 2004. The ships are to meet patrol and surveillance requirements in support of civil agencies in New Zealand's EEZ and the Southern Ocean and to assist South Pacific states to patrol their EEZs. Manufacturing of modules started at Tenix's Whangarei Shipyard in New Zealand in February 2005. Final assembly is being undertaken at Williamstown, Victoria.

Structure: The design is a lengthened, helicopter-capable variant of a Kvaerner Masa Manne design in service in Ireland and Mauritius. They are to be ice-strengthened.



OTAGO

6/2008, RNZN / 1335399

2 + 2 LAKE CLASS (INSHORE PATROL VESSELS) (PBO)

Name	No	Builders	Laid down	Launched	Commissioned
ROTOITI	P 3568	Tenix Defence Systems, Williamstown	3 Mar 2006	4 Aug 2007	2009
HAWEA	P 3571	Tenix Defence Systems, Williamstown	13 Dec 2006	15 Dec 2007	2009
PUKAKI	P 3568	Tenix Defence Systems, Williamstown	21 June 2007	10 May 2008	2009
TAUPO	P 3570	Tenix Defence Systems, Williamstown	14 Dec 2007	23 Aug 2008	2009

Displacement, tons: 340

Dimensions, feet (metres): 180.4 × 29.5 × 9.5 (55.0 × 9.0 × 2.9)

Main machinery: 2 MAN Burmeister & Wain 12VP 185 diesels; 2 shafts; cp props

Speed knots: 25

Range, n miles: 3,000 at 15 kt

Complement: 20 plus 16 spare

Guns: 3–12.7 mm MGs

Radars: Navigation: I-band.

Programmes: Following selection as 'Project Protector' prime contractor in April 2004, Tenix Defence awarded contract for final design and construction on 29 July 2004. The ships are to operate in support of civil agencies to meet patrol and surveillance requirements in New Zealand's inshore zone (out to 24 n miles), particularly around North Island, Marlborough Sounds and Tasman Bay. Manufacturing started at Tenix's Whangarei Shipyard in New Zealand in early 2005.

Structure: The Tenix design is based on the 56 m San Juan class built for the Philippines Coast Guard. Capable of operating in up to Sea State 5, they will be able to launch and recover rigid hull inflatable boats in up to Sea State 4.



HAWEA

5/2008, RNZN / 1335398

SURVEY AND RESEARCH SHIPS

1 STALWART CLASS (AGS)

Name	No	Builders	Commissioned
RESOLUTION (ex-Tenacious)	A 14 (ex-TAGOS 17)	Halter Marine, Moss Point	29 Sep 1999

Displacement, tons: 2,262 full load
Dimensions, feet (metres): 224 × 43 × 18.7 (68.3 × 13.1 × 5.7)
Main machinery: Diesel-electric; 4 Caterpillar D 398B diesel generators; 3,200 hp (2.39 MW); 2 motors; 1,600 hp (1.2 MW); 2 shafts; bow thruster; 550 hp (410 kW)
Speed, knots: 11. **Range, n miles:** 19,000 at 11 kt
Complement: 49
Radars: Navigation: 2 Raytheon; I-band.

Comment: Laid up by USN in 1995 and acquired in September 1996. Reactivated in October 1996 and commissioned into RNZN 13 February 1997 for passage to New Zealand. Conversion commenced mid-1997 to suit the ship for hydrography with secondary role of acoustic research for about three months per year, replacing both *Tui* and *Monowai*. Second stage of conversion to fit Atlas Elektronik MD 2/30 multibeam echo-sounder, completed in January 1999. A fixed dome increased the ship's draught. A DGPS and a towed array fitted for acoustic research. A new survey boat with Atlas Elektronik MD20 multibeam echo sounder was embarked in 2001. The ship has been repainted grey.



RESOLUTION 3/2006, Chris Sattler / 1158701

1 SURVEY MOTOR BOAT (YGS)

ADVENTURE A 05

Displacement, tons: 9
Dimensions, feet (metres): 31.8 × 11.5 × 2.3 (9.7 × 3.5 × 0.7)
Main machinery: 2 Volvo-Penta AD31P/DP diesels, 300 hp (223 kW)
Speed, knots: 25 **Range, n miles:** 1,000 at 10 kt
Complement: 3
Radars: Navigation: I-band.

Comment: Aluminium catamaran craft built in Kumeu, North Auckland, in 1998. While usually operated as a tender from *Resolution*, she is capable of independent inshore hydrographic operations and short coastal passages. She is fitted with an echo sounder whose data can be integrated with the multibeam system fitted in *Resolution*.



ADVENTURE 4/2006, Chris Sattler / 1305309

AUXILIARIES

Notes: (1) Options for the replacement of *Endeavour* are under consideration. The successor ship is likely to be a joint-support vessel with a broader range of capabilities. Commonality with *Canterbury* is likely to be a key factor.
 (2) In addition to vessels listed below there are three 12 m sail training craft used for seamanship training: *Paea II*, *Mako II*, *Manga II* (sail nos 6911-6913).



PAEA 2002, RNZN 0525919

2 LANDING CRAFT (LCM)

LC 01 LC 02

Displacement, tons: 55 standard; 100 full load
Dimensions, feet (metres): 75.5 × 21.0 × ? (23.0 × 6.4 × ?)
Main machinery: 2 Scania D19 44M diesels; 630 hp (470 kW); 2 Veth Z-drive azimuth thrusters
Speed, knots: 9
Range, n miles: 250 at 9 kt
Complement: 3
Military lift: 2 armoured fighting vehicles (NZLAV)

Comment: Designed by Iv-Nevesbu b.v. (Papendrecht, Netherlands) and constructed by Zwijnenburg, Rotterdam, the craft are to be carried in *Canterbury*. Operable in Sea State 3, onload and offload can be achieved (empty) using *Canterbury*'s 60 tonne crane or alternatively via the stern ramp. The LCMs are designed for beach landings and are fitted with a ballasting system to allow the safe onload and offload of cargo. They are also fitted with a keedge system. The stern ramp of *Canterbury* has 'marnage blocks' to facilitate correct alignment on the ramp.



LC 02 6/2007, RNZN / 1170065

1 REPLENISHMENT TANKER (AORH)

Name	No	Builders	Launched	Commissioned
ENDEAVOUR	A 11	Hyundai, South Korea	14 Aug 1987	6 Apr 1988

Displacement, tons: 12,390 full load
Dimensions, feet (metres): 453.1 × 80 × 23 (138.1 × 18.4 × 7.3)
Main machinery: 1 MAN-Burmeister & Wain 12V32/36 diesel; 5,780 hp(m) (4.25 MW) sustained; 1 shaft; LIPS cp prop
Speed, knots: 13.5
Range, n miles: 8,000 at 13.5 kt
Complement: 49 (10 officers)
Cargo capacity: 5,500 tons diesel; 100 tons Avcat; 20 containers
Radars: Navigation: Racal Decca 1290A/9; ARPA 1690S; I-band.
Helicopters: Platform only.

Comment: Ordered July 1986. Laid down 10 April 1987. Completion delayed by engine problems but arrived in New Zealand in May 1988. Two abeam RAS rigs (one QRC, one Probe). Fitted with Inmarsat. Standard merchant design modified on building to provide a relatively inexpensive replenishment tanker. Modifications are to be undertaken in 2009 to convert the ship's tanks to meet double-skinning requirements demanded by MARPOL regulations. This will extend the ship's life to 2013.



ENDEAVOUR 7/2007, Chris Sattler / 1169573

1 MOA CLASS (TRAINING SHIP) (AXL)

Name	No	Builders	Commissioned
KAHU (ex-Manawanui)	A 04 (ex-A 08)	Whangarei Engineering and Construction Co Ltd	28 May 1979

Displacement, tons: 91.5 standard; 105 full load
Dimensions, feet (metres): 88 × 20 × 7.2 (26.8 × 6.1 × 2.2)
Main machinery: 2 Cummins KT-1150M diesels; 710 hp (530 kW); 2 shafts
Speed, knots: 12
Range, n miles: 1,000 at 11 kt
Complement: 16
Radars: Navigation: Racal Decca Bridgemaster 2000; I-band.

Comment: Same hull design as former Patrol Craft. Now used for navigation and seamanship training and as a standby diving tender.



KAHU 3/2006, Chris Sattler / 1158599

1 DIVING TENDER (YDT)

Name	No	Builders	Commissioned
MANAWANUI (ex-Star Perseus)	A 09	Cochrane, Selby	May 1979

Displacement, tons: 911 full load
Dimensions, feet (metres): 143 × 31.2 × 10.5 (43.6 × 9.5 × 3.2)
Main machinery: 2 Caterpillar D 379TA diesels; 1,130 hp (843 kW); 2 shafts; cp props; bow thruster
Speed, knots: 10.7. **Range, n miles:** 5,000 at 10 kt
Complement: 24 (2 officers)
Radars: Surface search. Racal Decca Bridgemaster 2000, I-band.
Sonars: Klein 595Tracpoint; side scan; active high frequency.

Comment: North Sea Oil Rig Diving support vessel commissioned into the RNZN on 5 April 1988. Completed conversion in December 1988 and has replaced the previous ship of the same name which proved to be too small for the role. Equipment includes two Phantom HDX remote-controlled submersibles, a decompression chamber (to 250 ft), wet diving bell and 13 ton crane. Fitted with Inmarsat, MCAIS data system, side scan sonar and GPS fitted in 1995. More modifications are planned to enable the ship to do some of the work previously undertaken by *Tui*. This includes a stern gantry and general purpose winches for research including MCM. Used to support RAN submarine trials in 1996/97



MANAWANUI

10/2006, Chris Sattler / 1158734

1 CANTERBURY CLASS (MULTIROLE VESSEL) (AKRH/AX)

Name	No	Builders	Laid down	Launched	Commissioned
CANTERBURY	L 421	Merwede Shipyard, Netherlands	6 Sep 2005	11 Feb 2006	12 June 2007

Displacement, tons: 8,870
Dimensions, feet (metres): 430.4 × 76.8 × 18.4 (131.2 × 23.4 × 5.6)
Main machinery: CODAGE, 2 Wärtsilä 9L32 diesels; 12,000 hp (9 MW); 2 shafts, cp props
Speed, knots: 19
Range, miles: 6,000 at 15 kt
Complement: 53 + accommodation for 250 troops and 47 additional
Guns: 1 MSI DS 25M Autsig 25 mm, 2—12.7 mm MGs.
Military lift: 1 infantry company including Light Armoured Vehicles and equipment. 2 LCM.
Radars: Navigation: 2 I-band
Helicopters: 2 SH-2G Super Seasprites.

Programmes: Following selection as 'Project Protector' prime contractor in April 2004, Tenix Defence awarded contract for final design and construction on 29 July 2004. The ship was constructed in the Netherlands and fitted out by Tenix at Williamstown, Victoria.

Structure: With a design based on a commercial roll-on/roll-off vessel, the ship is built to comply with Lloyds Register of Shipping rules. The ship is ice-strengthened for operations in the Southern Ocean and the Ross Sea. Staff facilities are incorporated. Following an independent review to investigate problems arising during the introduction of the ship into service, remedial work is required to improve safety and stability in high seas states.



CANTERBURY

9/2007, Chris Sattler / 1166624

Operational: The ship provides a limited tactical sealift capacity for disaster relief, humanitarian relief operations, peace support operations, military support

activities and development assistance support. The ship is also used as the principal sea training platform for the RNZN.



CANTERBURY

9/2007, Chris Sattler / 1166639

Nicaragua

FUERZA NAVAL-EJERCITO DE NICARAGUA

Country Overview

The Republic of Nicaragua is the largest Central American republic. After many years of civil war, a 1989 peace plan introduced a more stable period of democratic government. With an area of 50,893 square miles, it is situated between Honduras to the north and Costa Rica to the south it has a 381 n mile coastline with the Caribbean and a 225 n mile coastline with the Pacific Ocean. Lake Nicaragua (Cocibolca), the largest lake in central America, and Lake

Managua (Xolotlán) are connected by the river Tipitapa. The capital and largest city is Managua while Corinto, on the Pacific coast, is the principal port. Nicaragua has not claimed an EEZ but is one of a few coastal states which claims a 200 n mile territorial sea.

Headquarters Appointments

Head of Navy:

Rear Admiral Juan Santiago Estrada García

Personnel

2009: 910 officers and men

Pacific: Corinto (HQ), San Juan del Sur, Puerto Sandino y Potosi
 Atlantic: Bluefields (HQ), El Bluff, Puerto Cabezas, Corn Island, San Juan del Norte

PATROL FORCES

Notes: There are reported plans to procure four Damen Stan Patrol 2606 patrol craft.

3 DABUR CLASS (PB)

GC 201 GC 202 GC 205

Displacement, tons: 39 full load
 Dimensions, feet (metres): 64.9 x 18 x 5.8 (19.8 x 5.5 x 1.8);
 Main machinery: 2 Caterpillar 3406 diesels; 1,500 hp (1.1 MW) sustained; 2 shafts
 Speed, knots: 20
 Range, n miles: 450 at 13 kt
 Complement: 12
 Guns: 2—12.7 mm MGs.
 Radars: Surface search, Furuno 2115, I-band.

Comment: GC 201, 203 and 205 were acquired from Israel in May 1996. All three craft re-engined GC 205 in 2004, GC 202 in 2006 and GC 201 in 2008. All are operational on the Atlantic coast.



GC 201 4/2008*, Nicaraguan Navy / 1335288

4 RODMAN 101 CLASS (PB)

GP 401-404

Displacement, tons: 63 full load
 Dimensions, feet (metres): 98.4 x 19.4 x 4.3 (30.0 x 5.9 x 1.3)
 Main machinery: 2 Caterpillar 3412C diesels; 2,800 hp (2.06 MW); 2 Hamilton waterjets
 Speed, knots: 30
 Range, n miles: 800 at 12 kt
 Complement: 11
 Radars: Navigation: Furuno FR 2115; I-band.

Comment: GRP hull. Built by Rodman, Vigo and donated by the Spanish government in 2007. Employed on fishery protection duties and operated by the navy. Based on both coasts

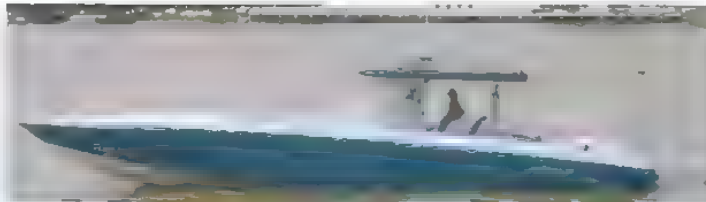


GP 404 6/2008*, Nicaraguan Navy / 1335289

4 INTERCEPTOR CRAFT (PBF)

Displacement, tons: To be announced
 Dimensions, feet (metres): 44.0 x 9.0 x 3.0 (13.4 x 2.75 x 0.9)
 Main machinery: 3 Yanmar diesels; 945 hp (704 kW); Bravo X drives
 Speed, knots: 60
 Range, n miles: 600 at 25 kt
 Complement: 6

Comment: Manufactured by Nor-Tech, Fort Myers, FL. Composite and glass-fibre hull with V-bottomed hull. Donated by the US Southern Command in 2007. Employed on counter drugs, arms trafficking and illegal immigration duties.



INTERCEPTOR CRAFT 6/2007, US Southern Command / 1167968

19 ASSAULT AND RIVER CRAFT (PBF)

Comment: There are approximately 21 Colombian-built Eduardoño class 10 to 13 m assault craft, capable of 50 kt and 12 m 'Cigarette' craft capable of 46 kt. These are divided between the Atlantic and Pacific. Sixteen Zodiac RIBs with 40 hp engines were donated by the US in mid-2006



EDUARDOÑO CLASS 6/2008*, Nicaraguan Navy / 1335287



CIGARETTE CLASS 6/2008*, Nicaraguan Navy / 1335290



EDUARDOÑO CLASS 6/2008*, Nicaraguan Navy / 1335291

Nigeria



Country Overview

Formerly a British protectorate, the Federal Republic of Nigeria gained full independence in 1960. With an area of 356,669 square miles, it is situated in western Africa and is bordered to the north by Niger, to the east by Chad and Cameroon and to the west by Benin. It has a 459 n mile coastline with the Gulf of Guinea. Abuja is the capital while Lagos (the capital until 1991) is the largest city, commercial centre and one of its principal ports. There are other ports at Port Harcourt, Warri, Calabar, Bonny, and Burutu. Territorial Seas (12 n miles) are claimed. An EEZ (200 n miles) has been claimed but the limits have not been defined.

The Navy has suffered from chronic lack of investment over the last ten years but there are signs that a refit programme is attempting to restore a core seagoing capability for operations within the Nigerian EEZ. However, the operational status of weapon systems and sensors remains doubtful.

Headquarters Appointments

Chief of the Naval Staff
 Vice Admiral Iko Ibrahim

Headquarters Appointments— continued

Flag Officer Western Command:
 Rear Admiral Ola Sahad Ibrahim
 Flag Officer Eastern Command:
 Rear Admiral Igwe Ben Acholonu

Personnel

- a) 2009: 8,000 (650 officers) including Coast Guard
- b) Voluntary service

Bases

Apapa-Lagos: Western Naval Command, Naval Base Lagos (NNS *Onaku*), Naval College (NNS *Olokun*) and Naval Training (NNS *Quorra*).
 Calabar: Eastern Naval Command, Naval Base Calabar (NNS *Anansu*), Naval Base Warri (NNS *Umalokun*) and Naval Base Port Harcourt (NNS *Okemini*). There is a forward operating base NNS *Pathfinder* at Bonny Island, Rivers State and plans for further bases at Egwuama, Bayelsa State and Forcados in Delta State. This is in addition to those already established at Ibaka, Akwa-Ibom State and Igbokada in Ondo State.

Naval Aviation

The official list includes two Lynx Mk 89, 12 MBB BO 105C, three Fokker F27 and 14 Dornier Do 128-6MPA. These aircraft are believed not to be operational. Four Agusta A 109E were procured from Italy in September 2004 for patrol duties, one of which was lost in April 2007.

Prefix to Ships' Names

NNS

Port Security Police

A separate force of 1,600 officers and men in Lagos.

Coastal Defence

There are plans to build a national coastal defence system although the status of the programme is unclear.

FRIGATES

1 MEKOTYPE 360 H1 (FFGHM)

Name	No	Builders	Laid down	Launched	Commissioned
ARADU (ex-Republic)	F 89	Blohm & Voss, Hamburg	1 Dec 1978	25 Jan 1980	20 Feb 1982

Displacement, tons: 3,360 full load
Dimensions, feet (metres): 412 × 49.2 × 19 (screws)
 (125.6 × 15 × 5.8)
Main machinery: CODOG; 2 RR Olympus TM3B gas turbines; 50,880 hp (37.9 MW) sustained; 2 MTU 20V 956 TB92 diesels; 10,420 hp(m) (7.71 MW) sustained; 2 shafts; 2 Kamewa cp props
Speed, knots: 30.5
Range, n miles: 6,500 at 15 kt
Complement: 195 (26 officers)



ARADU

(Scale 1 : 1,200), Ian Sturton / 0081331

Missiles: SSM: 8 OTO Melara/Matra Otomat Mk 1 ●; active radar homing to 80 km (43.2 n miles) at 0.9 Mach; warhead 210 kg. SAM Selenia Elsig Albatros octuple launcher ●; 24 Aspide; semi-active radar homing to 13 km (7 n miles) at 2.5 Mach; warhead 30 kg.
Guns: 1 OTO Melara 5 in (127 mm)/54 ●; 45 rds/min to 23 km (12.4 n miles); weight of shell 32 kg.
 8 Breda Bofors 40 mm/70 (4 twin) ●; 300 rds/min to 12.5 km (6.8 n miles) anti-surface; weight of shell 0.96 kg.
Torpedoes: 6—324 mm Plessey STWS-1B (2 triple tubes) ●
 18 Whitehead A244S; anti-submarine; active/passive homing to 7 km (3.8 n miles) at 33 kt; warhead 34 kg (shaped charge).
Depth charges: 1 rack.

Countermasures: Decoys: 2 Breda 105 mm SCLAR 20-tubed trainable; chaff to 5 km (2.7 n miles); illuminants to 12 km (6.6 n miles). ESM: Decca RDL-2, Intercept. ECM: RCM-2; jammer.

Combat data systems: Sewaco-BV actron data automation.
Weapons control: M20 series GFCS. Signaal Vesta ASW
Radars: Air/surface search: Plessey AWS 5 ●; E/F-band.
 Navigation: Racal Decca 1226; I-band.
 Fire control: Signaal STIR ●; I/J/K-band. Signaal WM 25 ●; I/J-band

Sonars: Atlas Elektronik EA80; hull-mounted, active search and attack; medium frequency

Helicopters: 1 Lynx Mk 89 ●

Modernisation: Refit started at Wilmot Point, Lagos with Blohm & Voss assistance in 1991 and completed in February 1994

Operational: Had two groundings and a major collision in 1987 and ran aground again during post refit trials in early 1994. Assessed as beyond economical repair in 1995 but managed to go to sea in early 1996, and again in 1997 when she broke down for several months in Monrovia. Back in Lagos on one engine in 1998 for further repairs. SSM system reported being refitted in 1999. Following a refit at Lagos, attended Fleet Review at Portsmouth, UK, in June 2005 and participated in fleet exercises in January 2007



ARADU

9/2007, Mario R V Carneiro / 1353243

CORVETTES

1 MK 9 VOSPER THORNYCROFT TYPE (FSM)

Name	No	Builders	Commissioned
ENYMIRI	F 84	Vosper Thornycroft	2 May 1980

Displacement, tons: 680 standard; 780 full load
Dimensions, feet (metres): 226 × 31.5 × 9.8 (69 × 9.6 × 3)
Main machinery: 4 MTU 20V 956 TB92 diesels; 22,140 hp(m) (16.27 MW) sustained; 2 shafts; 2 Kamewa cp props
Speed, knots: 27 **Range, n miles:** 2,200 at 14 kt
Complement: 90 (including Flag Officer)

Missiles: SAM: Short Brothers Seocat triple launcher.

Guns: 1 OTO Melara 3 in (76 mm)/52 Mod 6 compact, 85 rds/min to 16 km (8.7 n miles); weight of shell 6 kg
 1 Breda Bofors 40 mm/70 Type 350; 300 rds/min to 12.5 km (6.8 n miles); weight of shell 0.96 kg
 2 Oerlikon 20 mm.

A/S mortars: 1 Bofors 375 mm twin launcher; range 1,600 or 3,600 m.

Countermasures: ESM: Decca Cutlass; radar warning.

Weapons control: Signaal WM20 series.

Radars: Air/surface search: Plessey AWS 2; E/F-band.

Navigation: Racal Decca TM 1226; I-band.

Fire control: Signaal WM24; I/J-band, range 46 km (25 n miles)

Sonars: Plessey PMS 26; lightweight; hull-mounted; active search and attack; 10 kHz.

Programmes: Ordered from Vosper Thornycroft 22 April 1975.

Operational: Enymiri was damaged by fire in 2005 but had returned to service by early 2007 when it took part in fleet exercises. Sister ship Erinomi assessed as beyond economical repair in 1996.



ENYMIRI

5/1999 / 0081333

PATROL FORCES

Notes: (1) All the Coastal Patrol Craft belong to the Coast Guard. Some 38 craft were acquired in the mid-1980s from various shipbuilders including Simonneau, Damen, Swiftships, Intermarine, Watercraft, Van Mill and Rotork. Few of these vessels have been reported at sea in recent years although some are visible, laid up ashore, and are still serviceable.

(2) A Damen 2600 Mk II patrol craft was acquired from South Africa in 2001.

(3) Four 8 m Night Cat 27, capable of 70 kt, were delivered by Intercept Boats in 2003-04.

(4) Several 20 m VCSM craft were acquired from Reidco Marine in 2008.



P 236 (Simonneau)

5/2002 / 0578307



VCSM craft

8/2008, B Prézain / 1353244

3 EKPE (LÜRSSSEN 57) CLASS (LARGE PATROL CRAFT) (PGF)

Name	No	Builders	Commissioned
EKPE	P 178	Lürssen, Vegesack	Aug 1980
DAMISA	P 179	Lürssen, Vegesack	Apr 1981
AGU	P 180	Lürssen, Vegesack	Apr 1981

Displacement, tons: 444 full load
 Dimensions, feet (metres): 190.6 x 24.9 x 10.2 (58.1 x 7.6 x 3.1)
 Main machinery: 4 MTU 16V 956TB92 diesels; 17,700 hp(m) (13 MW) sustained; 2 shafts
 Speed, knots: 42
 Range, n miles: 2,000 at 10 kt
 Complement: 40
 Guns: 1 OTO Melara 3 in (76 mm)/62; 60 rds/min to 16 km (8.7 n miles); weight of shell 6 kg.
 2 Breda 40 mm/70 (twin); 4 Emerson Electric 30 mm (2 twin)
 Radars: Surface search: Racal Decca TM 1226; I-band.
 Fire control: Signaal WM28; I/J-band.

Programmes: Ordered in 1977. Major refit in 1984 at Vegesack.
 Operational: P 178 refitted at Lagos in 1995 but broke down en route to Sierra Leone in 1997. P 179 believed to be operational but the operational status of the other two is doubtful.



EKPE 3/1998 / 0052656

4 BALSAM CLASS (PBO)

Name	No	Builders	Commissioned
KYANWA (ex-Sedge)	A 501 (ex-WLB 402)	Marine Iron and Shipbuilding Corp, Duluth, Minnesota	5 July 1944
OLOGBO (ex-Cowslip)	A 502 (ex-WLB 277)	Marine Iron and Shipbuilding Corp, Duluth, Minnesota	17 Oct 1942
NWAMBA (ex-Firebush)	A 503 (ex-WLB 393)	Marine Iron and Shipbuilding Corp, Duluth, Minnesota	20 July 1944
OBULA (ex-Sassafras)	A 504 (ex-WLB 401)	Marine Iron and Shipbuilding Corp, Duluth, Minnesota	23 May 1944

Displacement, tons: 1,034 full load
 Dimensions, feet (metres): 180 x 37 x 12 (54.9 x 11.3 x 3.8)
 Main machinery: Diesel electric; 2 diesels; 1,402 hp (1.06 MW); 1 motor; 1,200 hp (895 kW);
 1 shaft; bow thruster
 Speed, knots: 13
 Range, n miles: 8,000 at 12 kt
 Complement: 53
 Guns: 2 12.7 mm MGs.
 Radars: Navigation: Raytheon SPS-64(V)1

Comment: First ship transferred from the US Coast Guard on 30 September 2002, second on 30 December 2002, third on 30 June 2003 and fourth on 30 October 2003. Transfer of a fifth vessel is unlikely.



NWAMBA 8/2008* / 1353245

15 DEFENDER CLASS (RESPONSE BOATS) (PBF)

P 313-327

Displacement, tons: 2.7 full load
 Dimensions, feet (metres): 25.0 x 8.5 x 8.8 (7.6 x 2.6 x 2.7)
 Main machinery: 2 Honda outboard motors; 450 hp (335 kW)
 Speed, knots: 46
 Range, n miles: 175 at 35 kt
 Complement: 4
 Guns: 1 12.7 mm MG.
 Radars: To be announced.

Comment: High-speed inshore patrol craft of aluminium construction and foam collar built by SAFE Boats International, Port Orchard, Washington. An initial order for ten craft, with an option for five further craft, placed in August 2004 through USCG Foreign Military Sales programme. First four delivered on 13 December 2004 and second batch of four on 9 February 2005. Two were delivered in May 2005 and the final five on 5 July 2005.



DEFENDER CLASS 2/2006, SAFE Boats International / 0530666

3 COMBATTANTE IIIB CLASS (FAST ATTACK CRAFT—MISSILE) (PGGF)

Name	No	Builders	Commissioned
SIRI	P 181	CMN, Cherbourg	19 Feb 1981
AYAM	P 182	CMN, Cherbourg	11 June 1981
EKUN	P 183	CMN, Cherbourg	18 Sep 1981

Displacement, tons: 385 standard, 430 full load
 Dimensions, feet (metres): 184 x 24.9 x 7 (56.2 x 7.6 x 2.1)
 Main machinery: 4 MTU 16V 956TB92 diesels; 17,700 hp(m) (13 MW) sustained; 2 shafts
 Speed, knots: 38
 Range, n miles: 2,000 at 15 kt
 Complement: 42

Missiles: SSM: 4 Aerospatiale MM 38 Exocet; inertial cruise; active radar homing to 42 km (23 n miles) at 0.9 Mach; warhead 185 kg; sea-skimmer.
 Guns: 1 OTO Melara 3 in (76 mm)/62, 60 rds/min to 16 km (8.7 n miles); weight of shell 6 kg.
 2 Breda 40 mm/70 (twin); 300 rds/min to 12.5 km (6.8 n miles); weight of shell 0.96 kg.
 4 Emerson Electric 30 mm (2 twin); 1,200 rds/min combined to 6 km (3.3 n miles); weight of shell 0.35 kg.
 Countermeasures: ESM. Decca RDL; radar intercept.
 Weapons control: Thomson-CSF Vega system. 2 CSEE Panda optical directors.
 Radars: Air/surface search: Thomson-CSF Triton (TRS 3033); G-band.
 Navigation: Racal Decca TM 1226; I-band. Fire control: Thomson-CSF Castor II (TRS 3203), I/J-band.

Programmes: Ordered in late 1977. Finally handed over in February 1982 after delays caused by financial problems.

Modernisation: Major refit and repairs carried out at Cherbourg from March to December 1991 but the ships were delayed by financial problems.

Operational: Ayam believed to be operational and sister ships Siri and Ekun are reported to be seagoing.



AYAM (outboard DAMISA) 5/2002 / 0526300

AMPHIBIOUS FORCES

1 FDR TYPE RO-RO 1300 (LST)

Name	No	Builders	Commissioned
AMBE	LST 1312	Howaldtswerke, Hamburg	11 May 1979

Displacement, tons: 1,470 standard; 1,860 full load
 Dimensions, feet (metres): 285.4 x 45.9 x 7.5 (87 x 14 x 2.3)
 Main machinery: 2 MTU 16V 956TB92 diesels; 8,850 hp(m) (6.5 MW) sustained; 2 shafts
 Speed, knots: 17
 Range, n miles: 5,000 at 10 kt
 Complement: 58 (6 officers)
 Military lift: 460 tons and 220 troops long haul; 540 troops or 1,000 troops seated short haul; can carry 5-40 ton tanks
 Guns: 1 Breda 40 mm/70. 2 Oerlikon 20 mm.
 Radars: Navigation: Racal Decca 1226; I-band.

Comment: Ordered September 1976. Built to a design prepared for the FGN. Has 19 m bow ramps and a 4 m stern ramp. Reported that bow ramps are welded shut. Second of class, Offiam, beyond repair but Ambe reported active in 2007.



AMBE 7/1997 / 0012836

MINE WARFARE FORCES

2 LERICI CLASS (MINEHUNTERS/SWEEPERS) (MHSC)

Name	No	Builders	Commissioned
OHUE	M 371	Intermarine SY, Italy	28 May 1987
BARAMA	M 372	Intermarine SY, Italy	25 Feb 1988

Displacement, tons: 540 full load
Dimensions, feet (metres): 167.3 × 32.5 × 9.2 (51 × 9.9 × 2.8)
Main machinery: 2 MTU 12V 396 TB83 diesels, 3,120 hp (2.3 MW) sustained; 2 waterjets

Speed, knots: 15.5

Range, n miles: 2,500 at 12 kt

Complement: 50 (5 officers)

Guns: 2 Emerson Electric 30 mm (twin), 1,200 rds/min combined to 6 km (3.3 n miles); weight of shell 0.36 kg.
 2 Oerlikon 20 mm GAM-BO1.

Countermeasures: MCM: Fitted with 2 Pluto remote-controlled submersibles, Dropesa 'O' Mis 4 and Jbis V control system.

Radars: Navigation: Racal Decca 1228; I-band

Sonars: Thomson Sintra TSM 2022; hull-mounted; mine detection; high frequency

Comment: *Ohue* ordered in April 1983 and *Barama* in January 1986. *Ohue* laid down 23 July 1984 and launched 22 November 1985. *Barama* laid down 11 March 1985, launched 6 June 1986. GRP hulls but, unlike Italian and Malaysian versions they do not have separate hydraulic minehunting propulsion. Carry Galeazzi two-man decompression chambers. Both were refitted in 1999, after operations off Liberia. *Barama* reported refitted in late 2004 but the operational effectiveness of both ships in their MCM role is doubtful



OHUE

7/1987, Marina Freccaroli / 0506063



LANA

5/1999, 0081334

TUGS

3 COASTAL TUGS (YTB/YTL)

COMMANDER APAYI JOE A 499

DOLPHIN MIRA

DOLPHIN RIMA

Comment: A 499 is of 310 tons and was built in 1983. The two Dolphin tugs are under repair.



COMMANDER APAYI JOE

11/1983, Hartmut Ehlers / 0516064

SURVEY SHIPS

1 SURVEY SHIP (AGS)

Name	No	Builders	Launched	Commissioned
LANA	A 498	Brooke Marine, Lowestoft	4 Mar 1976	18 July 1976

Displacement, tons: 1,088 full load

Dimensions, feet (metres): 189 × 37.5 × 12 (57.8 × 11.4 × 3.7)

Main machinery: 2 Lister Blackstone diesels, 2,640 hp (1.97 MW); 2 shafts

Speed, knots: 16

Range, n miles: 4,500 at 12 kt

Complement: 52 (12 officers)

Radars: Navigation: Decca; I-band.

Comment: Similar to UK Bulldog class. Ordered in 1973. Rarely goes to sea.



Norway

Country Overview

The Kingdom of Norway is a constitutional monarchy occupying the northwest part of the Scandinavian Peninsula. With an area of 125,016 square miles, it is bordered to the east by Sweden and to the northeast by Finland and Russia. The coastline of 11,842 n miles with the Atlantic Ocean (Norwegian Sea), Arctic Ocean (Barents Sea), North Sea and Skagerrak Strait contains numerous fjords and offshore islands. External territories in the Arctic Ocean include the Svalbard archipelago and Jan Mayen Island while the uninhabited Bouvet Island lies in the south Atlantic. Territorial claims in Antarctica include the territory known as Queen Maud Land and Peter I Island. The capital, largest city and principal port is Oslo. Other ports include Bergen, Trondheim and Stavanger. Territorial seas (12 n miles) and an EEZ (200 n miles) are claimed.

Headquarters Appointments

Chief of Naval Staff

Rear Admiral H Bruun-Hanssen

Deputy Chief of Naval Staff:

Commodore Commodore Lars Johan Fleisje

Commander Coast Guard:

Commodore A I Skram

Commander Norwegian Fleet:

Commodore H Tronstad

Diplomatic Representation

Defence Attaché in Ankara

Captain Helge Moen

Diplomatic Representation — continued

Defence Attaché in Helsinki

Captain Ernst Egeliid

Defence Attaché in London:

Colonel K H Hamre

Defence Attaché in Madrid:

Captain Jan Krohn-Hansen

Defence Attaché in Moscow:

Commodore Geir A M Osen

Defence Attaché in Paris:

Captain Per Norvald Svartefoss

Defence Attaché in Stockholm:

Colonel K O Drivenes

Defence Attaché in Washington:

Major General T H Knutsen

Defence Attaché in Warsaw:

Lieutenant Colonel T Larsen Bergheim

Defence Attaché in Berlin:

Colonel Iver Tokstad

Defence Attaché in Riga:

Colonel Svein Ruderaas

Defence Attaché in Rome:

Captain G Myrseth

Defence Attaché in Kiev:

Colonel Tommy Johansen

Defence Attaché in Bucharest:

Colonel T Lysentgen

Defence Attaché in The Hague:

Commander T Andersson

Defence Attaché in Belgrade:

Lieutenant Colonel T Haaverstad

Personnel

(a) 2009: 3,200 officers and ratings

(b) 9 to 12 months' national service (up to 40 per cent of ships complement)

Coast Artillery

The fixed defence system of nine coastal forts and controlled minefields is in long-term storage. As a result, the Coastal Ranger Command was established in 2001 with a headquarters at Trondenes.

Coast Guard

Founded April 1977 with operational command held by Norwegian Defence Command. Main bases at Sortland (North) and Haakonsværn (South). Tasks include fishery protection, customs, police, SAR and environmental duties at sea.

Bases

Reitan (Bodo): National Operational HQ (from 8/2009)

Haakonsværn (Bergen): Main Naval Base

Laksevåg (Bergen): Submarine Repair

Ramsund: Supply, repair and maintenance

Sortland: Coast Guard Base

Air Force Squadrons (see *Shipborne and Land-based Aircraft*)

Aircraft (Squadron)	Location	Duties
Sea King Mk 43 (330)	Bodø, Benak, Sola, Ørland	SAR
Orion P.3N/C (333)	Andøya	MPA
Lynx (337)	Coast Guard vessels/ Bardufoss	MP
Boll 412 (719, 339 & 720)	Bodø, Rygge, Bardufoss	Army Transport

Prefix to Ships' Names

KNM (Naval)
K/V (Coast Guard)

Strength of the Fleet

Type	Active	Building (Projected)
Submarines—Coastal	6	—
Frigates	3	2
Patrol craft	23	6
Minesweepers/Hunters	6	—
Auxiliaries	1	—
Naval District Auxiliaries	6	—
Coast Guard Vessels	13	2 (5)
Survey Vessels	6	—

DELETIONS**Frigates**

2006	Trondheim
2007	Narvik

Patrol Forces

2007	Hauk, Ørn, Skarv, Teist, Lom, Falk, Gribb, Erle
2008	Terne, Tjeld, Jo, Stegg, Ravn, Geir

Auxiliaries

2008	Horten
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PENNANT LIST

Notes: Naval District Auxiliaries are listed on page 573.

Submarines

S 300	Ula
S 301	Utsira
S 302	Utstein
S 303	Utvaer
S 304	Uthaug
S 305	Uredd

Frigates

F 310	Fridtjof Nansen
F 311	Roald Amundsen
F 312	Otto Sverdrup
F 313	Helge Ingstad (bldg)
F 314	Thor Heyerdahl (bldg)

Minesweepers/Hunters

M 341	Karmøy
M 342	Måløy
M 343	Hinnøy
M 350	Alta
M 351	Otra
M 352	Rauma

Mineslayers

N 50	Tyr
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Patrol Forces

P 358	Hessa
P 359	Vigra

P 960	Skjold
P 961	Storm
P 962	Skudd
P 963	Steil
P 964	Glimt
P 965	Gnist

Auxiliaries

A 533	Norge
A 535	Valkyrien

Coast Guard

W 303	Svalbard
W 312	Ålesund

W 314	Stålbas
W 318	Harstad
W 319	Løikven
W 320	Nordkapp
W 321	Senja
W 322	Andenes
W 330	Nornen
W 331	Farm
W 332	Heimdal
W 333	Njord
W 334	Tor
W 340	Barentshav
W 341	Sortland
W 342	Bergen

SUBMARINES

Notes: Norway withdrew from the 'Viking' submarine project on 13 June 2003 at the end of the Project Definition Phase Step 1 Studies into the replacement of the current submarine capability from about 2020 were launched in late 2007. Following initial conceptual work, a more detailed project definition study is expected to start in 2009.

6 ULA CLASS (SSK)

Name	No	Builders	Laid down	Launched	Commissioned
ULA	S 300	Thyssen Nordseewerke, Emden	29 Jan 1987	28 July 1988	27 Apr 1989
UREDD	S 305	Thyssen Nordseewerke, Emden	23 June 1988	22 Sep 1989	3 May 1990
UTVAER	S 303	Thyssen Nordseewerke, Emden	8 Dec 1988	19 Apr 1990	8 Nov 1990
UTHAUG	S 304	Thyssen Nordseewerke, Emden	15 June 1989	18 Oct 1990	7 May 1991
UTSTEIN	S 302	Thyssen Nordseewerke, Emden	6 Dec 1989	25 Apr 1991	14 Nov 1991
UTSIRA	S 301	Thyssen Nordseewerke, Emden	15 June 1990	21 Nov 1991	30 Apr 1992

Displacement, tons: 1,040 surfaced; 1,150 dived

Dimensions, feet (metres): 193.6 × 17.7 × 15.1
(59 × 5.4 × 4.6)

Main machinery: Diesel-electric; 2 MTU 16V 396 SB83 diesels; 2,700 hp(m) (1.98 MW) sustained; 1 Siemens motor; 6,000 hp(m) (4.41 MW); 1 shaft

Speed, knots: 11 surfaced; 23 dived

Range, n miles: 5,000 at 8 kt

Complement: 21 (5 officers)

Torpedoes: 8–21 in (533 mm) bow tubes. 14 AEG DM 2A3 Sehecht: dual purpose; wire-guided, active/passive homing to 28 km (15 n miles) at 23 kt; 13 km (7 n miles) at 35 kt; warhead 260 kg; depth to 460 m.

Countermeasures: ESM: Argo S 5; radar warning.

Weapons control: Kongsberg MSI-90(U) TFCS.

Radars: Surface search: Kelvin Hughes 1007; I-band.

Sonars: Atlas Elektronik CSU 83; active/passive intercept search and attack; medium frequency.
Thomson Sintra; flank array; passive; low frequency.

Programmes: Contract signed on 30 September 1982. This was a joint West German/Norwegian effort known as Project 210 in Germany. Although final assembly was



UTHAUG

5/2007, Harald Carstens / 1165510

at Thyssen a number of pressure hull sections were provided by Norway.

Modernisation: MSI-90U being upgraded 2000–2005. A mid-life upgrade of all six boats is in progress 2007–15. The programme includes updates to the sonar and communications systems and a number of platform improvements.

Structure: Diving depth, 250 m (820 ft). The basic command and weapon control systems are Norwegian, the attack sonar is German but the flank array, based on piezoelectric polymer antenna technology, was developed in France and substantially reduces flow noise. Celzoni Trident modular system of non-penetrating masts has been installed. Zeiss periscopes.



UTHAUG

5/2007, Jurg Kürsener / 1165611

FRIGATES

3 + 2 FRIDTJOF NANSEN CLASS (FFGHM)

Name	No	Builders	Laid down	Launched	Commissioned
FRIDTJOF NANSEN	F 310	Navantia, Ferrol	9 Apr 2003	3 June 2004	5 Apr 2006
ROALD AMUNDSEN	F 311	Navantia, Ferrol	3 June 2004	25 May 2005	21 May 2007
OTTO SVERDRUP	F 312	Navantia, Ferrol	25 May 2005	28 Apr 2006	30 Apr 2008
HELGE INGSTAD	F 313	Navantia, Ferrol	28 Apr 2006	23 Nov 2007	2009
THOR HEYERDAHL	F 314	Navantia, Ferrol	23 Nov 2007	11 Feb 2009	2010

Displacement, tons: 5,290 full load

Dimensions, feet (metres): 437.0 x 55.1 x 16.1
(133.2 x 16.8 x 4.9)

Main machinery: CODAG; 1 GELM 2500 gasturbine; 26,112 hp
(19.2 MW); 2 Bazán Bravo 12V diesels; 12,240 hp(m)
(9 MW); 2 shafts; cp props; bow thruster; 1,360 hp(m)
(1 MW)

Speed, knots: 26

Range, n miles: 4,500 at 16 kt

Complement: 120 (50 officers) plus 26 spare

Missiles: SSM: 8 Kongsberg NSM; inertial, GPS and terrain mapping guidance and passive IR homing to 185 km (100 n miles) at 0.95 Mach; warhead 120 kg.

SAM: Mk 41 VLS (8 cells); 32 Evolved Sea Sparrow RIM 162B, semi-active radar homing to 18 km (9.7 n miles) at 3.6 Mach; warhead 38 kg

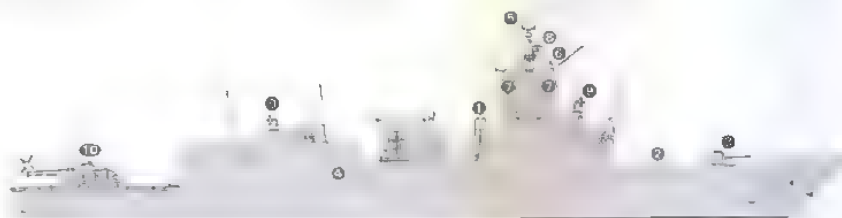
Guns: 1 Oto Melara 76 mm/62 Super Rapid; 120 rds/min to 15.75 km (8.5 n miles) anti-aircraft, 12 km (6.5 n miles) anti-aircraft, weight of shell 6 kg.
4—12.7 mm MGs. Fitted for 1—40 mm/70.

Torpedoes: 4—324 mm (2 double) tubes; Marconi Stingray, active/passive homing to 11 km (5.9 n miles) at 45 kt; warhead 35 kg shaped charge

Countermeasures: Decoys: Terma SKWS chaff, IR, LOKI 130 mm acoustic decoy.

ESM: Condor CS-3701, Intercept.

Combat data systems: AEGIS with ASW and ASuW segments from Kongsberg; Link 11 (fitted for Link 16/22).



FRIDTJOF NANSEN

(Scale 1 : 1,200), Ian Sturton / 1190985

Weapons control: Sagem VIGY 20 optronic director.

Radars: Air search: Lockheed Martin SPY-1F; E/F-band

Surface search: Litton; E/I-band

Fire control: 2 Mk 82 (SPG-62); I/J-band

Navigation: 2 Litton; I-band, IFF: Mk XII.

Sonars: Thomson Marconi Spherion MRS 2000 and Mk 2

CAPTAS, combined active/passive towed array.

Helicopters: 1 NH 90.

Programmes: Design Definition for a new class of frigates started in March 1997. Izar and Lockheed Martin selected in March 2000 and contract signed 23 June 2000. Most of the construction is being undertaken by Navantia (formerly Izar). Two Norwegian shipyards,

Bergen Mekaniske Verksted and Aker Yards, Florø, are collaborating to build modules for each ship. These are shipped to Ferrol where final assembly takes place. The building programme has been delayed by disputes over quality control and contractual arrangements. Planned commissioning dates could be affected.

Modernisation: Stingray torpedoes are to be upgraded or replaced in due course.

Structure: The design is based on the Alvaro de Bazan class. Damage control is automated through the Integrated Platform Management System.

Operational: Fridtjof Nansen successfully conducted Combat Systems Ship Qualification Trials with the US Navy in mid-2007.



ROALD AMUNDSEN

5/2008*, Michael Nitz / 1335809



FRIDTJOF NANSEN

4/2008*, Derek Fox / 1335797



FRIDTJOF NANSEN

4/2006, *Ships of the World* / 1159735



FRIDTJOF NANSEN

6/2008, *Royal Norwegian Navy* / 1335807

SHIPBORNE AIRCRAFT

Numbers/Type: 14 NH Industries NH 90 NFH
Operational speed: 157 kt (291 km/h).
Service ceiling: 13,940 ft (4,250 m).
Range: 621 n miles (1,150 km).
Role/Weapon systems: Delivery of 14 aircraft, reconfigurable for ASW and Coast Guard missions, is to begin in 2010. Flight of the first aircraft took place on 20 December 2006. Option for further ten SAR aircraft. Sensors: Thales ENR surveillance radar, TJS FLASH dipping sonar. Weapons: NSM missiles, Stingray (to be upgraded or replaced) torpedoes.



NH 90 6/2008*, Norwegian Navy / 1335801

Numbers/Type: 6 Westland Lynx Mk 86.
Operational speed: 125 kt (232 km/h).
Service ceiling: 12,500 ft (3,810 m).
Range: 320 n miles (590 km).
Role/Weapon systems: Operated by Air Force on behalf of the Coast Guard for fishery protection, offshore oil protection and SAR; embarked in CG vessels and shore-based. To be replaced by NH 90 from 2010. Sensors: Search radar, FLIR may be fitted, ESM. Weapons: Generally unarmed.



LYNX 6/2002, Royal Norwegian Navy / 0572608

LAND-BASED MARITIME AIRCRAFT

Notes: The Air Force has a total of 56 F-16 Falcons armed with Penguin 3 ASMs.

Numbers/Type: 4 Lockheed P-3C Orion.
Operational speed: 410 kt (760 km/h).
Service ceiling: 28,300 ft (8,625 m).
Range: 4,000 n miles (7,410 km).
Role/Weapon systems: Long-range MR and oceanic surveillance duties in peacetime, with ASW added as a war role. Updated in 1998-99 with new radars and new tactical computers. P-3Ns used by Coast Guard paid off in 1999. Sensors: APS-137(V)5 radar, ASQ-81 MAD, AQS-212 processor and computer, IFF, AAR-36 IR detector; AAR-47 ESM, ALE 47 countermeasures; sonobuoys. Weapons: ASW: 8 MUSL Stingray (to be upgraded or replaced) torpedoes, depth bombs or mines. ASV: Penguin NFT Mk 3 ASM.



P-3C 6/2001, A Sherna, D130100

Numbers/Type: 12 Westland Sea King Mk 43B
Operational speed: 125 kt (232 km/h).
Service ceiling: 10,500 ft (3,200 m).
Range: 630 n miles (1,165 km).
Role/Weapon systems: SAR, surface search and surveillance helicopter; supplemented by civil helicopters in wartime. Two 43B delivered in May 1996; remainder updated to 43B standard. Sensors: FLIR 2000 and dual Bendix radars RDR 1500 and RDR 1300. Weapons: Generally unarmed.



SEA KING 43B 2001, GKN Westland / 0051448

PATROL FORCES

Notes: There is an inshore patrol craft *Kaholman* SHV 121 delivered in about 2005.

1 + 5 SKJOLD CLASS (PTGMF)

Name	No	Builders	Launched	Commissioned
SKJOLD	P 960	Kvaerner Mandal	22 Sep 1996	17 Apr 1999
STORM	P 961	Umoe Mandal	30 Oct 2006	2009
SKUDD	P 962	Umoe Mandal	30 Apr 2007	2009
STEIL	P 963	Umoe Mandal	15 Jan 2008	2009
GLIMT	P 964	Umoe Mandal	2008	2010
GNIST	P 965	Umoe Mandal	2008	2010

Displacement, tons: 273 full load
Dimensions, feet (metres): 155.8 x 44.3 x 7.5; 2.6 on cushion (47.5 x 13.5 x 2.3; 0.8)
Main machinery: CODAG: 2 Pratt & Whitney gas turbines; 16,100 hp (12 MW)
 2 MTU 12V 183 TE92 diesels (left), 990 hp (740 kW); 2 Kamewa waterjets
Speed, knots: 60; 40 in Sea State 3
Range, n miles: 800 at 40 kt
Complement: 20
Missiles: 8 SSM; 8 Kongsberg NSM inertial, GPS and terrain matching guidance and passive IR homing to 185 km (100 n miles) at 0.95 Mach; warhead 120 kg.
SAM: Mistral; IR homing to 4 km (2.2 n miles) at 2.5 Mach; warhead 3 kg
Guns: 1 Oto Melara 76 mm/62 Super Rapid; 120 rds/min to 16 km (8.7 n miles), weight of shell 6 kg. 2-12.7 mm MGs
Countermeasures: 1 Rheinmetall MASS-1L.
ESM: EDO CS 370; intercept
Combat data systems: DCN Senit 2000; Link 11/16.
Weapons control: Sagem VIGX-20 optronic director.
Radars: Air/surface search: Thales MRR; 3D NG; G-band.
Navigation: I-band.
Fire control: CelsiusTech Ceros 200, J-band

Programmes: Project SMP 6081. A preproduction version (P 960) ordered 30 August 1996. This was tested by the Norwegian Navy from 1999-2001 and was evaluated by the USN and USCG in 2001-02. The Norwegian parliament decided on 23 October 2003 that five additional vessels were to be built. Contract with Skjold Prime Consortium, comprising Umoe Mandal, Armaris and Kongsberg Defence & Aerospace, was signed 28 November 2003. Ships are being built at Umoe Mandal shipyard for delivery by 2009. P 960 is to be used for crew training and is to be upgraded to production standard after the other five vessels have been delivered.

Structure: SES hull with advanced stealth technology including anechoic coatings. Building on experience in US trials, a more raked bow has been adopted to improve performance into sea. The foredeck structure is also to be strengthened around the gun mounting. Two quadruple SSM launchers are to be recessed aft of the bridge. These will elevate to fire and then retract.



STORM 6/2006*, Royal Norwegian Navy / 1335800



STORM 6/2006*, Royal Norwegian Navy / 1335799

20 COMBATBOAT 90N (LCP)

TRONDENES L 4510 (ex-KA 1)	KJØKØY L 4523 (ex-KA 14)	SØVIKNES L 4531 (ex-KA 23)
HYSNES L 4511 (ex-KA 2)	MØRVIKA L 4524 (ex-KA 15)	OSTERNES L 4532 (ex-KA 31)
HELLEN L 4512 (ex-KA 3)	KOPÅS L 4525 (ex-KA 16)	FJELL L 4533 (ex-KA 32)
TORÅS L 4513 (ex-KA 4)	TANGEN L 4526 (ex-KA 17)	LERØY L 4534 (ex-KA 33)
MØVIK L 4514 (ex-KA 5)	ODDANE L 4527 (ex-KA 18)	
SKROLSVIK L 4520 (ex-KA 11)	MALMØYA L 4528 (ex-KA 19)	
KRÅKENES L 4521 (ex-KA 12)	BRETTINGEN L 4529 (ex-KA 21)	
STANGNES L 4522 (ex-KA 13)	LØKHAUG L 4530 (ex-KA 22)	

Displacement, tons: 19 full load
Dimensions, feet (metres): 52.2 × 12.5 × 2.6 (15.9 × 3.8 × 0.8)
Main machinery: 2 SAAB Scania DSI 14 diesels; 1,104 hp(m) (812 kW) or 1,251 hp(m) (920 kW) (KA 21-43) sustained; 2 FF 450 water-jets or 2 Kamewa FF 410 (KA 21-43)
Speed, knots: 35 or 40; 20 in Sea State 3
Range, n miles: 240 at 20 kt
Complement: 3
Military lift: 2.8 tons or 20 troops
Guns: 1—12.7 mm MG
Radars: Navigation: I-band

Comment: Ordered from Dockstarvarvet, Sweden. Four Batch 1 units delivered for trials in July and October 1996. Three more of the class delivered in 1997, 13 in 1998. Used to carry mobile light missile units and prime method of transportation for new Coastal Ranger Commando. Similar in most details to the Swedish Coastal Artillery craft. Names are mostly taken from Coastal Fortresses. Evaluation of these craft as a launch platform for the Hellfire missile took place on Mørviika in May 2004. Pennant numbers were changed in 2004.



KJØKØY 6/2008*, Royal Norwegian Navy / 1335798

7 ALUSAFE 1290 CLASS (INSHORE PATROL CRAFT) (PB)

L 4540–L 4546

Displacement, tons: 7.6
Dimensions, feet (metres): 43.2 × 11.5 × 2.5 (12.9 × 3.5 × 0.75)
Main machinery: 2 Volvo Penta TAMD 74 EDC diesels; 900 hp (670 kW); 2 Kamewa K28 waterjets
Speed, knots: 42
Complement: 2 (plus 13 troops)
Guns: 2—12.7 mm MGs

Comment: Aluminium hull. Built by Maritime Partner, Ålesund and delivered in 2002. Designed for use by the Norwegian Naval Home Guard as multifunction assault and patrol vessels by the coastal rangers. The craft are also available as tactical logistics craft and to support police, customs, environmental and fishery authorities.



L 4540 6/2008*, Richard Scott / 1335808

4 HÅREK (ALUSAFE 1300) CLASS (INSHORE PATROL CRAFT) (PB)

HÅREK SHV 101 SLOTTØY SHV 105
 KVITSØY SHV 104 HALTEN SHV 106

Displacement, tons: 10
Dimensions, feet (metres): 43.6 × 12.0 × 2.5 (13.3 × 3.65 × 0.75)
Main machinery: 2 Volvo Penta TAMD 74 EDC diesels; 900 hp (670 kW); 2 Kamewa K28 waterjets
Speed, knots: 40
Complement: 2 (plus 13 troops)
Guns: 2—12.7 mm MGs

Comment: Aluminium hull. Built by Maritime Partner, Ålesund and delivered in 2003. Based at Stavanger, Bergen and Trondheim. Designed for use by the Norwegian Naval Home Guard as multifunction patrol vessels. The craft are also available to support police, customs, environmental and fishery authorities.



KVITSØY 6/2008*, Richard Scott / 1335807

2 GYDA CLASS (INSHORE PATROL CRAFT) (PB)

HVASSER SHV 102 HEKKINGEN SHV 103

Displacement, tons: 14 full load
Dimensions, feet (metres): 44.8 × 13.4 × 2.9 (13.65 × 4.1 × 0.9)
Main machinery: 2 Volvo Penta TAMD 74 EDC diesels; 1,750 hp (1.3 MW); 2 Kamewa K32 waterjets
Speed, knots: 42
Complement: 2 (plus 13 troops)
Guns: 2—12.7 mm MGs

Comment: Aluminium hull. Built by Henriksen Mekaniske Verksted, Tønsberg and delivered in 2003. Designed for use by the Norwegian Naval Home Guard as patrol vessels.



HVASSER 6/2006, E & M Laursen / 1040662

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jfs.janes.com

MINE WARFARE FORCES

6 OKSØY/ALTA CLASS

(MINEHUNTERS/SWEEPERS) (MHCM/MSCM)

Name	No	Builders	Commissioned
Hunters			
KARMØY	M 341	Kvaerner Mandal	24 Oct 1994
MÅLØY	M 342	Kvaerner Mandal	24 Mar 1995
HINNØY	M 343	Kvaerner Mandal	8 Sep 1995
Sweepers			
ALTA	M 350	Kvaerner Mandal	12 Jan 1998
OTRA	M 351	Kvaerner Mandal	8 Nov 1996
RAUMA	M 352	Kvaerner Mandal	2 Dec 1998

Displacement, tons: 375 full load

Dimensions, feet (metres), 181.1 × 44.6 × 8.2 (2.76 cushion) (55.2 × 13.6 × 2.5; 0.84)

Main machinery: 2 MTU 12V 396 TE84 diesels; 3,700 hp(m) (2.72 MW) sustained, 2 Kvaerner Eureka water-jets; 2 MTU 8V 396 TE54 diesels; 1,740 hp(m) (1.28 MW/60 Hz) sustained, lift engines

Speed, knots: 23

Range, n miles, 1,500 at 20 kt

Complement: 40 (14 officers) (minehunters); 32 (10 officers) (minesweepers)

Missiles, SAM: Matra Sadral twin launcher; Mistral; IR homing to 4 km (2.2 n miles); warhead 3 kg.

Guns: 1 or 2 Rheinmetall 20 mm. 3—12.7 mm MGs

Countermeasures: MCMV-2 Pluto submersibles (minehunter); mechanical, AGATE (air gun and transducer equipment) acoustic and Elma magnetic sweep (minesweepers). Minesweeper mini torpedoes can be carried.

Radars: Navigation: 2 Racal Decca; I-band.

Sonars: Thales TSM 2022 Mk 3; hull mounted; high frequency.

Programmes: Order placed with Kvaerner on 9 November 1989

Modernisation: Both minehunters and minesweepers are being upgraded with new sonars (TSM 2022), new tactical C2 system and new dynamic positioning system. The Kongsberg Simrad Hugin 1000 AUV is to be installed in all ships. The AUV is to be used for mine reconnaissance and rapid environmental assessment.

Structure: Design developed by the Navy in Bergen with the Defence Research Institute and Norsk Veritas and uses an air cushion created by the surface effect between two hulls. The hull is built of Fibre Reinforced Plastics (FRP) in sandwich configuration. The ROVs are carried in a large hangar and are launched by two hydraulic cranes. The minesweeper has an A frame aft for the sweep gear. SAM launcher mounted forward of the bridge

Operational: Simrad Albatross tactical system including mapping; Cast/Del Norte mobile positioning system with GPS. The catamaran design is claimed to give higher transit speeds with lesser installed power than a traditional hull design. Other advantages are lower magnetic and acoustic signatures, clearer water for sonar operations and less susceptibility to shock. Orkla M 353 was lost after a catastrophic fire on 19 November 2002. M 354 was decommissioned in 2004 and M 340 in 2005



HINNØY

3/2007, M Doelcherk / 1186614



KARMØY

11/2004, Michael Nitz / 1043497



OTRA

5/2006, Frank Flindler / 1043063

SURVEY AND RESEARCH SHIPS

1 RESEARCH SHIP (AGEH)

Name	Builders	Launched	Commissioned
MARJATA	Tangørn Verft A/S	18 Dec 1992	July 1994

Displacement, tons: 7,560 full load

Dimensions, feet (metres): 267.4 × 130.9 × 19.7 (81.5 × 39.9 × 6)

Main machinery: Diesel-electric; 2 MTU Siemens 16V 396 TE diesels; 7,072 hp(m) (5.2 MW); 2 Dresser Rand/Siemens gas-turbine generators; 9,792 hp(m) (7.2 MW); 2 Siemens motors; 8,160 hp(m) (6 MW); 2 Schottel 3030 thrusters, 1 Siemens motor; 2,720 hp(m); (2 MW); 1 Schottel thruster (forward)

Speed, knots: 15

Complement: 14 plus 31 scientists

Helicopters: Platform for one medium

Comment: Ordered in February 1992 from Langsten Slip og Batbyggen to replace the old ship of the same name. Called Project Minerva. Design developed by Ariel A/S, Horten. The three main superstructure-mounted cupolas contain ELINT and SIGINT equipment. Hull-reinforced to allow operations in fringe ice. Equipment includes Sperry radars, Elac sonars, Siemens TV surveillance, and a fully equipped helicopter flight deck. The unconventional hull which gives the ship an extraordinary length to beam ratio of 2:1 is said to give great stability and dynamic qualities.



MARJATA

6/2000, Royal Norwegian Navy / 0105173

5 SURVEY SHIPS (AGS)

Name	Displacement tons	Launched	Officers	Crew
OLJEVERN 01	200	1978	2	6
OLJEVERN 02	200	1978	2	6
OLJEVERN 03	200	1978	2	6
OLJEVERN 04	200	1978	2	6
GEOFJORD	364	1958	2	6

Comment: Under control of Ministry of Environment based at Stavanger. Oljevern 01 and 03 have red hulls and work for the Pollution Control Authority



GEOFJORD

5/2002, L-G Nilsson / 0528972

TRAINING SHIPS

2 TRAINING SHIPS (AXL)

Name	No	Builders	Commissioned
HESSA (ex-Hitra, ex-Marsteinen)	P 358	Fjellstrand, Omastrand	Jan 1978
VIGRA (ex-Kvarven)	P 359	Fjellstrand, Omastrand	July 1978

Displacement, tons: 39 full load

Dimensions, feet (metres): 77 × 16.4 × 3.5 (23.5 × 5 × 1.1)

Main machinery: 2 GM 12V-71 diesels; 1,800 hp (1.34 MW); 2 shafts

Speed, knots: 20

Complement: 5 plus 13 trainees

Guns: 1—12.7 mm Browning MG.

Radars: Navigation: Racal Decca, I-band

Comment: The vessels are designed for training students at the Royal Norwegian Naval Academy in navigation, manoeuvring and seamanship. All-welded aluminium hulls. Also equipped with an open bridge and a blind pilotage position below deck. 18 berths.



VIGRA

4/2002, P Froud / 0529133

AUXILIARIES

Notes: A concept study to explore options for afloat replenishment and logistic support is in progress. Potential conclusions include a multirole Ro-Ro ship and an ADR to support the new frigates. An acquisition programme, is as yet unfunded

1 SUPPLY AND RESCUE VESSEL

Name	No	Builders	Commissioned
VALKYRIEN	A 535	Ulstein Høtlo	1981

Displacement, tons: 3,000 full load
Dimensions, feet (metres), 223.1 x 47.6 x 16.4 (68 x 14.5 x 5)
Main machinery: Diesel electric; 4 diesels; 10,560 hp(m) (7.76 MW) sustained; 2 motors; 3.14 MW; 2 shafts; 2 bow thrusters; 1,600 hp(m) (1.18 MW); 1 stern thruster; 800 hp(m) (588 kW)
Speed, knots: 16
Complement: 13
Missiles: SAM: Mistral; IR homing to 4 km (2.2 n miles) at 2.5 Mach; warhead 3 kg.
Guns: 3—12.7 mm MGs.
Radars: Navigation: 2 Furuno; HI-band.

Comment: Tug/supply ship acquired in 1994 for supply and SAR duties. Bollard pull 128 tons. Can carry a 700 ton deck load. Oil recovery equipment is also carried.



VALKYRIEN 6/2008*, Maritime Photographic / 1335606

7 COASTAL VESSELS (YPT/YDT)

Notes: Due to re-organisation of the coastal vessels, the naval districts no longer operate many of the vessels previously assigned. The following remain in service and are prefaced by two letters as follows. HT (torpedo recovery), HM (multirole), HS (tugs), HD (diving), HP (personnel), HR (rescue). *Hitra* (HP 15) is also used for training cruises. All are less than 300 tons displacement

Name	No	Speed, knots	Commissioned	Role
VIKEN	HD 2	12	1984	Cargo (4 tons)/Passengers (40) Diving vessel
TORPEN	HM 3	12	1977	Cargo (100 tons)/Passengers (15)
KJEGY	HM 7	10	1993	Training ship/Passengers (30)
HITRA	HP 15	—	—	Passengers (30)
KARLSØY	HT 3	10	1978	Torpedo fishing vessel
SLEIPNER	HS 4	11	2002	Tug/Cargo (10 tons)
MJØLNER	HS 5	11	2002	Tug/Cargo (10 tons)



SLEIPNER 5/2008*, Marco Ghiglini / 1335805



VIKEN 7/2003, Declerck/Steeghers / 1043508

1 SUPPORT SHIP (AGDS)

Name	No	Builders	Commissioned
TYR (ex- <i>Standby Master</i>)	N 50	Alesund Mekaniske Verksted	1981

Displacement, tons: 495 full load
Dimensions, feet (metres), 138.8 x 33.1 x 11.5 (42.3 x 10.1 x 3.5)
Main machinery: 2 Deutz SBA12M816 diesels; 1,300 hp(m) (956 kW); 1 shaft; cp prop; 1 MWM diesel, 150 hp(m) (110 kW); bow and stern thrusters
Speed, knots: 12
Complement: 22 (7 officers)
Mines: 2 rails.
Radars, Navigation: Furuno 711 and Furuno 1011; I-band.

Comment: Former oil rig pollution control ship. Acquired in December 1993 and converted by Mjellum & Karlsen, Bergen. Recommissioned 7 March 1995 as a minelayer, and for the maintenance of controlled minefields but principal current task is to support underwater operations. Carries a ROV



TYR 6/2008*, Maritime Photographic / 1335804

ROYAL YACHTS

1 ROYAL YACHT (YAC)

Name	No	Builders	Commissioned
NORGE (ex- <i>Philante</i>)	A 533	Camper & Nicholson's Ltd, Southampton	1937

Displacement, tons: 1,786 full load
Dimensions, feet (metres), 263 x 38 x 15.2 (80.2 x 11.6 x 4.6)
Main machinery: 2 Bergen KRMB-8 diesels; 4,850 hp(m) (3.6 MW) sustained; 2 shafts, bow thruster
Speed, knots: 17
Complement: 50 (18 officers)
Radars: Navigation, 2 Decca, I-band.

Comment: Built to the order of the late T O M Sopwith as an escort and store vessel for the yachts *Endeavour I* and *Endeavour II* Launched on 17 February 1937. Served in the Royal Navy as an anti-submarine escort during the Second World War, after which she was purchased by the Norwegian people for King Haakon and reconditioned as a Royal Yacht at Southampton. Can accommodate about 50 people in addition to crew. Repaired after serious fire on 7 March 1985 when the ship was fitted with a bow-thruster



NORGE 6/2005, E & M Laursen / 1151127

COAST GUARD (KYSTVAKT)

3 CHARTERED SHIPS (WPBO)

Name	No	Tonnage	Completion
ÅLESUND	W 312	1,357	1996
STÅLBAS	W 314	850	1955
LEIKVIN	W 319	1,300	1969

Comment: All armed with one 40 mm/60 gun. Some ships are operated with two crews, changing over every three weeks. *Leikvin* and *Stålbas* are to be replaced by Barentshav class when they enter service from 2009.

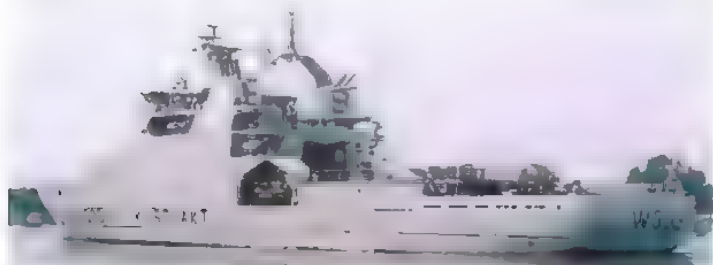
574 Norway/Coast guard

1 ARCTIC CLASS (WPSOH)

Name	No	Builders	Commissioned
SVALBARD	W 303	Tangen Verft, Kragerø	5 Jan 2002

Displacement, tons: 6,300 full load
Dimensions, feet (metres): 340.3 × 62.7 × 21.3 (103.7 × 19.1 × 6.5)
Main machinery: Diesel electric; 4 Rolls Royce diesel generators; 10 MW; 2 azimuth pods; 1 bow thruster
Speed, knots: 17
Range, n miles: 10,000 at 13 kt
Complement: 50
Guns: 1 Bofors 57 mm/70
Radars: Air/Surface search EADSTRS 3D; G band.
Surface search/navigation: Kongsberg Bridgeline 10; I-band.
Helicopters: Platform for 1 NH 90 or Lynx

Comment: Project definition completed in 1997 for an ice-reinforced vessel equipped with a helicopter. Built to Det Norske Veritas standards. Contract placed 15 December 1999 with Langsten Slip and Båtbyggeri A/S, Tomrefjord. Ship launched February 2001. Fitted for firefighting and counter-pollution work. There are two motor cutters and a sea-raider type dinghy. The ship underwent refit at Fiskerstrand Verft in 2006.



SVALBARD 7/2003, Freddie Philips / 06/2601

1 ULSTEIN UT 512 (SALVAGE AND RESCUE TUG) (ARS)

Name	No	Builders	Commissioned
HARSTAD	W 318	Aker Sjøviknes	28 Jan 2005

Displacement, tons: 3,130 full load
Dimensions, feet (metres): 272.3 × 50.8 × 19.7 (83.0 × 15.5 × 6.0)
Main machinery: 2 Bergen B 32-40L diesels; 10,730 hp (8 MW); 2 Kamewa Ulstein cp props, two bow thrusters; 1 Kamewa Ulstein 738 kW tunnel thruster; 1 Ulstein Aquamaster swing-up 883 kW azimuth thruster
Speed, knots: 19
Complement: 26
Guns: 1-57 mm.

Comment: Contract awarded in November 2003 for vessel designed by Rolls-Royce for a variety of coastguard and EEZ management roles. These include offshore standby and rescue, firefighting, salvage, pollution prevention, general law enforcement operations and fishery control. The ship is to be capable of operating the NATO Submarine Rescue System. Built by Aker's Sjøviknes yard based on steelwork from Aker Tulcea in Romania. The ship is owned by Remøy Shipping, who operates the ship on long term charter.



HARSTAD 6/2008, Richard Scott / 1335803

1 + 2 BARENTSHAV (VS 794) CLASS (SALVAGE AND RESCUE TUGS) (ARS)

Name	No	Builders	Commissioned
BARENTSHAV	W 340	Myklebust Verft AS	2009
BERGEN	W 341	Myklebust Verft AS	2009
SORTLAND	W 342	Myklebust Verft AS	2010

Displacement, tons: 4,000 full load
Dimensions, feet (metres): 305.8 × 54.5 × 19.0 (93.2 × 16.6 × 5.8)
Main machinery: LNG/diesel-electric; 1 Bergen B32 diesel; 5,364 hp (4 MW); 3 Mitsubishi GS 16R generators; 3,480 hp (2.6 MW); 1 Mitsubishi GS 12R generator; 860 hp (642 kW); 1 motor; 1 shaft
Speed, knots: 20
Complement: 16
Guns: 1-40 mm/70
Radars: Air/Surface search: To be announced
Surface search/Navigation: To be announced

Comment: Contract signed on 21 October 2005 with designer Vik-Sandvik AS and owner Remøy Management for the delivery of three coast guard vessels. The ships are to be operated by the Coast Guard on long term charter. The vessels are to be equipped with the same kind of rescue and environmental protection equipment as that in the UT 512 design Harstad. The vessels are of particular interest in that they are some of the world's first naval vessels to use a hybrid propulsion system based on diesel and liquid natural gas (LNG). The hulls are under construction in Romania and are to be fitted out in Norway from 2009.



BARENTSHAV (artist's impression) 1/2006, Myklebust Verft / 1158733

3 NORDKAPP CLASS (WPSOH)

Name	No	Builders	Launched	Commissioned
NORDKAPP	W 320	Bergens Mek Verksteder	2 Apr 1980	25 Apr 1981
SENJA	W 321	Horten Verft	16 Mar 1980	6 Mar 1981
ANDENES	W 322	Haugesund Mek Verksted	21 Mar 1981	30 Jan 1982

Displacement, tons: 3,300 full load
Dimensions, feet (metres): 346 × 47.9 × 18.1 (105.5 × 14.6 × 4.9)
Main machinery: 4 Wichmann 9AXAG diesels; 16,163 hp(m) (11.9 MW); 2 shafts
Speed, knots: 21 **Range, n miles:** 7,500 at 15 kt
Complement: 52 (6 aircrew)
Missiles, SSM: Fitted for 6 Kongsberg Penguin II but not embarked.
SAM: Fitted for MBDA Simbad
Guns: 1 Bofors 57 mm/70; 200 rds/min to 17 km (9.3 n miles); weight of shell 2.4 kg. 4 Rheinmetall 20 mm/20; 1,000 rds/min to 2 km.
Torpedoes: 8-324 mm US Mk 32 (2 triple) tubes. Honeywell Mk 46; anti-submarine; active/passive homing to 11 km (5.9 n miles) at 40 kt; warhead 44 kg. Mountings only in peacetime.
Depth charges: 1 rack
Countermeasures: Decoys: 2 chaff launchers.
Combat data systems: Navkis or EDO (after modernisation). SATCOM can be carried.
Weapons control: Sagem Vigy 20 optronic director.
Radars: Air/surface search: EADSTRS-3D; G-band.
Navigation: Atlas; I-band.
Sonars: Simrad SP 270; hull-mounted; 24-30 kHz

Helicopters: 1 Westland Lynx Mk 86

Programmes: In November 1977 the Coast Guard budget was cut resulting in a reduction of the building programme from seven to three ships.

Modernisation: A modernisation programme was conducted 2001-03. Upgrades included an optronic director, new hull-mounted sonar, new air search radar and combat data system. A further refit programme for all three ships was conducted by Fiskerstrand Verft in 2006.

Structure: Ice strengthened. Fitted for firefighting, anti-pollution work, all with two motor cutters and a Gemini-type dinghy. SATCOM fitted for Gulf dep oyment.

Operational: Bunks for 109. War complement increases to 76.



ANDENES 6/2006, E & M Laursen / 1151136

4 FISHERY PROTECTION SHIPS (WPSOH)

Name	No	Tonnage	Completion
TITRAN	KV 1	96	1982
GARSØY	KV 8	95	1988
ÅHAV	KV 7	50	1981
THORSTEINSON	KV 26	272	1960

Comment: An Inshore Patrol Force was established in January 1997. This comprises mostly chartered ships with KV pennant numbers. KV 1-7 are coastal cutters. Five new ships are to replace older ships from 2006.



GARSØY 6/2005, Globke Collection / 1151135

5 + (5) NORNEN CLASS (PATROL VESSELS) (PBO)

Name	No	Builders	Commissioned
NORNEN	W 330	Gryfia Shipyard, Szczecin	2006
FARM	W 331	Gryfia Shipyard, Szczecin	2006
HEIMDAL	W 332	Gryfia Shipyard, Szczecin	2008
NJORD	W 333	Gryfia Shipyard, Szczecin	2008
TOR	W 334	Gryfia Shipyard, Szczecin	2008

Displacement, tons: 743 full load
Dimensions, feet (metres): 154.8 × 33.8 × 10.8 (47.2 × 10.3 × 3.3)
Main machinery: Diesel-electric; 2 azimuth thrusters
Speed, knots: 16
Complement: 20

Comment: Contract awarded in February 2005 to Remøy Management and Remøy Shipping for the construction of five new vessels with an option for a further five. The original plan was for the ships to be owned and managed by the shipping companies and chartered to the Coast Guard. However, this was overtaken by the decision in July 2008 to purchase all five ships. The design, developed by Skipsteknisk AS, is called ST-610. The ships are employed out to 24 n miles from the coast and are equipped to conduct towing, counter-pollution operations, fire-fighting and general patrol duties. Two fast rescue craft are carried and there is space for 100 m³ of cargo space on deck and 90 m³ in the hold



HEIMDAL

4/2007, L-G Nilsson / 1166620

Oman



Country Overview

The Sultanate of Oman is an independent Middle-East state extending along the south-east coast of the Arabian Peninsula. It is bordered to the south-west by the Republic of Yemen, to the west by Saudi Arabia and to the north-west by the United Arab Emirates which separates a small exclave on the Musandam peninsula, on the south side of the Strait of Hormuz, from the rest of the country. Masirah island and the Khuriya Muriya Islands lie off the south-east coast. With an area of 92,030 square miles, it has a 1,129 n mile coastline with the Indian Ocean and Gulf of Oman. The capital, largest city and principal port is Muscat while there is a further port at Salalah. Territorial seas (12 n miles) are claimed. An EEZ (200 n miles) has also been claimed but its limits have only been partly defined by boundary agreements.

Headquarters Appointments

Commander Royal Navy of Oman:
 Rear Admiral (Liwaah Rukn Bahry) Salim bin Abdullah bin Rashid al Alawi
Principal Staff Officer:
 Commodore (Ameed) Abdullah Khamis Abdullah Al-Raisi
Director General Operations and Plans:
 Commodore (Ameed) Abdullah Khamis Abdullah Al-Raisi
Commander Coast Guard:
 Captain (Aqeed Bahry) Hamdan bin Marhoon Al Mamary
Commander Royal Yacht Squadron:
 Commodore (Ameed) J M Knapp

Bases

Said bin Sultan, Widam A'Sahil (main base, dockyard and shipyard)
 Ras Musandam
 Musaskar al Murtafa'a (headquarters)

Personnel

(a) 2009: 4,200 officers and men
 (b) Voluntary service

CORVETTES

1 PATROL SHIP (FSH/AXL/AGS)

Name	No	Builders	Commissioned
AL MABRUKAH (ex-Al Said)	Q 30 (ex-A 1)	Brooke Marine, Lowestoft	1971

Displacement, tons: 900 full load
Dimensions, feet (metres): 203.4 × 35.1 × 9.8 (62 × 10.7 × 3)
Main machinery: 2 Paxman Valenta 12CM diesels, 5,000 hp (3.73 MW) sustained, 2 shafts
Speed, knots: 12
Complement: 39 (7 officers) plus 32 trainees

Guns: 1 Bofors 40 mm/70, 2 Oerlikon 20 mm A41A.
Countermeasures: Decoys: Wallop Barricade 18-barrelled chaff launcher
ESM: Racal Cutlass; radar warning.
Radars: Surface search: Racal Decca TM 1226, I-band.
Helicopters: Platform only.

Comment: Built by Brooke Marine, Lowestoft. Launched 7 April 1970 as a yacht for the Sultan of Oman. Carried on board is one Rotork landing craft. Converted to training/patrol ship in 1983 with enlarged helicopter deck, additional accommodation and armament. Re-classified as a corvette and pennant number changed in 1997. Fitted with survey equipment in 2000, as an additional role.



AL MABRUKAH

6/2003, Royal Navy of Oman / 0589799

2 QAHIR CLASS (FSGMH)

Name	No	Builders	Laid down	Launched	Commissioned
QAHIR AL AMWAJ	C 31	Vosper Thornycroft, Woolston	21 May 1993	21 Sep 1994	3 Sep 1996
AL MUA'ZZAR	C 32	Vosper Thornycroft, Woolston	4 Apr 1994	26 Sep 1995	13 Apr 1997

Displacement, tons: 1,450 full load
Dimensions, feet (metres): 274.6 oa; 249.3 wl x 37.7 x 11.8 (89.7; 76 x 11.5 x 3.6)
Main machinery: CODAD; 4 Crossley SEMT-Pielstick 16 PA6 V 280 STC, 28,160 hp(m) (20.7 MW) sustained; 2 shafts, Kamewa cp props
Speed, knots: 28
Range, n miles: 4,000 at 10 kt
Complement: 76 (14 officers) plus 3 spare

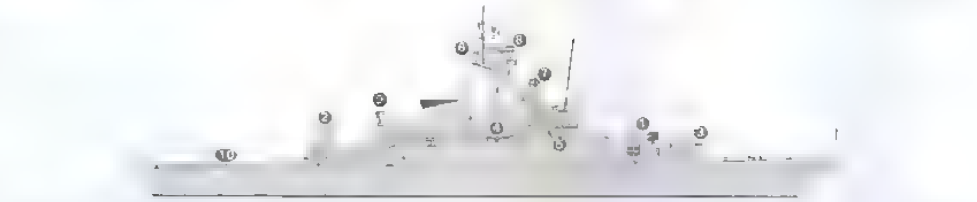
Missiles: SSM: 8 Aerospatiale MM 40 Block 2 Exocet ●; inertial cruise; active radar homing to 70 km (40 n miles) at 0.9 Mach; warhead 165 kg; sea-skimmer. SAM: Thomson-CSF Crotale NG octuple launcher ●; 16 VT1; command line of sight guidance; radar/IR homing to 13 km (7 n miles) at 2.4 Mach; warhead 14 kg.
Guns: 1 OTO Melara 3 in (76 mm)/62 Super Rapid ●; 120 rds/min to 16 km (8.7 n miles); weight of shell 6 kg. 2 Oerlikon/Royal Ordnance 20 mm: GAM-BO1 ●; 2 7.62 mm MGs.
Torpedoes: 6—324 mm (2 triple) tubes may be fitted in due course
Countermeasures: Decoys: 2 Barricade 12-barrelled chaff and IR launchers ●.
ESM: Thomson-CSF DR 3000 ●, intercept.
Combat data systems: Signaal/Thomson-CSF TACTICOS; Link Y; SATCOM
Weapons control: Signaal STING optronic and radar tracker ●; 2 Signaal optical directors.
Radars: Air/surface search: Signaal MW08 ●; G band.
Fire control: Signaal STING ●; I/J-band. Thomson-CSF DRBV 51C ●; J-band (for Crotale).
Navigation: Kelvin Hughes 1007; I-band.
Sonars: Thomson Sintra/BAeSEMA ATAS; towed array; active search, 3 kHz (may be fitted).

Helicopters: Platform for 1 Super Lynx ●

Programmes: Vosper Thornycroft signed the Muheet Project contract on 5 April 1992. First steel cut 23 September 1992. C 31 accepted on 27 March 1996, and C 32 on 26 November 1996. Commissioned after operational work up in the UK, and on return to Oman. Names mean Conqueror of the Waves, and The Supported.

Structure: The ship is based on the Vigilance class design with enhanced stealth features. It is possible lightweight torpedo tubes may be fitted. The towed array, if fitted, adds another 8 tons on the stern but does not affect the helicopter deck. RAM (Radar Absorbent Material) is widely used on the superstructure.

Operational: The helicopter platform can support a Super Puma sized aircraft.



QAHIR AL AMWAJ (Scale 1 : 900), Ian Sturton / 0506743



AL MUA'ZZAR 6/2005, E & M Laursen / 1151140



QAHIR AL AMWAJ 3/2008, Michael Nitz / 1353247

0 + 3 PROJECT KHAREEF (CORVETTES) (FSGHM)

Name	No	Builders	Laid down	Launched	Commissioned
-	-	VT Shipbuilding, Portsmouth	2007	2009	2010
-	-	VT Shipbuilding, Portsmouth	2007	2009	2010
-	-	VT Shipbuilding, Portsmouth	2008	2010	2011

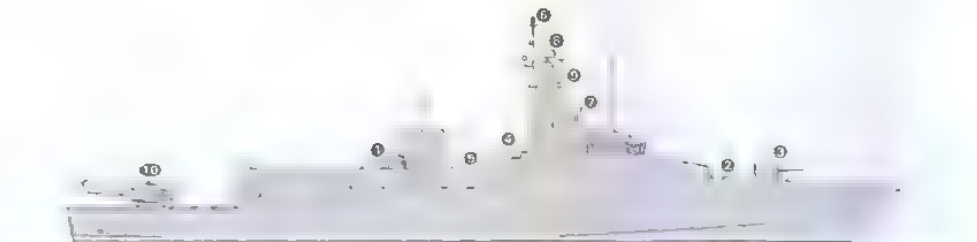
Displacement, tons: 2,500 standard
Dimensions, feet (metres): 323.1 x 47.9 x 13.4 (98.5 x 14.6 x 4.1)
Main machinery: 2 diesels; 2 shafts
Speed, knots: 25
Complement: To be announced

Missiles: SSM: 8 MBDA MM 40 Exocet Block 3 ●
SAM: 12 (2 sextuple) MBDA VL MICA; command/inertial guidance ●; radar/IR homing to 20 km (10.8 n miles); warhead 12 kg.
Guns: 1 OTO Melara 3 in (76 mm)/62 Super Rapid ●; 2 MSI-Defence DS 30M 30 mm ●.
Countermeasures: Decoys: 2 Rheinmetall MASS-2L launchers ●.
ESM: Thales Vigile 400 ●
Combat data systems: Thales Tacticos. Link Y Mk 2
Weapons control: Thales STING Mk 2 optronic and radar tracker ●
Radars: Air/surface search: Thales SMART-S ●; E/F-band.
Navigation: To be announced ●
Fire control: Thales STING ●; I/J-band

Helicopters: 1 Super Lynx ●

Programmes: The contract for the design and build of three Project Khareef patrol ships with an initial logistics support package, was signed with VT Shipbuilding on 15 January 2007. All three vessels are to be built at Portsmouth with the handover of the lead ship scheduled for early 2010. The others are to follow at six-month intervals.

Structure: The design is derived from VT Multipurpose Ocean Patrol vessel family.



PROJECT KHAREEF (Scale 1 : 900), Ian Sturton



PROJECT KHAREEF CORVETTE 1/2007, VT Group 1190513

SHIPBORNE AIRCRAFT

Numbers/Type: 16 GKN Westland Super Lynx 300
Operational speed: 120 kt (222 km/h).
Service ceiling: 10,000 ft (3,048 m).
Range: 320 n miles (593 km).

Role/Weapon systems: Contract signed 19 January 2002. Ten had been delivered by early 2007. Roles include maritime surveillance, armed escort and SAR. Operated by the Air Force.



SUPER LYNX

5/2006 / 116/504

**4 DHOFAR (PROVINCE) CLASS
 (FAST ATTACK CRAFT—MISSILE) (PGGF)**

Name	No	Builders	Launched	Commissioned
DHOFAR	Z 10	Vosper Thornycroft	14 Oct 1981	7 Aug 1982
AL SHARQIYAH	Z 11	Vosper Thornycroft	2 Dec 1982	5 Dec 1983
AL BAT'NAH	Z 12	Vosper Thornycroft	4 Nov 1982	18 Jan 1984
MUSSANDAM	Z 14	Vosper Thornycroft	19 Mar 1988	31 Mar 1989

Displacement, tons: 311 light, 394 full load
Dimensions, feet (metres): 186 x 26.9 x 7.9 (56.7 x 8.2 x 2.4)
Main machinery: 4 Paxman Valenta 18CM diesels, 15,000 hp (11.2 MW) sustained, 4 shafts, auxiliary propulsion; 2 motors; 200 hp (149 kW)
Speed, knots: 38. **Range, n miles:** 2,000 at 18 kt
Complement: 45 (5 officers) plus 14 trainees
Missiles: SSM: 8 (6 in Z 10). Aerospatiale MM 40 Exocet; inertial cruise; active radar homing to 70 km (40 n miles) at 0.9 Mach; warhead 165 kg; sea-skimmer
Guns: 1 OTO Melara 3 in (76 mm)/62 compact; 85 rds/min to 16 km (8.7 n miles); weight of shell 6 kg
 2 Breda 40 mm/70 (twin); 300 rds/min to 12.5 km (6.8 n miles); weight of shell 0.96 kg, 2 -20 mm
Countermeasures: Decoys: 2 Wallop Barricade fixed triple barrels; for chaff and IR flares. ESM: Racal Cutlass; radar warning
 ECM: Scorpion, jammer
Weapons control: Sperry Sea Archer (8 10), Philips 9LV 307 (remainder).
Radars: Air/surface search: Plessey AWS 4 or AWS 6; E/F-band.
 Fire control, Philips 9LV 307; I/J-band.
 Navigation: KH 1007 ARPA; I-band.

Programmes: First ordered in 1980, two more in January 1981 and fourth in January 1986.
Structure: Similar to Kenyan Nyayo class. Mast structures are different dependent on radars fitted
Operational: Pennant numbers have been changed from B to Z.



AL SHARQIYAH

6/2003, Royal Navy of Oman / 116/443



DHOFAR

6/2003, Royal Navy of Oman / 056/467

PATROL FORCES

Notes: Replacement of the Dhofar class is under consideration.

3 AL BUSHRA CLASS (PBO)

Name	No	Builders	Laid down	Launched	Commissioned
AL BUSHRA	Z 1	CMN, Cherbourg/Wudam Dockyard	10 Nov 1993	3 May 1995	15 June 1995
AL MANSOOR	Z 2	CMN, Cherbourg/Wudam Dockyard	12 Apr 1994	3 May 1995	10 Aug 1995
AL NAJAH	Z 3	CMN, Cherbourg/Wudam Dockyard	27 June 1994	5 Mar 1996	15 Apr 1996

Displacement, tons: 475 full load
Dimensions, feet (metres): 178.6 x 26.2 x 8.9 (54.5 x 8 x 2.7)
Main machinery: 2 MTU 16V 538 TB93 diesels; 8,000 hp (m) (5.88 MW) sustained; 2 shafts
Speed, knots: 24. **Range, n miles:** 2,400 at 15 kt
Complement: 43 (8 officers)
Guns: 1 OTO Melara 76 mm/62 Compact; 85 rds/min to 16 km (8.7 n miles); weight of shell 6 kg
 2 Oerlikon/Royal Ordnance 20 mm GAM-BO1, 2 12.7 mm MGs.
Countermeasures: Decoys: Plessey Barricade chaff launcher
 ESM Thomson-CSF DR 3000; intercept
Weapons control: CelsiusTech 9LV 207 Mk 3 command system and optronic director.
Radars: Surface search Kelvin Hughes 1007 ARPA; I-band.
Programmes: Project Mawj order for three, with an option on five more, on 1 September 1993. The ships have had additional weapon systems fitted in Wudam dockyard.
Structure: Same hull design as the French P 400 class. 20 mm guns, and countermeasures were not fitted at Cherbourg and are planned to be installed in due course. 76 mm guns were fitted from 1998 from deleted Al Waafi class. The plan to fit torpedoes and sonars has been shelved.
Operational: First pair arrived in Oman on 28 September 1995, last one on 29 June 1996. Pennant numbers have been changed from B to Z.



AL MANSOOR

6/2003, Royal Navy of Oman / 0569798

578 Oman/Patrol forces—Training ships

4 SEEB (VOSPER 25) CLASS (COASTAL PATROL CRAFT) (PB)

Name	No	Builders	Commissioned
SEEB	Z 20	Vosper Private, Singapore	15 Mar 1981
SHINAS	Z 21	Vosper Private, Singapore	15 Mar 1981
SADH	Z 22	Vosper Private, Singapore	15 Mar 1981
KHASSAB	Z 23	Vosper Private, Singapore	15 Mar 1981

Displacement, tons: 74 full load
Dimensions, feet (metres): 82.8 × 19 × 5.2 (25 × 5.8 × 1.6)
Main machinery: 2 MTU 12V 331 TCS2 diesels; 2,660 hp (m) (1.96 MW) sustained; 2 shafts
 1 Cummins N-855M diesel for slow cruising, 189 hp (141 kW) sustained; 1 shaft
Speed, knots: 25; 8 (Cummins diesel)
Range, n miles: 750 at 14 kt
Complement: 13
Guns: 1 Oerlikon 20 mm GAM-801, 2—7.62 mm MGs.
Radars: Surface search, Racal Decca 1226; I-band.

Comment: Arrived in Oman on 19 May 1981 having been ordered one month earlier. The craft were built on speculation and completed in 1980. Pennant numbers have been changed from B to Z.



SADH

10/2004 / 1151305

AMPHIBIOUS FORCES

Notes: There are also some French-built Havas Mk 8 two-man SDVs in service.

1 LANDING SHIP-LOGISTIC (LSTH)

Name	No	Builders	Commissioned
NASR AL BAHR	A 2	Brooke Marine, Lowestoft	6 Feb 1985

Displacement, tons: 2,500 full load
Dimensions, feet (metres): 305 × 50.8 × 8.5 (93 × 15.5 × 2.6)
Main machinery: 2 Paxman Valenta 18 CM diesels; 7,500 hp (5.6 MW) sustained; 2 shafts; cp props
Speed, knots: 12
Range, n miles: 5,500 at 15 kt
Complement: 104 (13 officers)
Military lift: 7 MBT or 400 tons cargo; 190 troops; 2 LCVPs
Guns: 2 Breda 40 mm/70 (1 twin), 2 Oerlikon 20 mm GAM-801, 2—12.7 mm MGs.
Countermasures: Decoys; Wallop Barricade double layer chaff launchers.
Weapons control: PEAB 9LV 107 GFCS and CSEE Lynx optical sight.
Radars: Surface search/navigation; 2 Racal Decca 1226; I-band.
Helicopters: Platform for Super Puma.

Comment: Ordered 18 May 1982. Launched 16 May 1984. Similar to Algerian LSLs. Carries one 16 ton crane. Bow and stern ramps. Full naval command facilities. The forward ramp is of two sections measuring length 59 ft (when extended) × 16.5 ft breadth (18 × 5 m), and the single section stern ramp measures 14 × 16.5 ft (4.3 × 5 m). Both hatches can support a 60 ton tank. The tank deck side bulkheads extend 7.5 ft (2.25 m) above the upper deck between the forecabin and the forward end of the superstructure, and provides two hatch openings to the tank deck below. Positioned between the hatches is a 2 ton crane with athwartship travel. New engine exhaust system and funnel fitted in 1987. Aft Oerlikon gun removed. Ship is also used as a ratings' training vessel. Pennant number has been changed from L to A.



NASR AL BAHR

2/2002, A Sharma / 0533304

1 LANDING CRAFT (LCT)

AL MUNASSIR A 1

Displacement, tons: 850 approx
Dimensions, feet (metres): 210 × 39.4 × 8.7 (64.0 × 12.0 × 2.7)
Main machinery: 2 Caterpillar 3508 diesels; 3,620 hp (2.7 MW); 2 shafts
Speed, knots: 11
Complement: 19 (plus 56 troops)
Military lift: Military vehicles

Comment: The Project Mahmal contract was placed with Abu Dhabi Ship Building on 13 March 2005. The vessel is likely to be similar to those delivered to the UAE in 2004. Details are speculative. The ship was launched on 17 May 2008 and sea trials had started by the end of 2008.

3 LCMs (LSTH)

Name	No	Builders	Commissioned
SABA AL BAHR	A 8 (ex-L 8)	Vosper Private, Singapore	17 Sep 1981
AL DOGHAS	A 9 (ex-L 9)	Vosper Private, Singapore	10 Jan 1983
ALTEMSAH	A 10 (ex-L 10)	Vosper Private, Singapore	12 Feb 1983

Displacement, tons: 230 full load
Dimensions, feet (metres): 108.2 (83.6, C 8) × 24.3 × 4.3 (33 (25.5) × 2.4 × 1.3)
Main machinery: 2 Caterpillar 3408TA diesels; 1,880 hp (1.4 MW) sustained; 2 shafts
Speed, knots: 8
Range, n miles: 1,400 at 8 kt
Complement: 11
Military lift: 100 tons
Radars: Navigation: Furuno 701; I-band

Comment: First one launched 30 June 1981. Second pair of similar but not identical ships, launched 12 November and 15 December 1982. Pennant numbers have been changed from L to A.



ALTEMSAH

6/2003, Royal Navy of Oman / 0567468

1 LCU (LSTH)

Name	No	Builders	Commissioned
AL NEEMRAN	A 7 (ex-L 7)	Lewis Offshore, Stornoway	1979

Measurement, tons: 85 dwt
Dimensions, feet (metres): 84 × 24 × 6 (25.6 × 7.4 × 1.8)
Main machinery: 2 diesels; 300 hp (220 kW); 2 shafts
Speed, knots: 7/8
Complement: 6
Radars: Navigation: Furuno; I-band.

Comment: Second of class deleted in 1993. Pennant number has been changed from L to A.

TRAINING SHIPS

1 SAIL TRAINING SHIP (AXS)

Name	No	Builders	Recommissioned
SHABAB OMAN (ex-Captain Scott)	S 1	Herd and Mackenzie, Buckie, Scotland	1979

Displacement, tons: 386 full load
Dimensions, feet (metres): 144.3 × 27.9 × 15.1 (44 × 8.5 × 4.6)
Main machinery: 2 Gardner diesels; 460 hp (343 kW); 2 shafts
Speed, knots: 10 (diesels)
Complement: 20 (5 officers) plus 3 officers and 24 trainees

Comment: Topsail schooner built in 1971 and taken over from Dulverton Trust in 1977 used for sail training. Name means Omani Youth.



SHABAB OMAN

8/2008, Frank Findler / 1353246

AUXILIARIES

Notes: (1) In addition to the listed vessels there are four 12 m Cheverton Work boats (W 41-44) and eight 8 m Work boats (W 4-11).

(2) The contract for five 52 m catamaran vessels was signed with Rodriguez Cantieri Navali on 8 April 2006. Three are to be used for transport and two for rescue. Delivery is expected to be completed in 2009.

1 SUPPLY SHIP (AKS)

Name	No	Builders	Launched	Commissioned
AL SULTANA	T 1 (ex-A 2, ex-S 2)	Conoship, Groningen	18 May 1975	4 June 1975

Measurement, tons: 1,380 dwt
Dimensions, feet (metres): 215.6 × 35 × 13.5 (65.7 × 10.7 × 4.2)
Main machinery: 1 Mirreles Blackstone diesel; 1,120 hp(m) (835 kW); 1 shaft
Speed, knots: 11
Complement: 20
Radars: Navigation Racal Decca TM 1226; I-band.

Comment: Major refit in 1992. Has a 1 ton crane. Pennant number changed in 1997 and again in 2002.



AL SULTANA 4/2002, Schaeffer/Marsan / 0533305

2 FAST TRANSPORT SHIPS (AP)

SHINAS HORMUZ

Measurement, tons: 146 dwt
Dimensions, feet (metres): 212.6 × 54.1 × 6.9 (64.8 × 16.5 × 2.1)
Main machinery: 4 MTU 20V 1163 TB73L diesels; 34,865 hp (26 MW); 4 Kamewa 90 waterjets
Speed, knots: 50 **Range, n miles:** 450 at 40 kt
Complement: 12
Military lift: 203 passengers and 56 vehicles including 64 lane-metres of trucks
Radars: Navigation.
Helicopters: Platform for one medium.

Comment: Contract signed with Austal Ships on 15 May 2006 for the construction of two multipurpose passenger/vehicle ferries. They are of a twin-hull catamaran design and of aluminium construction. The vessels act as intra-theatre sealift ships in an emergency and, at other times, they are used commercially as passenger ferries. The first vessel was launched on 27 September 2007; the second was delivered in July 2008. They are based around the Musandam Peninsula.



SHINAS 10/2007, Austal Ships / 12934/4

ROYAL YACHTS

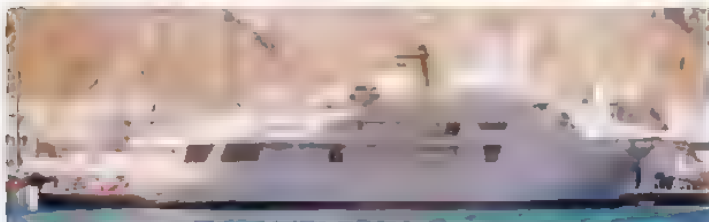
Notes: The Royal Yacht Squadron of Oman is a distinct service that is not part of the Royal Navy of Oman. Based at Muscat, the squadron consists of three major units and a number of smaller craft.

1 ROYAL YACHT (YAC)

Name	No	Builders	Commissioned
AL SAID	-	Picchiotti SpA, Viareggio	July 1982

Displacement, tons: 3,800 full load
Dimensions, feet (metres): 340.5 × 62.4 × 15.4 (103.8 × 19.0 × 4.7)
Main machinery: 2 GMT A 420.6 H diesels; 8,400 hp(m) (6.17 MW); sustained; 2 shafts, cp props; bow thruster
Speed, knots: 18
Complement: 156 (16 officers)
Radars: Navigation; Decca TM 1226C; ACS 1230C; I-band.

Comment: Fitted with helicopter deck and fin stabilisers. Carries three Puma C service launches and one Rotork beach landing craft. A variety of small arms carried.



AL SAID 12/2005, Hartmut Ehlers / 116/444

1 SUPPORT SHIP (AKSH)

Name	No	Builders	Launched	Commissioned
FULK AL SALAMAH	-	Bremer-Vulkan	29 Aug 1986	3 Apr 1987

(ex-Ghubat Al Salamah)

Measurement, tons: 10,797 grt; 3,239 net
Dimensions, feet (metres): 447.5 × 68.9 × 19.7 (136.4 × 21 × 6)
Main machinery: 4 Fincantieri GMT A 420.6 H diesels; 16,800 hp(m) (12.35 MW) sustained; 2 shafts, cp props
Speed, knots: 19.5
Military lift: 240 troops
Radars: Navigation. 2 Racal Decca; I-band.
Helicopters: Up to 2 AS 332C Super Pumas.

Comment: Primary role is to support the Royal Yacht on deployments. Secondary roles include government, environmental and training duties. Reported to be fitted with Javelin air-defence missile system.



FULK AL SALAMAH 12/2005, Hartmut Ehlers / 1167445

1 ROYAL DHOW (YAC)

Name	No	Builders	Commissioned
ZINAT AL BIHAAR	-	-	1988

Displacement, tons: 510 light
Dimensions, feet (metres): 200.2 × 32.2 × 12.8 (61 × 9.8 × 3.9)
Main machinery: 2 Siemens motors, 965 hp (720 kW); 2 shafts
Speed, knots: 11.5

Comment: Three-masted wooden sailing vessel built in Oman on traditional lines.



ZINAT AL BIHAAR 4/2004, Derek Fox / 0589797

POLICE

Notes: (1) In addition to the vessels listed below there are several harbour craft including a Cheverton 8 m work boat *Zahra 24*, *Zahra 16* and a fireboat pennant number 10. There are also two P.1atus aircraft for SAR
 (2) 15 FPBs between 11 and 30 m may be ordered in due course. These could be for the Navy if it takes over Fishery Protection duties from the Police



ZAHRA 16 6/2003, Hartmut Ehlers / 0567471

3 CG 29 TYPE (COASTAL PATROL CRAFT) (PB)

HARAS 7 H 7

HARAS 9 H 9

HARAS 10 H 10

Displacement, tons: 84 full load
Dimensions, feet (metres): 94.8 × 17.7 × 4.3 (28.9 × 5.4 × 1.3)
Main machinery: 2 MTU 12V 331TC92 diesels; 2,660 hp(m) (1.96 MW) sustained; 2 shafts
Speed, knots: 25
Range, n miles: 600 at 15 kt
Complement: 13
Guns: 2 Oerlikon 20 mm GAM-BO1.
Radars: Navigation: Racal Decca 1226; I-band.

Comment: Built by Karlskrona Varvet. Commissioned in 1981–82. GRP Sandwich hulls.



HARAS 9

12/2000 / 0114776

1 + 2 FAST PATROL CRAFT (PBF)

Displacement, tons: 54 full load
Dimensions, feet (metres): 90.0 × 18.0 × 4.75 (27.4 × 5.5 × 1.5)
Main machinery: 2 MTU 12V 4000M 90 diesels; 5,470 hp (4.1 MW); 2 Kamewa 56SII waterjets
Speed, knots: 45
Range, n miles: 1,200 at 30 kt
Complement: 12 (2 officers)
Guns: 1—12.7 mm MG 2 7.62 mm MGs.
Radars: Navigation: I-band.

Comment: Order placed on 9 June 2005 with United States Marine, Gulfport, Mississippi, for three interception craft under the Foreign Military Sales programme. With a higher superstructure, the craft are a modified version of the US Mk V Pegasus class. The first boat was delivered in January 2008 and the contract includes a training and support package. Roles include anti-smuggling and anti-narcotics.

1 P 1903 TYPE (COASTAL PATROL CRAFT) (PB)

HARAS 8 H 8

Displacement, tons: 32 full load
Dimensions, feet (metres): 63 × 16.7 × 5.2 (19.2 × 4.8 × 1.6)
Main machinery: 2 MTU 8V 331TC92 diesels; 1,770 hp(m) (1.3 MW); 2 shafts
Speed, knots: 30
Range, n miles: 1,650 at 17 kt
Complement: 10
Guns: 2—12.7 mm MGs.
Radars: Navigation: Racal Decca 1226; I-band.

Comment: Built by Le Comte, Netherlands. Commissioned August 1981. Type 1903 Mk III.



HARAS 8

10/1992, Hartmut Ehlers / 0506067

1 CG 27 TYPE (COASTAL PATROL CRAFT) (PB)

HARAS 6 H 6

Displacement, tons: 53 full load
Dimensions, feet (metres): 78.7 × 18 × 6.2 (24 × 5.5 × 1.9)
Main machinery: 2 MTU 12V 331TC92 diesels; 2,660 hp(m) (1.96 MW) sustained; 2 shafts
Speed, knots: 25
Complement: 11
Guns: 1 Oerlikon 20 mm GAM-BO1
Radars: Navigation: Furuno 701; I-band.

Comment: Completed in 1980 by Karlskrona Varvet. GRP hull.



HARAS 6

10/1992, Hartmut Ehlers / 0506068

14 RODMAN 58 CLASS (PB)

HARAS 21–34

Displacement, tons: 19 full load
Dimensions, feet (metres): 59.0 × 16.0 × 3.9 (18.0 × 4.9 × 1.2)
Main machinery: 2 diesels, 2,000 hp (1.49 MW); 2 waterjets
Speed, knots: 34. **Range, n miles:** 450 at 17 kt
Complement: 5
Radars: Navigation: I-band

Comment: GRP hull. Built in 2002–03 by Rodman, Vigo.



HARAS 25

3/2007, Marco Ghiglino / 1170202

1 P 2000 TYPE (COASTAL PATROL CRAFT) (PB)

DHEEB AL BAHAR 1 2 1

Displacement, tons: 80 full load
Dimensions, feet (metres): 68.2 × 19 × 5 (20.8 × 5.8 × 1.5)
Main machinery: 2 MTU 12V 396TB93 diesels; 3,260 hp(m) (2.4 MW) sustained; 2 shafts
Speed, knots: 40
Range, n miles: 423 at 38 kt; 700 at 18 kt
Guns: 1—12.7 mm MG
Radars: Surface search: Furuno 701; I-band.

Comment: Delivered January 1985 by Watercraft Ltd, Shoreham, UK. GRP hull. Similar to UK Archer class. Carries SATNAV.



DHEEB AL BAHAR 1

6/2003, Hartmut Ehlers / 0589794

2 D 59116 TYPE (COASTAL PATROL CRAFT) (PB)**DHEEB AL BAHAR 2 Z 2****DHEEB AL BAHAR 3 Z 3**

Displacement, tons: 65 full load
Dimensions, feet (metres): 75.5 x 17.1 x 3.9 (23 x 5.2 x 1.2)
Main machinery: 2 MTU 12V 396 TB93 diesels; 3,260 hp(m) (2.4 MW) sustained; 2 shafts
Speed, knots: 36
Range, n miles: 420 at 30 kt
Complement: 11
Guns: 1 – 12.7 mm MG
Radars: Surface search: Furuno 711-2; Furuno 2400; I-band.

Comment: Built by Yokohama Yacht Co, Japan. Commissioned in 1988

**DHEEB AL BAHAR 3**

6/2003, Hartmut Ehlers / 056/470

5 INSHORE PATROL CRAFT (PBI)**ZAHRA 14 Z 14 ZAHRA 15 Z 15 ZAHRA 17 Z 17 ZAHRA 18 Z 18 ZAHRA 21 Z 21**

Displacement, tons: 16; 18 (Zahra 18 and 21) full load
Dimensions, feet (metres): 45.6 x 14.1 x 4.6 (13.9 x 4.3 x 1.4)
 52.5 x 13.8 x 7.5 (16 x 4.2 x 2.3) (Zahra 18 and 21)
Main machinery: 2 Cummins VTA-903M diesels, 643 hp (480 kW); 2 shafts
Speed, knots: 36
Range, n miles: 510 at 22 kt
Complement: 5-6
Guns: 1 or 2 - 7.62 mm MGs.
Radars: Navigation: Decca 101, I-band.

Comment: Zahra 14, 15 and 17 built by Watercraft, Shoreham, UK and completed in 1981. Zahra 21 completed by Emsworth SB in 1987 to a slightly different design. Zahra 18 built by Lecomte in 1987.

**ZAHRA 17 (alongside Zahra 14)**

6/2003, Hartmut Ehlers / 056/472

12 SEASPRAY ASSAULT BOATS (PB)

Displacement, tons: To be announced
Dimensions, feet (metres): 31.2 x 10.2 x 1.6 (9.5 x 3.1 x 0.5)
Main machinery: 2 outboards; 500 hp (375 kW)
Speed, knots: 50
Range, n miles: 450 at 17 kt
Complement: 5
Radars: Navigation: I-band.

Comment: Abu Dhabi Ship Building awarded contract in January 2004. Designed by SeaSpray Aluminium Boats. To be employed in policing, patrol and interception roles by the navy and police.

1 DIVING CRAFT (YDT)**SABHUR 7 (ex-Zahra 27)**

Displacement, tons: 13 full load
Dimensions, feet (metres): 59 x 12.4 x 3.6 (18 x 3.8 x 1.1)
Main machinery: 2 Volvo Penta AQD70D diesels; 430 hp(m) (316 kW) sustained; 2 shafts
Speed, knots: 20
Complement: 4
Guns: 2 – 7.62 mm MGs.

Comment: Rotork Type, the last of several logistic support craft, delivered in 1981 and now used as a diving boat. Similar craft used by the Navy.

**SABHUR 7**

12/2006, Hartmut Ehlers / 1167446

5 VOSPER 75 ft TYPE (COASTAL PATROL CRAFT) (PB)**HARAS 1-5 H 1 HARAS 2 H 2 HARAS 3 H 3 HARAS 4 H 4 HARAS 5 H 5**

Displacement, tons: 50 full load
Dimensions, feet (metres): 75 x 20 x 5.9 (22.9 x 6.1 x 1.8)
Main machinery: 2 Caterpillar D 348 diesels; 1,460 hp (1.08 MW) sustained; 2 shafts
Speed, knots: 24.5
Range, n miles: 1,000 at 11 kt
Complement: 11
Guns: 1 Oerlikon 20 mm GAM-BO1.
Radars: Navigation: Decca 101; I-band.

Comment: First four completed 22 December 1975 by Vosper Thornycroft. GRP hulls. Haras 5 commissioned November 1978.

**HARAS 3**

3/2004, Bob Fildea / 058979F

20 HALMATIC COUGAR ENFORCER 33 (FAST PATROL CRAFT) (PBF)

Displacement, tons: 5.4 full load
Dimensions, feet (metres): 35.7 x 9.3 x 2.5 (10.88 x 2.84 x 0.75)
Main machinery: 2 Yanmar diesels; 2 Hamilton waterjets
Speed, knots: 45
Range, n miles: 120 at 45 kt

Comment: Based on Cougar 33 deep Vee hull form, first batch of five craft supplied by Halmatic in March 2003 with further 15 delivered by late 2003. Deployed in coastal patrol and interception role.

**ENFORCER 33**

3/2007, Marco Ghiglino / 1171701

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Pakistan

Country Overview

The Islamic Republic of Pakistan gained independence in 1947. Situated in south Asia, it has an area of 307,293 square miles and is bordered to the west by Iran, to the north by Afghanistan and to the south by India. It has a 567 n mile coastline with the Arabian Sea. The former province of East Pakistan seceded in 1971 and assumed the name Bangladesh. The status of Jammu and Kashmir is disputed with India. The capital is Islamabad while Karachi is the largest city and principal port. There is a further port at Muhammad bin Qasim. Territorial waters (12 n miles) are claimed. A 200 n mile EEZ has been claimed but the limits have not been defined.

Headquarters Appointments

Chief of the Naval Staff:
Admiral Noman Bashir, HI (M)
Vice Chief of Naval Staff:
Vice Admiral Asaf Humayun, HI (M)
Deputy Chief of Naval Staff (Operations):
Rear Admiral Tanveer Faiz, SI (M)

Senior Appointments

Commander Pakistan Fleet:
Rear Admiral Mohammad Asif Sandila, SI (M)
Commander Karachi:
Vice Admiral Saleem Ahmad Meanai, HI (M)
Commander Coastal Area:
Rear Admiral Muhammad Shafi, SI (M)
Commander Logistics:
Rear Admiral Bakhtiar Mohsin, HI (M)
Commander North Navy:
Commodore Syed Hassan Mustafa, SI (M)
Director General Maritime Security Agency:
Rear Admiral Azher Shamim Anwar, SI (M)

Diplomatic Representation

Naval Adviser in London:
Commodore Asif Saleem
Naval Attaché in Qatar:
Commodore Kalim Shaukat
Naval Attaché in Kuala Lumpur:
Commodore Ayaz Ahmed Nasir
Naval Attaché in Paris:
Captain Asif Khaliq
Naval Attaché in Tehran:
Captain Moazzam Ilyas
Naval Attaché in New Delhi:
Captain Javid Iqbal
Naval Attaché in Washington:
Captain Muhammad Fayyaz Gilani
Naval Adviser in New Delhi:
Captain Javid Iqbal
Naval Attaché in Bonn:
Captain Muhammad Shafiq
Naval Attaché in Beijing:
Captain Mirza Foad Amin Baig
Defence Attache in Muscat:
Captain Shahid Sohail Rao

Personnel

(a) 2009: 25,100 (2,980 officers) including 1,200 Marines and 1,000 (36 officers) seconded to the MSA
(b) Voluntary service
(c) Reserves 5,000

Bases

PNS *Haider* (Naval HQ); PNS *Akram* (Gwadar Naval Base); PNS *Iqbal* (Commando Base); PNS *Mehran* (Karachi Naval Air Station); PNS *Qasim* (Marines HQ/Base), Jinnah Naval Base (Port Ormora)

Prefix to Ships' Names

PNS

Maritime Security Agency

Set up in 1986. Main purpose is to patrol the EEZ in co-operation with the Navy and the Army-manned Coast Guard

Marines

A Marine Commando Unit was formed at PNS *Iqbal*, Karachi in 1981.

Strength of the Fleet

Type	Active	Building
Submarines—Patrol	5	(3)
Submarines—Midget	3	—
Destroyers/Frigates	7	3
Fast Attack Craft—Missile	4	—
Large Patrol Craft	2	—
Hovercraft	4	—
Minehunters	3	—
Survey Ship	1	—
Tankers	5	—
Maritime Security Agency Destroyers	1	—
Large Patrol Craft	4	2
Fast Attack Craft—Gun	2	—

DELETIONS

Frigates

2006 *Zulfiqar*

PENNANT LIST

Submarines

S 135 Hashmat
S 136 Hurmat
S 137 Khalid
S 138 Saad
S 139 Hamza

Destroyers/Frigates

D 181 Tariq
D 182 Babur
D 183 Khaibar
D 184 Badr
D 185 Tippu Sultan

D 188 Shahjahan
251 Zulfiqar
252 Shamsheer (bldg)
253 Saif (bldg)

Mine Warfare Forces

M 163 Muhafiz
M 164 Mujahid
M 166 Munsif

Patrol Forces

P 140 Rajshahi
P 157 Larkana

P 1023 Jurrat
P 1028 Quwwat
P 1029 Jalalat
P 1030 Shujaat

Maritime Security Agency

D 156 Nazim
1060 Sarkat
1061 Rehmat
1062 Nusrat
1063 Vehdat
1066 Subqat
1068 Razaqat

Auxiliaries

A 20 Moawin
A 21 Kalmat
A 40 Attock
A 44 Bhofu
A 45 Guma
A 47 Nasr
A 49 Gwadar
— Janbaz
SV 48 Behr Palma

SUBMARINES

Notes: A competition for the acquisition of three new diesel-electric submarines was launched in 2006. AI-independent propulsion is a requirement and principal contenders are reported to include the French (DCN) Scorpene class and Germany's (HDW) Type 214. The submarines are expected to be built in Pakistan.

2 HASHMAT (AGOSTA 70) CLASS (SSK)

Name	No	Builders	Laid down	Launched	Commissioned
HASHMAT (ex-Astrant)	S 135	Dubigeon Normandie, Nantes	15 Sep 1976	14 Dec 1977	17 Feb 1979
HURMAT (ex-Adventurous)	S 136	Dubigeon Normandie, Nantes	18 Sep 1977	1 Dec 1978	18 Feb 1980

Displacement, tons: 1,490 surfaced; 1,740 dived
Dimensions, feet (metres): 221.7 × 22.3 × 17.7
(67.6 × 6.8 × 5.4)

Main machinery: Diesel-electric; 2 SEMT-Pielstick 16 PA4 V 185 VG diesels; 3,600 hp(m) (2.65 MW); 2 Jeumont Schneider alternators; 1.7 MW; 1 motor; 4,600 hp(m) (3.4 MW); 1 cruising motor; 32 hp(m) (23 kW); 1 shaft
Speed, knots: 12 surfaced; 20 dived
Range, n miles: 8,500 at 9 kt snorting; 350 at 3.5 kt dived
Complement: 59 (8 officers)

Missiles: SSM McDonnell Douglas Sub Harpoon; active radar homing to 130 km (70 n miles) at 0.9 Mach; warhead 227 kg.

Torpedoes: 4—21 in (533 mm) bow tubes ECAN F17P; wire-guided; active/passive homing to 20 km (10.8 n miles) at 40 kt; warhead 250 kg; water ram discharge gear. E14, E15 and L3 torpedoes are also available. Total of 20 torpedoes and missiles.

Mines, Stonefish.

Countermeasures: ESM: DR-3000, intercept and warning
Radars: Surface search: Thomson-CSF DRUA 33; I-band
Sonars: Thomson Sintra TSM 2233D, passive search; medium frequency.
Thomson Sintra DUUA 2B; active/passive search and attack; 8 kHz active.
Thomson Sintra TSM 2933D towed array; passive; very low frequency

Programmes: Purchased from France in mid-1978 after United Nations' ban on arms sales to South Africa. *Hashmat* arrived Karachi 31 October 1979, *Hurmat* arrived 11 August 1980

Structure: Diving depth, 300 m (985 ft). Both were modified to fire Harpoon in 1985 but may have had to acquire the missiles through a third party
Operational: Assigned to 5th Submarine Squadron.



HURMAT

3/2000, Michael Nitz / 1305311

3 KHALID (AGOSTA 90B) CLASS (SSK)

Name	No	Builders	Laid down	Launched	Commissioned
KHALID	S 137	DCN, Cherbourg	15 July 1998	18 Dec 1998	6 Sep 1999
SAAD	S 138	DCN, Cherbourg/PN Dockyard, Karachi	2 Dec 1999	24 Aug 2002	12 Dec 2003
HAMZA	S 139	Karachi Shipyard and Engineering Works	2000	10 Aug 2006	26 Sep 2008

Displacement, tons: 1,510 surfaced; 1,760 dived (1,980 with MESMA)

Dimensions, feet (metres): 221.7; 250.0 (S 139) × 22.3 × 17.7 (67.6; 76.2 (S 139) × 6.8 × 5.4)

Main machinery: Diesel-electric; 2 SEMT-Pielstick 16 PA4 V 185 VG diesels; 3,600 hp(m) (2.65 MW); 2 Jeumont Schneider alternators; 1.7 MW; 1 Jeumont motor; 2,992 hp(m) (2.2 MW); 1 cruising motor; 32 hp(m) (23 kW); 1 shaft

Speed, knots: 12 surfaced; 20 dived

Range, n miles: 8,500 at 9 kt snorting, 350 at 3.5 kt dived

Complement: 36 (7 officers)

Missiles: SSM: 4 Aerospatiale Exocet SM 39; inertial cruise; active radar homing to 50 km (27 n miles) at 0.9 Mach; warhead 165 kg

Torpedoes: 4–21 in (533 mm) bow tubes. 16 ECAN F17P Mod 2; wire-guided; active/passive homing to 20 km (10.8 n miles) at 40 kt; warhead 250 kg. Total of 20 weapons

Mines: Stonefish

Countermeasures: ESM. Thomson-CSF DR-3000U; intercept

Weapons control: Thomson Sintra SUBTICS Mk 2.

Radars: Surface search: KH 1007; I-band.

Sonars: Thomson Sintra TSM 2233 suite; bow cylindrical, passive ranging and intercept, and clip-on towed arrays.

Programmes: A provisional order for a second batch of three more Agostas was reported in September 1992 and this was confirmed on 21 September 1994. First one built



SAAD

9/2003, DCN / 1567934

in France. Parts for S 138 sent to Pakistan in April 1998 and for S 139 in September 1998.

Structure: The last of the class has a 200 kW MESMA liquid oxygen AIP system, thereby extending the hull by 8.6 m. The MESMA AIP system has a power output of 200 kW which quadruples dived performance at 4 kt. The MESMA system is to be retrofitted in S 137 and S 138 during their next major refits from about 2012.

Hulls also have much improved acoustic quietening and a full integrated sonar suite including flank, intercept and towed arrays SOPOLEM J 95 search and STS 95 attack periscopes. Sagem Integrated navigation system HLES 80 steel Diving depth of 320 m (1,050 ft).

Operational: Khalid completed 29 April 1999 and sailed for Pakistan in November 1999. Assigned to 5th Submarine Squadron.



HAMZA

8/2006, DCN / 1154888

3 MIDGET SUBMARINES (SSW)

X 01–X 03

Displacement, tons: 118 dived

Dimensions, feet (metres): 91.2 × 18.4 (27.8 × 5.6)

Speed, knots: 7 dived

Range, n miles: 2,200 surfaced; 60 dived

Complement: 8 + 8 swimmers

Torpedoes: 2–21 in (533 mm) tubes; 2 ALCATEL E 14/E 15; active homing to 12 km (6.5 n miles) at 25 kt; passive homing to 28 km (15 n miles) at 23 kt; warhead 300 kg

plus either two short range active/passive homing torpedoes or two SDVs.

Mines: 12 Mk 414 Limpet type

Sonars: Hull mounted; active/passive; high frequency.

Comment: MG 110 type built in Pakistan under supervision by Cosmos. These are enlarged SX 756 of Italian Cosmos design. Diving depth of 150 m and can carry eight

swimmers with 2 tons of explosives as well as two CF2 FX 80 SDVs (swimmer delivery vehicles). Pilkington Optronics CK 39 periscopes. Reported as having a range of 1,000 n miles and an endurance of 20 days. All have been upgraded since 1995 with improved sensors and weapons. However, reports that X 01 has been equipped with Harpoon are not considered likely. All are active.



X 03

5/2003 / 1156926

FRIGATES

Notes: Procurement of second-hand frigates is under consideration

6TARIQ (AMAZON) CLASS (TYPE 21) (FFHM/FFGH)

Name	No	Builders	Laid down	Launched	Commissioned	Recommissioned
TARIQ (ex-Ambuscade)	D 181 (ex-F 172)	Yarrow Shipbuilders, Glasgow	1 Sep 1971	18 Jan 1973	5 Sep 1975	28 July 1993
BABUR (ex-Amazon)	D 182 (ex-F 169)	Vosper Thornycroft, Woolston	6 Nov 1969	26 Apr 1971	11 May 1974	30 Sep 1993
KHAIBAR (ex-Arrow)	D 183 (ex-F 173)	Yarrow Shipbuilders, Glasgow	28 Sep 1972	5 Feb 1974	29 July 1976	1 Mar 1994
BADR (ex-Asacrity)	D 184 (ex-F 174)	Yarrow Shipbuilders, Glasgow	5 Mar 1973	18 Sep 1974	2 July 1977	1 Mar 1994
TIPPU SULTAN (ex-Avenger)	D 185 (ex-F 185)	Yarrow Shipbuilders, Glasgow	30 Oct 1974	20 Nov 1975	19 July 1978	23 Sep 1994
SHAHJAHAN (ex-Active)	D 186 (ex-F 171)	Vosper Thornycroft, Woolston	23 July 1971	23 Nov 1972	17 June 1977	23 Sep 1994

Displacement, tons: 3,100 standard; 3,700 full load
Dimensions, feet (metres): 384 oa; 360 wl x 41.7 x 19.5 (screws) (117; 109.7 x 12.7 x 5.9)
Main machinery: COGOG, 2 RR Olympus TM3B gas turbines; 50,000 hp (37.3 MW) sustained; 2 RR Tyne RM1C gas turbines (cruising); 9,900 hp (7.4 MW) sustained; 2 shafts, cp props
Speed, knots: 30; 18 on Tynes
Range, n miles: 4,000 at 17 kt; 1,200 at 30 kt
Complement: 221 (23 officers) (accommodation for 192)

Missiles: SSM: 4 McDonnell Douglas Harpoon 1C fitted in D 186, D 184 and D 182
SAM: China LY 60N sextuple launchers semi-active radar homing to 13 km (7 n miles) at 2.5 Mach; warhead 33 kg (D 185, D 181 and D 183).
Guns: 1 Vickers 4.5 in (114 mm)/55 Mk 8; 25 rds/min to 22 km (11.9 n miles) anti-surface; 6 km (3.3 n miles) anti-aircraft, weight of shell 21 kg.
 Hughes 20 mm Vulcan Phalanx Mk 15; 3,000 rds/min to 1.5 km (D 181, D 183, D 184 and D 186)
 2 MSI DS 30B 30 mm/75; D 182, D 185 and D 186.
 4-12.7 mm MGs

Torpedoes: 6-324 mm Plessey STWS Mk 2 (2 triple) tubes (D 184 and D 186); others fitted with 2 Bofors Type 43X2 single launchers for Swedish Type 45 torpedoes.

Countermeasures: Decoys: Graseby Type 182; towed torpedo decoy
 2 Rheinmetall MASS launchers (D 181-186) Mk 36 SRBOC (D 181 and D 182)
 ESM: Thomson-CSF DR 3000S; intercept.

Combat data systems: CAAIS combat data system with Ferranti FM 1600B computers (D 186 and D 184) CelsiusTech 9LV Mk 3 including LinkY (in remainder).

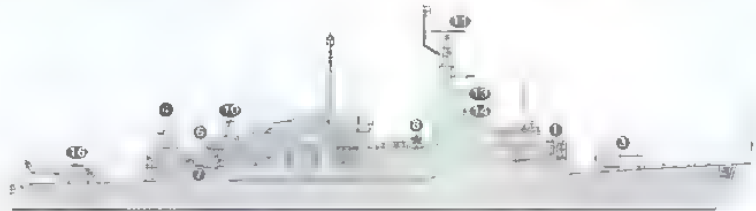
Weapons control: Ferranti WSA-4 digital fire-control system. CSEE Najir Mk 2 optronic director (D 182, D 185 and D 186).

Radars: Air/surface search: Marconi Type 992R; E/F-band (D 182, D 184 and D 186). Signaal DA08; F-band (D 181, D 183 and D 185).

Surface search: Kelvin Hughes Type 1007 or Type 1006 (D 184 and D 186), I-band.

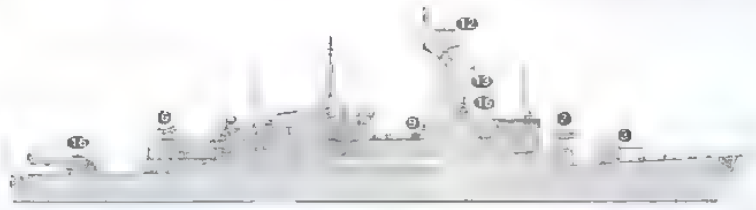
Fire control: 1 Selonia Type 912 (RTN 10X); I/J-band (D 182, D 184 and D 186)
 1 China LZ-1 (for LY 60N); I/J-band (D 185, D 181 and D 183).

SHAHJAHAN



(Scale 1 : 1,200), Ian Sturton / C114/84

TIPPU SULTAN



(Scale 1 : 1,200), Ian Sturton / 1133556

Sonars: Graseby Type 184P; hull-mounted; active search and attack; medium frequency Kelvin Hughes Type 162M, hull-mounted; bottom classification; 50 kHz
Helicopters: 1 Alouette III

Programmes: Acquired from the UK in 1983-94. *Tariq* arrived in Karachi 1 November 1993 and the last pair in January 1995. These ships replaced the Garcia and Brooke classes and have been classified as destroyers

Modernisation: Exocet, torpedo tubes and Lynx helicopter facilities were all added in RN service, but torpedo tubes were subsequently removed in all but *Badr* and *Shahjahan* and all retrofitted by Pakistan using Swedish equipment. Exocet was not transferred and the obsolete Seacat SAM system was replaced by Phalanx taken from the Gearings. Chinese LY 60N, which is a copy of *Aspide*, has been fitted in three of the class, Harpoon in three

others. New EW equipment has been installed. There are still plans to update the hull sonars but there is no evidence that ATAS sonar has been fitted in D 183 and D 185 as previously reported. Other equipment upgrades include a DA08 search radar in three of the class, an optronic director, new 30 mm and 20 mm guns, SRBOC chaff launchers. An improved combat data system with a datalink to shore HQ is also fitted in four of the class.

Structure: Due to cracking in the upper deck structure large strengthening pieces have been fixed to the ships' side at the top of the steel hull as shown in the illustration. The addition of permanent ballast to improve stability has increased displacement by about 350 tons. Further hull modifications to reduce noise and vibration started in 1988 and completed in all of the class by 1992

Operational: Form 25th Destroyer Squadron.



SHAHJAHAN

12/2007, Chris Sattler / 1170021



BADR

6/2000, Pakistan Navy / 0105184



BABUR

7/2008, John Mortimer / 1363249



TARIQ

6/2000, Pakistan Navy / 0105185



KHAIBAR

6/2000, Pakistan Navy / 0105185

1 + 3 SWORD (F-22P) CLASS (FFGH)

Name	No	Builders	Laid down	Launched	Commissioned
ZULFIQUAR	251	Hudong-Zhonghua Shipyard, Shanghai	12 Oct 2006	7 Apr 2008	31 Oct 2008
SHAMSHEER	252	Hudong-Zhonghua Shipyard, Shanghai	13 July 2007	31 Oct 2008	2010
SAIF	253	Hudong-Zhonghua Shipyard, Shanghai	4 Nov 2008	2009	2010
-	-	Karachi Shipyard and Engineering Works	2009	2011	2013

Displacement, tons: 2,250 full load
Dimensions, feet (metres): 403.6 x 45.9 x 7
 (129.0 x 14.0 x 7)
Main machinery: 2 diesels; 2 shafts
Speed, knots: 27
Range, n miles: 4,000 at 18 kt
Complement: 170

Missiles: SSM: 8 C-802 (YJ-83/CSS-N-8 Saccade) ●; mid-course guidance and active radar homing to 150 km (81 n miles) at 0.9 Mach; warhead 165 kg; sea skimmer.
SAM: 1 HQ-7 (Crotale) octuple launcher CSA-N-4 ●; line of sight guidance to 13 km (7 n miles) at 2.4 Mach; warhead 14 kg.

Guns: 1–3 in (76 mm) AK 176M ●.
 2–30 mm Type 730 ●; 7 barrels per mounting; 4,200 rds/min combined to 15 km.

Torpedoes: 5–324 mm (2 triple) tubes.
Countermeasures: Decoys/ESM/ECM. To be announced
Combat data systems: To be announced

Weapons control: Optronic director to be announced

Radars: Air search: Type 517 Knife Rest ●; A-band.

Air/surface search: Type 363 Seagull S ●; E/F-band.

Fire control: Type 343G ●; I-band (for SSM and 76 mm gun).

Type 347G(2) ●; I-band for Type 730.
 Type 345 (MR 35) ●; I/J-band (for SAM).

Navigation: To be announced.

Sonars: Atlas Elektronik DSQS-238Z; hull-mounted, active search and attack; medium frequency.

Helicopters: 1 Harbin Zhi-9C Haitun ●

Programmes: A contract to procure four frigates from China was signed on 4 April 2005. The ships, three of which are to be built in Shanghai and the fourth at Karachi, look to be based on the Type 054 Jiangkai class in service in the PLA(N). Technology transfer is a key element of the deal and the contract includes the upgrade of KSEW Shipyard, training and technical assistance. Steel was first cut for the first of class on 12 October 2006. Details of weapons and sensors are indicative and are based on the Jiangwei II class in PLA(N) service. A second batch of ships may be ordered.



ZULFIQUAR

(Scale 1 : 900), Ian Sturton / 1353748



ZULFIQUAR

12/2008* / 1353250

SHIPBORNE AIRCRAFT

Numbers/Type: 6 Westland Sea King Mk 45/45A.

Operational speed: 125 kt (232 km/h).

Service ceiling: 10,500 ft (3,200 m).

Range: 630 n miles (1,165 km).

Role/Weapon systems: Sensors: ARI 5955 search radar, Marconi Type 2069 dipping sonar, Star SAFIRE FLIR, AQS-928G acoustic processors. Weapons: ASW; two Mk 46 torpedoes; Mk 11 depth charges. ASV; one AM 39 Exocet missile.



SEA KING

6/2007, Hechiro Nakai / 1186819

Numbers/Type: 4/10 Aerospatiale SA 316 Alouette III/SA 319B Alouette III.

Operational speed: 113 kt (210 km/h).

Service ceiling: 10,660 ft (3,250 m).

Range: 270 n miles (500 km).

Role/Weapon systems: Reconnaissance helicopter. Two SA 319B procured in mid-1970s and fitted with radar and MAD. Eight further SA 319B (eight ex-French Air Force) purchased in 2005 for delivery in 2008 after refurbishment. Four SA 316 acquired in 1994. Sensors: Weather/search radar and MAD (in two SA 319B). Weapons: ASW: Mk 11 depth charges, and MG1 A3 gun



ALOUETTE III

6/2003, Pakistan Navy / 0569234

Numbers/Type: 6 Hai Z-9EC.

Operational speed: 140 kt (260 km/h).

Service ceiling: 15,000 ft (4,572 m)

Range: 200 n miles (370 km).

Role/Weapon systems: ASW helicopter procured in conjunction with Zulfiqar class frigate programme. Chinese design based on Dauphin 2. Sensors: KLC-1 radar; ESM; DSE Sonar. Weapons: up to four ET-52C torpedoes.

LAND-BASED MARITIME AIRCRAFT

Notes: The Maritime Security Agency operates three Britten-Norman Maritime Defenders. with Bendix RDR 1400C radars



DEFENDER

8/1996, MSA / 0081375

Numbers/Type: 10 Lockheed P-3C Orion (Update II).

Operational speed: 410 kt (760 km/h).

Service ceiling: 28,300 ft (8,625 m).

Range: 4,000 n miles (7,410 km).

Role/Weapon systems: Order of first two completed in 1991 but held up by the Pressler amendment, until delivery in December 1996. May be used for Elint. Eight further aircraft donated by the United States in September 2005. The first two, delivered in early 2007, are to have an avionics upgrade at a later date. The remaining six are to be upgraded before delivery. Sensors: APS-115 search radar; up to 100 sonobuoys, ASQ 81 MAD; ESM Weapons: four Whitehead A 244 torpedoes or Mk 11 depth charges for ASW; Harpoon.



P-3C

6/2001, Pakistan Navy / 0114/83

Numbers/Type: 6 Fokker F27-200
Operational speed: 250 kt (463 km/h)
Service ceiling: 29,500 ft (8,990 m)
Range: 2,700 n miles (5,000 km)

Role/Weapon systems: Acquired in 1994–96 for maritime surveillance and limited ASW. One further aircraft acquired in 2007. Sensors: OM 100 radar, Thomson-CSF DR 3000A ESM. Star SAFIRE FLIR. Weapons: Mk II depth charge.



FOKKER F27-200

6/2001, Pakistan Navy / 0114780

Numbers/Type: 2 Breguet Atlantic 1.
Operational speed: 355 kt (658 km/h)
Service ceiling: 32,800 ft (10,000 m)
Range: 4,855 n miles (8,995 km)

Role/Weapon systems: Long-range MR/ASW cover for Arabian Sea, ex-French and Dutch stock. Upgraded in 1992–93. Three more acquired in 1994 for spares. Sensors: Thomson-CSF Ocean Master radar, Thomson-CSF DR 3000A ESM, MAD, sonobuoys, Sadang 1C sonobuoy signal processor. Weapons: ASW, nine Mk 46 torpedoes, Mk 11 depth bombs, mines. ASW: AM 39 Exocet missiles.



ATLANTIC 1

6/2001, Pakistan Navy / 0114781

Numbers/Type: 12 AMD-BA Mirage III.
Operational speed: 750 kt (1,390 km/h)
Service ceiling: 59,055 ft (18,000 m)
Range: 740 n miles (1,370 km)

Role/Weapon systems: Operated by the Air Force, and all can be used for maritime strike. Sensors: Thomson-CSF radar. Weapons: ASW, two AM 39 Exocet or Harpoon; two 30 mm DEFA.



MIRAGE III

6/2004, Pakistan Navy / 1044171

Numbers/Type: 5 Saab 2000 AEW
Operational speed: 250 kt (463 km/h)
Service ceiling: 25,000 ft (7,620 m)
Range: 570 n miles (1,056 km)

Role/Weapon systems: Air Force operated early warning aircraft. Modified version of Saab 340B special mission aircraft derived from regional transport aircraft. Dorsal-mounted main radar. First aircraft rolled out in mid-June 2008 for delivery in 2009. Sensors: Ericsson Erieye radar, ESM, ECM.



SAAB 2000 AEW

5/2008*, Saab / 1330714

PATROL FORCES

Notes: Eight Mekat type catamarans ordered in late 1997. These may be operated by the Customs

2 JALALAT CLASS (FAST ATTACK CRAFT—MISSILE) (PTG)

Name	No	Builders	Launched	Commissioned
JALALAT	1029 (ex-1022)	PN Dockyard, Karachi	16 Nov 1996	14 Aug 1997
SHUJAAT	1030	PN Dockyard, Karachi	26 Mar 1999	30 Sep 1999

Displacement, tons: 185 full load
Dimensions, feet (metres): 128 × 22 × 5.4 (39 × 6.7 × 1.64)
Main machinery: 2 MTU diesels; 5,984 hp(m) (4.4 MW) sustained; 2 shafts
Speed, knots: 23. **Range, n miles:** 2,000 at 17 kt
Complement: 31 (3 officers)
Missiles: SSM: 4 China C 802 Saccade (2 twin); active radar homing to 120 km (66 n miles) at 0.9 Mach; warhead 165 kg; sea skimmer.
Guns: 2–37 mm/63 (twin); 180 rds/min to 8.5 km (4.6 n miles); weight of shell 1.42 kg
Countermeasures: Decoys: chaff launcher.
ESM: Thales DR 3000
Radars: Surface search: Kelvin Hughes Type 756; I-band.
Fire control: Type 47G (for gun); Type TR 47G A/R (for SSM); I-band.

Comment: Designed with Chinese assistance to replace deleted Hegu class. Same hull as Larkana



JALALAT

3/2007 / 1170017

2 JURRAT CLASS (FAST ATTACK CRAFT—MISSILE) (PTG)

Name	No	Builders	Launched	Commissioned
JURRAT	1023	Karachi Shipyards and Engineering Works	9 Sep 2004	24 Feb 2006
QUWWAT	1028	Karachi Shipyards and Engineering Works	13 Sep 2004	24 Feb 2006

Displacement, tons: 225 standard, 250 full load
Dimensions, feet (metres): 127.4 × 26.2 × 4.9 (38.85 × 8.0 × 1.85)
Main machinery: 3 MTU 16V 4000 M70; 3 shafts; ducted propellers
Speed, knots: 32. **Range, n miles:** 1,700 at 15 kt
Complement: 35 (3 officers)
Missiles: SSM: 4 China C 802 Saccade (2 twin); active radar homing to 120 km (68 n miles) at 0.9 Mach; warhead 165 kg; sea skimmer.
Guns: 2–25 mm (twin).
Countermeasures: Decoys: chaff launcher.
ESM: RW-28 CB, warning receiver.
Radars: Surface search: Type SR 47A; I-band.
Fire control: Type 47G (for gun); Type TR 47G A/R (for SSM); I-band.

Comment: Both ordered in September 2002 and laid down 4 April 2003. Built at KSEW, reportedly in co-operation with Thai company Marsun. Steel hull and aluminium superstructure.



JURRAT

3/2008*, Michael Nitz / 1305312

1 TOWN CLASS (LARGE PATROL CRAFT) (PB)

Name	No	Builders	Commissioned
RAJSHAHI	P 140	Brooke Marine	1965

Displacement, tons: 115 standard; 143 full load
Dimensions, feet (metres): 107 × 20 × 6.9 (32.6 × 6.1 × 2.1)
Main machinery: 2 MTU 12V 538 diesels; 3,400 hp(m) (2.5 MW); 2 shafts
Speed, knots: 24
Complement: 19
Guns: 2 Bofors 40 mm/60. 2–12.7 mm MGs.
Radars: Surface search: Pot Head, I-band.

Comment: The last survivor in Pakistan of a class of four built by Brooke Marine in 1965. Steel hull and aluminium superstructure. Assigned to 10th Patrol Squadron.



RAJSHAHI

6/2003, Pakistan Navy / 0569233

1 LARKANA CLASS (LARGE PATROL CRAFT) (PB)

Name	No	Builders	Commissioned
LARKANA	P 157	PN Dockyard, Karachi	6 June 1994

Displacement, tons: 180 full load
Dimensions, feet (metres): 128 x 22 x 5.4 (39 x 6.7 x 1.7)
Main machinery: 2 MTU diesels; 5,984 hp(m) (4.4 MW) sustained; 2 shafts
Speed, knots: 23. **Range, n miles:** 2,000 at 17 kt
Complement: 25 (3 officers)
Guns: 2 Type 78A 37 mm/63 (twin), 4—25 mm/60 (2 twin).
Depth charges: 2 Mk 64 launchers.
Radars: Surface search: Kelvin Hughes Type 756; I-band

Comment: Ordered in 1991 and started building in October 1992. Has replaced the last of the Hainan class. The missile version on the same hull has taken priority but more may be built. Assigned to 10th Patrol Squadron.



LARKANA 8/2004 / 113352

4 GRIFFON 2000 TDX(M) (HOVERCRAFT) (UCAC)

Displacement, tons: 7.5 full load
Dimensions, feet (metres): 39.0 x 20.0 (11.9 x 6.1)
Main machinery: 1 Deutz BF8L513 diesel; 355 hp (265 kW) sustained
Speed, knots: 35. **Range, n miles:** 300 at 25 kt
Complement: 2
Military lift: 25 troops or 2 tons
Guns: 2—12.7 mm MGs.
Radars: Navigation: I-band.

Comment: Acquired from Griffon, UK. First craft delivered in April 2004 and the last in July 2005. The first two are of a modular design to enable rapid role-change. The second two have fixed roofs.



GRIFFON 2000 6/2005, Griffon Hovercraft / 1163507

2 KAAAN 15 (FAST INTERVENTION CRAFT) (PBF)

P 01 P 02

Displacement, tons: 19 full load
Dimensions, feet (metres): 54.8 x 13.2 x 3.9 (16.7 x 4.04 x 1.2)
Main machinery: 2 MTU 12V 183 TE93 diesels; 2,300 hp(m) (1.69 MW); 2 Ameson ASD 12 B1L surface drives
Speed, knots: 54. **Range, n miles:** 350 at 35 kt
Complement: 4 plus 8 mission crew
Guns: 2—12.7 mm MGs.

Comment: Built by Yonca Shipyard, Turkey. Advanced composites structure. The first delivered on 17 August 2004 and the second on 14 October 2004. To be operated by Special Services Group based at PNS Iqbar. Details based on those in Turkish Coast Guard service



P 01 7/2004, Selçuk Emre / 1044173

2 KAAAN 33 (FAST ATTACK CRAFT) (PGGF)

ZARRAR P 03 KARRAR P 04

Displacement, tons: 120 full load
Dimensions, feet (metres): 116.8 x 22.0 x 4.7 (35.6 x 6.7 x 1.4)
Main machinery: CODAG: 1 Honeywell TF50 gas turbine; 2 MTU 12V 4000 M90 diesels; 7,396 hp(m) (5.44 MW); 3 MJP 650/750 waterjets
Speed, knots: 65 (28 on diesels). **Range, n miles:** 970 at 15 kt
Complement: 18 (2 officers)
Missiles: SSM: 4 McDonnell Douglas Harpoon Block 2; active radar homing to 130 km (70 n miles) at 0.9 Mach, warhead 227 kg
Guns: 1—30 mm, 2—12.7 mm MGs.

Comment: Following a tendering process, two MRTP 33 fast attack craft ordered from Yonca-Onuk Shipyard, Turkey on 8 June 2006. Construction began in February 2007 and delivery of the first of class was made on 26 November 2007. The second followed in April 2008. With advanced composites structure, the craft are improved versions of those in service in the Turkish Coast Guard. The craft are to be used for patrol of littoral waters, maritime interdiction and special forces operations.



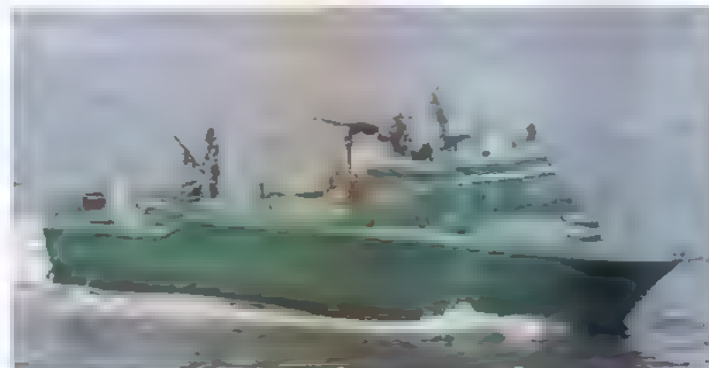
ZARRAR 8/2007, Yonca-Onuk / 1353751

4 MILITARY ASSAULT CRAFT (LCP)

114 +3

Displacement, tons: To be announced
Dimensions, feet (metres): To be announced
Main machinery: To be announced
Speed, knots: 30
Complement: 4 plus 14 troops
Guns: 2—12.7 mm MGs.

Comment: Built by Marsun Shipyard, Thailand. The first was delivered on 11 December 2004. Appearance is similar to SEAL assault craft in service with the Thai Navy



MILITARY ASSAULT CRAFT 114 3/2007 / 1170019

MINE WARFARE FORCES

3 MUNSIF (ÉRIDAN) CLASS (MINEHUNTERS) (MHSC)

Name	No	Builders	Launched	Commissioned
MUNSIF (ex-Sagittaire)	M 166	Lorient Dockyard	9 Nov 1988	27 July 1989
MUHAFIZ	M 163	Lorient Dockyard	8 July 1995	15 May 1996
MUJAHID	M 164	Lorient/PN Dockyard, Karachi	28 Jan 1997	9 July 1998

Displacement, tons: 562 standard, 595 full load
Dimensions, feet (metres): 168.9 x 29.2 x 9.5 (51.5 x 8.9 x 2.9)
Main machinery: 1 Stork Wärtsilä A-RUB 215X-12 diesel; 1,860 hp(m) (1.37 MW) sustained; 1 shaft; LIPS op prop; auxiliary propulsion; 2 motors; 240 hp(m) (179 kW); 2 active rudders; 2 bow thrusters
Speed, knots: 15; 7 on auxiliary propulsion
Range, n miles: 3,000 at 12 kt
Complement: 46 (5 officers)
Guns: 1 GIAT 20F2 20 mm; 1—12.7 mm MG
Countermeasures: MCM; 2 PAP 104 Mk 5 systems; mechanical sweep gear. Elosco MKR 400 acoustic sweep; MRK 960 magnetic sweep
Combat data systems: Thomson-CSF TSM 2061 Mk 2 tactical system in the last pair.
Radars: Navigation: Racal Decca 1229 (M 166) or Kelvin Hughes 1007; I-band
Sonars: Thomson Sintra DUBM 21B or 21D (163 and 164); hull-mounted; active; high frequency; 100 kHz (±10 kHz). Thomson Sintra TSM 2054 MCM towed array may be included

Comment: Contract signed with France 17 January 1992. The first recommissioned into the Pakistan Navy on 24 September 1992 after active service in the Gulf with the French Navy in 1991. Sailed for Pakistan in November 1992. The second was delivered in April 1996. The last one was transferred to Karachi by transporter ship in April 1995 with a final package following in November 1995. Form 21st Mine Countermeasures Squadron



MUHAFIZ 3/2008, Guy Toremans / 1305314

SURVEY SHIPS

Notes: Acquisition of a new oceanographic research vessel was reported in November 2002 to have received Presidential approval. It is not clear whether this is to be a specialist or a multipurpose vessel.

1 SURVEY SHIP (AGS/AGOR)

Name	No	Builders	Laid down	Launched	Commissioned
BEHR PAIMA	SV 48	Ishikawajima, Japan	16 Feb 1982	7 July 1982	27 Dec 1982

Measurement, tons: 1,183 gross
Dimensions, feet (metres): 200.1 × 38.7 × 12.1 (61 × 11.8 × 3.7)
Main machinery: 2 Daihatsu 6DSM-22 diesels; 2,000 hp(m) (1.47 MW); 2 shafts; cp props, bow thruster
Speed, knots: 13.7
Range, n miles: 5,400 at 12 kt
Complement: 84 (16 officers)

Comment: Ordered in November 1981 Hydrographic and oceanographic research vessel Equipped with multibeam echo-sounder, deep echo sounder and carries two survey motor boats for inshore operations.



BEHR PAIMA 6/2003, Pakistan Navy / 0569231

AUXILIARIES

Notes: An order for two unspecified 1,600-ton auxiliary ships was placed with Karachi Shipyard and Engineering Works (KSEW) in May 2007. The first was laid down on 27 February 2008. The ships are required for logistic support, SAR, mine-laying and torpedo-recovery tasks.

1 FUQING CLASS (AORH)

Name	No	Builders	Commissioned
NASR (ex-X-350)	A 47	Dalian Shipyard	27 Aug 1987

Displacement, tons: 7,500 standard; 21,750 full load
Dimensions, feet (metres): 561 × 71.5 × 30.8 (177 × 21.8 × 9.4)
Main machinery: 1 Sulzer 8RL866 diesel; 13,000 hp(m) (9.56 MW); 1 shaft
Speed, knots: 18
Range, n miles: 18,000 at 14 kt
Complement: 130 (during visit to Australia in October 1988 carried 373 (23 officers) including 100 cadets)
Cargo capacity: 10,550 tons fuel; 1,000 tons dieso; 200 tons feed water; 200 tons drinking water
Guns: 1 GE/GD Vulcan Phalanx CIWS. 4—37 mm (2 twin). 2—12.7 mm MGs
Countermeasures: Decoys: SRBOC Mk 36 chaff launcher. 2 Rheinmetall MASS launchers. ESM: Thales DR 3000
Radars: Navigation: 1 Kelvin Hughes 1007; 1 SPS 66; I-band
Helicopters: 1 SA 319B Alouette III.

Comment: Similar to Chinese ships of the same class. Two replenishment at sea positions on each side for liquids and one for solids. Phalanx fitted on the hangar roof in 1995. Assigned to 42nd Auxiliary Squadron.



NASR 7/2008*, John Mortimer / 1363252

2 COASTAL TANKERS (AOTL)

Name	No	Builders	Commissioned
GWADAR	A 49	Karachi Shipyard	1984
KALMAT	A 21	Karachi Shipyard	29 Aug 1982

Measurement, tons: 831 grt
Dimensions, feet (metres): 206 × 37.1 × 9.8 (62.8 × 11.3 × 3)
Main machinery: 1 Sulzer diesel; 550 hp(m) (404 kW); 1 shaft
Speed, knots: 10
Complement: 26
Cargo capacity: 340 m³ fuel or water
Guns: 2—7.62 mm MGs

Comment: Assigned to 42nd Auxiliary Squadron.



GWADAR 3/2008*, Guy Toremans / 1305313

1 POOLSTER CLASS (AORH)

Name	No	Builders	Commissioned	Recommissioned
MOAWIN (ex-Poolster)	A 20 (ex-A 835)	Rotterdamse Droogdok Mij	10 Sep 1964	28 July 1994

Displacement, tons: 16,800 full load
Measurement, tons: 10,000 dwt
Dimensions, feet (metres): 552.2 × 66.6 × 26.9 (168.3 × 20.3 × 8.2)
Main machinery: 2 boilers; 2 turbines; 22,000 hp(m) (16.2 MW); 1 shaft
Speed, knots: 21
Complement: 200 (17 officers)
Cargo capacity: 10,300 tons including 8-9,000 tons oil fuel
Guns: 4—20 mm Oerlikon (2 twin). 2—12.7 mm MGs.
Countermeasures: Decoys: SRBOC Mk 36 chaff launcher. ESM: SLQ 32
Radars: Air/surface search: Racal Decca 2459; F/I-band
Navigation: Racal Decca TM 1229C; I-band.
Sonars: Signaal CWE 10; hull-mounted; active search; medium frequency.
Helicopters: 1 Sea King.

Comment: Acquired from the Netherlands Navy. Helicopter deck aft. Funnel heightened by 4.5 m (14.8 ft). Capacity for five Lynx sized helicopters. Two fuelling stations each side for underway replenishment. Phalanx to be fitted in due course. Assigned to 42nd Auxiliary Squadron.



MOAWIN 6/2007, Hachiro Nakai / 1166816

1 TANKER (AOTL)

ATTOCK A 40

Displacement, tons: 1,200 full load
Dimensions, feet (metres): 177.2 × 32.3 × 15.1 (54 × 9.8 × 4.6)
Main machinery: 2 diesels; 800 hp(m) (276 kW); 2 shafts
Speed, knots: 8
Complement: 18
Cargo capacity: 550 tons fuel
Guns: 2 Oerlikon 20 mm.

Comment: Built in Italy in 1957. Assigned to 42nd Auxiliary Squadron.



ATTOCK 6/2004, Pakistan Navy / 1044169

TUGS

Notes: *Jandar* and *Jafakash* are two pusher tugs (10 ton bollard pull) built by Karachi Shipyard and commissioned in 2000.



JANDAR and JAFAKASH 6/2003, Pakistan Navy / 1044170

5 COASTAL TUGS (YTB)

Name	No	Builders	Commissioned
BHOLU	A 44	Giessendam Shipyard, Netherlands	Apr 1991
GAMA	A 45	Giessendam Shipyard, Netherlands	Apr 1991
JANBAZ	—	Karachi Shipyard	Sep 1990
JOSHILA	—	Karachi Shipyard	Sep 2000
DELAIR	—	Karachi Shipyard	Sep 2000

Displacement, tons: 265 full load
 Dimensions, feet (metres): 85.3 x 22.3 x 9.5 (26 x 6.8 x 2.9)
 Main machinery: 2 Cummins KTA38-M diesels, 1,836 hp (1.26 MW) sustained; 2 shafts
 Speed, knots: 11
 Complement: 6

Comment: Details are for *Bholu* and *Gama*, built by Damen Shipyards and which entered service in 1991. *Janbaz* and *Joshila* were built by Karachi Shipyard and delivered in 1990 and 2000 respectively



JOSHILA 5/2003 / 0569777

MARITIME SECURITY AGENCY

Notes: (1) All ships are painted white with a distinctive diagonal blue and red band and MSA on each side
 (2) One Britten-Norman Maritime Defender acquired in 1993, a second in 1994 and a third on 8 August 2004. Based near Karachi with 93 Squadron.
 (3) Plans for new aircraft are under consideration.

2 SHANGHAI II CLASS (FAST ATTACK CRAFT—GUN) (PB)

SUBQAT P 1066 RAFAQAT P 1068

Displacement, tons: 131 full load
 Dimensions, feet (metres): 127.3 x 17.7 x 5.8 (38.8 x 5.4 x 1.7)
 Main machinery: 2 Type L12-180 diesels; 2,400 hp (1.76 MW) (forward); 2 Type 12-D-6 diesels; 1,820 hp (1.34 MW) (aft); 4 shafts
 Speed, knots: 30. Range, n miles: 700 at 16.5 kt
 Complement: 34
 Guns: 4—37 mm/63 (2 twin), 2—25 mm/80 (twin).
 Depth charges: 2 projectors, 8 weapons.
 Mines: Fitted with mine rails for approx 10 mines.
 Radars: Surface search. Anritsu ARC-32A; I-band

Comment: Four of the class were transferred from the Navy in 1986 and two more in 1998. The last pair were then replaced by naval craft. All were originally acquired from China 1972-1976.



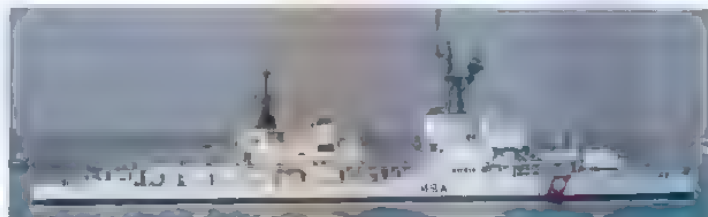
SUBQAT 5/2003 / 0569223

1 GEARING (FRAM 1) CLASS (DD)

Name	No	Builders	Commissioned
NAZIM (ex-Tughril)	D 156 (ex-D 167)	Iodd Pacific	4 Aug 1945

Displacement, tons: 2,425 standard; 3,500 full load
 Dimensions, feet (metres): 390.5 x 41.2 x 19 (119 x 12.6 x 5.8)
 Main machinery: 4 Babcock & Wilcox boilers; 600 psi (43.3 kg/cm²); 850 F (454 C); 2 GE turbines, 60,000 hp (45 MW); 2 shafts
 Speed, knots: 32. Range, n miles: 4,500 at 16 kt
 Complement: 180 (15 officers)
 Guns: 2 US 5 in (127 mm)/38 Mk 38 (twin), 15 rds/min to 17 km (9.3 n miles) anti-surface; 11 km (5.9 n miles); anti-aircraft; weight of shell 25 kg
 4—25 mm (2 twin)
 Torpedoes: 6—324 mm Mk 32 (2 triple) tubes.
 Countermasures: Decoys: 2 Plessey Shield 6-barrelled fixed launchers; chaff and IR flares in distraction, decoy or centroid modes
 Weapons control: Mk 37 for 5 in guns. OE 2 SATCOM.
 Radars: Surface search. Raytheon/Sylvania; SPS-10; G-band
 Navigation: KH 1007; I-band.
 Fire control: Western Electric Mk 25, I/J band

Comment: Transferred from the US on 30 September 1980 to the Navy. Passed on to the MSA in 1998 and renamed. This is the third Gearing to be renamed *Nazim*, the previous pair having been sunk as targets. All weapon systems removed except the torpedo tubes and main gun. Serves as the MSA Flagship.



NAZIM 3/2007, Paul Daly / 1170320

4 BARKAT CLASS (PBO)

Name	No	Builders	Commissioned
BARKAT	1060 (ex-P 60)	China Shipbuilding Corp	29 Dec 1989
REHMAT	1061 (ex-P 61)	China Shipbuilding Corp	29 Dec 1989
NUSRAT	1062 (ex-P 62)	China Shipbuilding Corp	13 June 1990
VEHDAT	1063 (ex-P 63)	China Shipbuilding Corp	13 June 1990

Displacement, tons: 435 full load
 Dimensions, feet (metres): 190.3 x 24.9 x 7.5 (58 x 7.6 x 2.3)
 Main machinery: 4 MTU 16V 396TB93 diesels, 8,720 hp (6.4 MW) sustained, 4 shafts
 Speed, knots: 27. Range, n miles: 1,500 at 12 kt
 Complement: 50 (5 officers)
 Guns: 2—37 mm/63 (1 twin), 2—14.5 mm/60 (twin)
 Radars: Surface search. 2 Anritsu ARC 32A; I-band

Comment: Type P58A patrol craft built in China for the MSA. First two arrived in Karachi at the end of January 1990, second pair in August 1990. Some of this type of ship are in service with Chinese paramilitary forces.



VEHDAT 6/1994, Maritime Security Agency / 0081380

1 HUANGFEN CLASS (PATROL BOAT) (PB)

SADAQAT (ex-Dahshat) P 1069 (ex-P 1026)

Displacement, tons: 171 standard; 205 full load
 Dimensions, feet (metres): 126.6 x 24.9 x 8.9 (38.6 x 7.6 x 2.7)
 Main machinery: 3 Type 42-160 diesels; 12,000 hp (8.8 MW) sustained; 3 shafts
 Speed, knots: 28. Range, n miles: 800 at 22 kt
 Complement: 28
 Guns: 4 Norinco 25 mm/80 (2 twin), 270 rds/min to 3 km (1.6 n miles); weight of shell 0.34 kg
 Radars: Surface search. Square Tie; I-band.

Comment: Originally transferred to the Pakistan Navy in April 1984. The then missile-armed craft were Chinese versions of the Soviet Osa II class. This craft was transferred to the MSA on 25 June 2005



SADAQAT 6/2005, Maritime Security Agency / 1164330

3 GUNS CLASS (PATROL BOATS) (PB)

GUNS MS 111 SUR MS 112 MALAN MS 113

Displacement, tons: 15 full load
Dimensions, feet (metres): 42.6 x 12.0 x 3.3 (13.0 x 3.65 x 1.0)
Main machinery: 2 Yamaha ME 730TIL diesels; 636 hp (475 kW); 2 shafts
Speed, knots: 21
Complement: 6
Guns: 1 – 7.62 mm MG.
Radars: Navigation: JRC 1500; I-band.

Comment: Manufactured by Karachi Shipyard and Engineering Works and commissioned in 2006. GRP construction.



MALAN 6/2006, Maritime Security Agency / 1164331

COAST GUARD

Notes: (1) Unlike the Maritime Security Agency which comes under the Defence Ministry, the official Coast Guard was set up in 1985 and is manned by the Army and answerable to the Ministry of the Interior.
 (2) The Customs Service is manned by naval personnel. It operates approximately 18 craft.

1 SWALLOW CLASS (PB)

SAIF

Displacement, tons: 52 full load
Dimensions, feet (metres): 65.6 x 15.4 x 4.3 (20.0 x 4.7 x 1.3)
Main machinery: 2 GM Detroit 12V71T1 diesels; 2,120 hp (1.58 MW); 2 shafts
Speed, knots: 25
Range, n miles: 500 at 20 kt
Complement: 8
Guns: 2 – 12.7 mm MGs

Comment: Built by Swallowcraft/Kangnam and delivered in 1986.

4 CRESTITALIA MV 55 CLASS (PBF)

SADD P 551 SHABHAZ P 552 VAQAR P 553 BURQ P 554

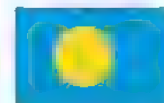
Displacement, tons: 23 full load
Dimensions, feet (metres): 54.1 x 17.1 x 2.95 (16.5 x 5.2 x 0.9)
Main machinery: 2 MTU diesels, 2,200 hp (1.64 MW); 2 shafts
Speed, knots: 35
Range, n miles: 425 at 25 kt
Complement: 5

Comment: Delivered in 1987.



SHABHAZ 5/2003 / 0669728

Palau



Country Overview

The Republic of Palau was a US-administered UN Trust territory from 1947 before becoming independent in 1994 when a Compact of Free Association, delegating to the US the responsibility for defence and foreign affairs, came into effect. Situated in the western Pacific

Ocean, the country comprises about 200 of the Caroline Islands archipelago spread in a chain about 350 n miles long. These include Koror (the administrative centre), Babelthuap (the largest island), Arakabesan, Malakal and Pelietu. The capital is currently on Koror, but a new capital is being built in eastern Babelthuap. Territorial seas (3 n miles) are claimed. An extended fisheries zone

(200 n miles) is also claimed but limits have not been fully defined.

Headquarters Appointments

Chief of Division of Marine Law Enforcement:
 Captain Ellender Ngirameketi

PATROL FORCES

1 PACIFIC CLASS (LARGE PATROL CRAFT) (PB)

Name	No	Builders	Commissioned
PRESIDENT H I REMELIK	001	Transfield Shipbuilding	May 1996

Displacement, tons: 162 full load
Dimensions, feet (metres): 103.3 x 26.6 x 6.9 (31.5 x 8.1 x 2.1)
Main machinery: 2 Caterpillar 3516TA diesels; 4,400 hp (3.28 MW) sustained; 2 shafts
Speed, knots: 20
Range, n miles: 2,500 at 12 kt
Complement: 17 (3 officers)
Guns: 2 – 7.62 mm MGs.
Radars: Surface search: Furuno 1011; I-band.

Comment: Ordered in 1995. This was the 21st hull in the Pacific class programme. Following the decision by the Australian government to extend the Pacific Patrol Boat project, the ship underwent a half-life refit at Gladstone in 2003. A life-extension refit will be required in 2010/11.



PRESIDENT H I REMELIK 6/2004, Division of Marine Law Enforcement, Palau 0144175



Panama

SERVICIO MARITIMO NACIONAL

Country Overview

The Republic of Panama is an independent state situated on the isthmus linking South America with Central and North America. Bordered to the west by Costa Rica and to the east by Colombia, it has an area of 29,157 square miles and a 684 n mile coastline with the north Pacific Ocean and of 370 n miles with the Caribbean. The country is bisected by the Panama Canal. A now treaty in 1977 ended US operation, maintenance and defence of the canal in 1999. The capital is Panama City while the main ports are Balboa, Cristóbal, Coco Solo, Bahía Las Minas,

Vacamonte, Almirante and Puerto Armuelles. Territorial seas (12 n miles) are claimed. An Exclusive Economic Zone (EEZ) (200 n miles) has been defined by boundary agreements. Reform of the security apparatus led to the creation of the Panamanian Public Forces, which includes the National Maritime Service, in 1984.

Personnel

- (a) 2009 620
(b) Voluntary service

Headquarters Appointments

Director General National Maritime Service
Rodrigo Cigarruista Tobias

Bases

Isla Flamenco (HQ) (Punta Brujas - HQ designate), Quebrada de Piedra, Largo Remo (under construction), Punta Cocos (air), Kuna Yala (air) (under construction)

PATROL FORCES

- Notes: (1) A patrol craft *Cocle* P 814 has been reported.
(2) Four interceptor craft, capable of 35 kt, donated by the United States in July 2007.
(3) A patrol craft *Carlos Jacome* has been reported.

1 BALSAM CLASS (PBO)

Name	No	Builders	Commissioned
INDEPENDENCIA (ex-Sweetgum)	A 401 (ex-WLB 309)	Marino Iron and Shipbuilding Corp, Duluth, Minnesota	20 Nov 1943

Displacement, tons: 1,034 full load
Dimensions, feet (metres): 180 × 37 × 12 (54.9 × 11.3 × 3.8)
Main machinery: Diesel electric; 2 diesels; 1,402 hp (1.06 MW); 1 motor; 1,200 hp (895 kW); 1 shaft, bow thruster
Speed, knots: 13
Range, n miles: 8,000 at 12 kt
Complement: 53
Guns: 2—12.7 mm MGs.
Radars: Navigation. Raytheon SPS-64(V)1.

Comment: Transferred from US Coast Guard on 15 February 2002. Operates as an offshore patrol ship.



INDEPENDENCIA

1/2004 / 0587788

2 VOSPERTYPE (COASTAL PATROL CRAFT) (PB)

Name	No	Builders	Commissioned
PANQUIACO	P 301 (ex-GC 10)	Vospers, Portsmouth	July 1971
LIGIA ELENA	P 302 (ex-GC 11)	Vospers, Portsmouth	July 1971

Displacement, tons: 96 standard; 145 full load
Dimensions, feet (metres): 103 × 18.9 × 5.8 (31.4 × 5.8 × 1.8)
Main machinery: 2 Detroit diesels; 5,000 hp (3.73 MW); 2 shafts
Speed, knots: 18
Range, n miles: 1,500 at 14 kt
Complement: 17 (3 officers)
Guns: 2—7.62 mm MGs.
Radars: Surface search: Raytheon R 81; I-band.

Comment: *Panquaco* launched on 22 July 1970, *Ligia Elena* on 25 August 1970. Hull of welded mild steel and upperworks of welded or buck-bolted aluminium alloy. Vospers fin stabiliser equipment. P 302 was sunk in December 1989, but subsequently recovered. Both vessels had major repairs in the Coco Solo shipyard from September 1992. This included new engines, a new radar and replacement guns. Pacific Flotilla. Similar craft in service in Malaysia.



LIGIA ELENA

6/2003, Panama Maritime Service / 0589305

1 COASTAL PATROL CRAFT (PB)

Name	No	Builders	Commissioned
NAOS (ex-Ertine)	P 303 (ex-RV 821)	Equitable, NO	Dec 1964

Displacement, tons: 120 full load
Dimensions, feet (metres): 105 × 24.9 × 6.9 (32 × 7.6 × 2.1)
Main machinery: 2 Caterpillar diesels, 2 shafts
Speed, knots: 10. Range, n miles: 550 at 8 kt
Complement: 11 (2 officers)
Guns: 2—7.62 mm MGs.
Radars: Surface search: Raymerx 2800; I-band

Comment: Served as a support/research craft at the US Underwater Systems establishment at Bermuda. Transferred from US in July 1992 and recommissioned in December 1992. Refitted in 1997 with new engines. Pacific Flotilla.



NAOS

6/2002, Panama Maritime Service / 0575006

1 COASTAL PATROL CRAFT (PB)

ESCUDO DE VERAGUAS (ex-Aun Sin Nombre, ex-Kathyuska Kelly) P 305 (ex-P 206)

Displacement, tons: 158 full load
Dimensions, feet (metres): 90.5 × 24.1 × 6.1 (27.6 × 7.3 × 1.9)
Main machinery: 2 Detroit 12V-71 diesels, 840 hp (627 kW) sustained; 2 shafts
Speed, knots: 10
Complement: 10 (2 officers)
Guns: 1—12.7 mm MG
Radars: Surface search: Raytheon; I-band

Comment: Confiscated drug runner craft taken into service in 1996. Also used for transport duties. Caribbean Flotilla



ESCUDO DE VERAGUAS

11/1998, Panama Maritime Service / 0057687

1 COASTAL PATROL CRAFT (PB)

TABOGA P 306

Comment: Details not confirmed. Possibly a confiscated vessel



TABOGA

6/2003, Panama Maritime Service / 0569104

1 NEGRITA CLASS (COASTAL PATROL CRAFT) (PB)

CACIQUE NOME (ex-Negrita) P 203

Displacement, tons: 68 full load
Dimensions, feet (metres): 80 x 15 x 6 (24.4 x 4.6 x 1.8)
Main machinery: 2 Detroit 12V-71 diesels, 840 hp (627 kW); 2 shafts
Speed, knots: 13. **Range, n miles:** 250 at 10 kt
Complement: 8 (2 officers)
Guns: 2—7.62 mm MGs.
Radars: Surface search: Raytheon 71; I-band

Comment: Former oilfield crew boat completely rebuilt in the Coco Solo shipyard and recommissioned 5 May 1993. Pacific Flotilla



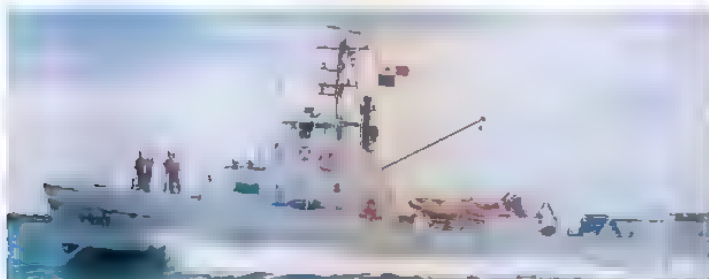
CACIQUE NOME 8/1998, Panama Maritime Service / 0052688

5 POINT CLASS (COASTAL PATROL CRAFT) (PB)

Name	No	Builders	Commissioned
3 DE NOVIEMBRE (ex-Point Barrow)	P 204 (ex-82348)	CG Yard, MD	4 Oct 1964
10 DE NOVIEMBRE (ex-Point Huron)	P 206 (ex-82357)	CG Yard, MD	17 Feb 1967
28 DE NOVIEMBRE (ex-Point Frances)	P 207 (ex-82356)	CG Yard, MD	3 Feb 1967
4 DE NOVIEMBRE (ex-Point Winslow)	P 208 (ex-82360)	J M Martinac, Tacoma	3 Mar 1967
5 DE NOVIEMBRE (ex-Point Hannon)	P 209 (ex-82355)	J M Martinac, Tacoma	23 Jan 1967

Displacement, tons: 69 full load
Dimensions, feet (metres): 83 x 17.2 x 5.8 (25.3 x 5.2 x 1.8)
Main machinery: 2 Cummins V-12-900M diesels, 1,600 hp (1.18 MW); 2 shafts
Speed, knots: 18. **Range, n miles:** 1,500 at 8 kt
Complement: 10 (2 officers)
Guns: 2—7.62 mm MGs.
Radars: Surface search: Raytheon Pathfinder; I-band.

Comment: P 204 transferred from US Coast Guard 7 June 1991 and recommissioned 10 July 1991. P 206 and P 207 transferred 22 April 1999. P 208 transferred 20 September 2000 and P 209 on 11 January 2001. Carry a RIB with a 40 hp engine. Caribbean Flotilla.



28 DE NOVIEMBRE 6/2003, Panama Maritime Service / 0568902

3 COASTAL PATROL CRAFT (PB)

CHIRIQUI P 841 **VERAGUAS** P 842 **BOCAS DEL TORO** P 843

Displacement, tons: 46 full load
Dimensions, feet (metres): 73.8 x 17.3 x 2.9 (22.5 x 5.3 x 0.9)
Main machinery: 3 Detroit 12V 71 diesels; 1,260 hp (940 kW) sustained, 3 shafts
Speed, knots: 20
Complement: 7 (1 officer)
Guns: 2—7.62 mm MGs
Radars: Surface search: Furuno 1411; I-band.

Comment: Ex-US Sea Spectre PB Mk IV Class transferred as Grant-Aid from the US in March 1998. Used for drug prevention patrols in both Flotillas.



BOCAS DEL TORO 6/2003 / 0568903

2 HARBOUR PATROL CRAFT (PB)

PANAMA P 101 **CALAMAR** P 102 (ex-PC 3602)

Displacement, tons: 11 full load
Dimensions, feet (metres): 38 x 13 x 3 (11 x 4 x 0.9)
Main machinery: 1 Detroit 6-71T diesel; 300 hp (224 kW); 1 shaft
Speed, knots: 15
Range, n miles: 160 at 12 kt
Complement: 5
Guns: 1—7.62 mm MG.

Comment: Ex-US personnel landing craft. P 102 in service from December 1992. P 101 from February 1998. GRP construction. Pacific flotilla.



CALAMAR 8/1998, Panama Maritime Service / 0506310

6 FAST PATROL BOATS (PBF)

BPC 2201 BPC 2203 BPC 2206-2209

Dimensions, feet (metres): 22.3 x 7.5 x 2 (6.8 x 2.3 x 0.6)
Main machinery: 2 Johnson outboards, 280 hp (209 kW)
Speed, knots: 35
Complement: 4
Guns: 1—7.62 mm MG.

Comment: BPC 2201-2206 are Boston Whaler Piraña class acquired between June 1991 and October 1992.



BPC 2203 11/1998, Panama Maritime Service / 0057690

11 FAST PATROL BOATS (PBF)

BPC 3201 BPC 3207 BPC 3209 BPC 3215 BPC 3222 BPC 3225
BPC 3202 BPC 3208 BPC 3214 BPC 3220 BPC 3223

Dimensions, feet (metres): 33.5 x 7.5 x 2 (10.2 x 2.3 x 0.6)
Main machinery: 2 Yamaha outboards; 400 hp(m) (294 kW)
Speed, knots: 35
Complement: 4
Guns: 1—7.62 mm MG.

Comment: Eduardoño class acquired between June 1995 and October 1998



BPC 3202 6/2003, Panama Maritime Service / 0587789

4 INTERCEPT CRAFT (PBF)

Displacement, tons: To be announced
Dimensions, feet (metres): 44.0 x 9.0 x 3.0 (13.4 x 2.75 x 0.9)
Main machinery: 3 Yanmar diesels, 945 hp (704 kW); Bravo X drives
Speed, knots: 60
Range, n miles: 600 at 25 kt
Complement: 6

Comment: Manufactured by Nor-Tech, Fort Myers, FL. Composite and glass-fibre hull with V-bottomed hull. Donated by the US Southern Command in 2007. Employed on counter drugs, arms trafficking and illegal immigration duties.



INTERCEPT CRAFT 6/2007, US Southern Command / 1167968

LAND-BASED MARITIME AIRCRAFT

Numbers/Type: 3 CASA C-212 Aviocar
Operational speed: 190 kt (353 km/h)
Service ceiling: 24,000 ft (7,315 m)
Range: 1,650 n miles (3,055 km)
Role/Weapon systems: Air Force operated coastal patrol aircraft for EEZ protection and anti-smuggling duties. Sensors: APS-128 radar, limited ESM. Weapons: ASW: two Mk 44/46 torpedoes. ASV: two rocket or machine gun pods.



C-212 6/2003, Adolfo Ortega Gili / 0587787

Numbers/Type: 1 Pilatus Britten-Norman Islander
Operational speed: 150 kt (280 km/h)
Service ceiling: 18,900 ft (5,760 m)
Range: 1,500 n miles (2,775 km)
Role/Weapon systems: Air Force operated coastal surveillance duties. Sensors: Search radar. Weapons: Unarmed

AUXILIARIES

Notes: (1) There are two auxiliary craft *Frailes del Norte* T 06 (ex-US LCM 8 class) and *Frailes del Sur* T 07.
 (2) *General Esteban Huertas* (ex-YFU 81) has been reported with pennant number A 402 and may have replaced *Flamenco* in July 2004.



FRAILES DEL NORTE 6/2003, Panama Maritime Service / 0568901

1 LOGISTIC CRAFT (YAG)

ISLA PARIDAS (ex-Endoavour) L 21
Displacement, tons: 120 full load
Dimensions, feet (metres): 75 x 14 x 7 (22.9 x 4.3 x 2.1)
Main machinery: 1 Caterpillar diesel, 366 hp (270 kW); 1 shaft
Speed, knots: 12
Complement: 7 (1 officer)
Radars: Navigation: Furuno; I-band.

Comment: Acquired in September 1991. Pacific flotilla

1 COASTAL PATROL CRAFT (YO)

FLAMENCO (ex-Scheherazade) A 402 (ex-P 304, ex-WB 831)
Displacement, tons: 220 full load
Dimensions, feet (metres): 105 x 25 x 6.9 (32 x 7.6 x 2.1)
Main machinery: 2 Caterpillar diesels; 2 shafts
Speed, knots: 10
Complement: 11 (2 officers)
Guns: 2—7.62 mm MGs.
Radars: Surface search: Furuno FCR 1411; I-band.

Comment: Built in 1963. Transferred from US 22 July 1992 and commissioned in December 1992. Former US wooden hulled COOP craft. Refitted in Panama in 1994. Now used as a refuelling auxiliary. May have been replaced by ex-YFU 81.



FLAMENCO (old number) 12/1998, Panama Maritime Service / 0052696

1 MSB 5 CLASS (YAG)

NOMBRE DE DIOS (ex-MSB 25) L 16
Displacement, tons: 44 full load
Dimensions, feet (metres): 67.2 x 15.5 x 4 (17.4 x 4.7 x 1.2)
Main machinery: 2 Detroit diesels; 600 hp (448 kW); 2 shafts
Speed, knots: 12
Complement: 6 (1 officer)
Guns: 1—7.62 mm MG
Radars: Navigation: Raytheon Raystar; I-band.

Comment: Built between 1952 and 1956. Former US minesweeping boat. Served in the canal area until 1992 and transferred from US to Panama in December 1992 after refit. Wooden hull, new engine. Used as logistic craft. Pacific flotilla.



NOMBRE DE DIOS 6/2003 / 0568899

6 SUPPORT CRAFT (YAG)

DORADO I BA 055 **DORADO III** – **PORTOBELO** BA 058
DORADO II BA 056 **AGUACERO** BA 057 **FANTASMA AZUL** BA 059

Comment: *Dorado I* and *II* acquired in February 1998 and are used as 40 kt supply craft. *Agucero* is a confiscated 50 kt power boat taken into service in November 1998.



DORADO I 12/1998, Panama Maritime Service / 0052692

Papua New Guinea



Country Overview

Papua New Guinea lies north of Australia in the eastern half of New Guinea which it shares with the Indonesian province of Irian Jaya. An Australian-administered UN Trust territory from 1949, it became independent in 1975. Its head of state is the British sovereign, who is represented by a Governor-General. Its many island groups include the Bismarck and Louisiade Archipelagos, the Trobriand Islands, the D'Entrecasteaux Islands and Woodlark Island. Amongst other islands are Bougainville (a nine-year separatist conflict ended in 1997) and Buka. It has a

2,781 n mile coastline. The capital, principal city and port is Port Moresby. An archipelagic state, territorial seas (12 n miles) are claimed. A 200 n mile Exclusive Economic Zone (EEZ) has also been claimed but the limits have not been fully defined by boundary agreements.

Headquarters Appointments

Commander Defence Forces:
Commodore Peter Ilau, CBE
Director Maritime Operations:
Commander Murphy Kila

Bases

Port Moresby (HQ PNGDF and PNGDF Landing Craft Base); Lombrum (Manus)

Prefix to Ships' Names

HMPNGS

PATROL FORCES

4 PACIFIC CLASS (LARGE PATROL CRAFT) (PB)

Name	No	Builders	Commissioned
RABAUL (ex-Tararua)	01	Australian Shipbuilding Industries	16 May 1987
DREGER	02	Australian Shipbuilding Industries	31 Oct 1987
SEADLER	03	Australian Shipbuilding Industries	29 Oct 1988
MORESBY (ex-Basilisk)	04	Australian Shipbuilding Industries	1 July 1989

Displacement, tons: 162 full load
Dimensions, feet (metres): 103.3 x 26.6 x 6.9 (31.5 x 8.1 x 2.1)
Main machinery: 2 Caterpillar 3516TA diesels; 4,400 hp (3.3 MW) sustained; 2 shafts
Speed, knots: 20. **Range, n miles:** 2,500 at 12 kt
Complement: 17 (3 officers)
Guns: 1 Oerlikon GAM BQ1 20 mm, 2—762 mm MGs.
Radars: Surface search: Furuno 1011; I-band.

Comment: Contract awarded in 1985 to Australian Shipbuilding Industries (Hamilton Hill, West Australia) under Australian Defence co-operation. These are the first, third, sixth and seventh of the class and some of the few to be armed. All upgraded, during half-life refits in Australia with new radars and navigation support systems in 1997/98. Following the decision by the Australian government to extend the Pacific Patrol Boat project, *Rabaal* underwent a life-extension refit at Gladstone in 2003 and *Dreger* at Townsville in 2004. Similar refits conducted for *Seadler* and *Moresby* at Townsville in 2006 and 2007 respectively.



MORESBY

7/2008*, John Mortimer / 1335713

AUXILIARIES

2 LANDING CRAFT (LSM)

Name	No	Builders	Commissioned
SALAMAUA	31	Walkers Ltd, Maryborough	19 Oct 1973
BUNA	32	Walkers Ltd, Maryborough	7 Dec 1973

Displacement, tons: 310 light; 503 full load
Dimensions, feet (metres): 146 x 33 x 6.5 (44.5 x 10.1 x 1.9)
Main machinery: 2 GM diesels; 2 shafts
Speed, knots: 10
Range, n miles: 3,000 at 10 kt
Complement: 15 (2 officers)
Military lift: 160 tons
Guns: 2—12.7 mm MGs.
Radars: Navigation: Racal Decca RM 916; I-band

Comment: Transferred from Australia in 1975. Underwent extensive refits 1985–86. Both vessels reported operational in 2008.



SALAMAUA

12/1990, James Goldrick / 0081510

Paraguay

ARMADA NACIONAL



Country Overview

The Republic of Paraguay is one of two landlocked countries in South America; Bolivia is the other. With an area of 157,048 square miles, it has borders to the north with Bolivia, to the east with Brazil and to the south with Argentina. There are some 1,800 n miles of internal waterways including the principal rivers, the Pilcomayo, Paraguay and Alto Paraná. Navigable by large ships for much of their length, they link the capital, largest city and principal port, Asunción, with the Rio de la Plata estuary on the Atlantic Ocean. Other ports include Ciudad del Este, Encarnación and Concepción.

Headquarters Appointments

Commander-in-Chief of the Navy:
Rear Admiral Ciber Benitez Caceres

Personnel

2009: 3,600 including 300 Coast Guard, 800 marines and 100 naval air

Bases

Main Base: Puerto Sajonia, Asunción
Minor Bases: Base Naval de Bahía Negra (BNBN) (on upper Paraguay river)
Base Naval de Salto del Guairá (BNSG) (on upper Paraná river)
Base Naval de Ciudad del Este (BNCE) (on Paraná river)
Base Naval de Encarnación (BNE) (on Paraná river)
Base Naval de Ita-Piru (BNIP) (on Paraná river)

Training

Specialist training is done with Argentina (Exercise Sirena), Brazil (Exercise Ninfa) and US (Exercise Unitas)

Marine Corps

BIM 1: Puerto Rosario
BIM 2: Puerto Vallemi
BIM 3: Asunción
BIM 5: Bahía Negra
Detachments at Pozo Hondo and Ita-Piru
BIM 8: Salto del Guairá
Detachments at Ciudad del Este and Encarnación

Naval Aviation

Fixed Wing: Asunción International Airport
Helicopters: Puerto Sajonia

Coast Guard

Prefectura General Naval

PATROL FORCES

Notes: An unnamed 10 m patrol craft is based at Asunción. Twelve 5 to 6 m patrol craft (LP 30-41) of four different types were commissioned in 2007; six further were ordered in 2008

1 RIVER DEFENCE VESSEL (PGR)

Name	No	Builders	Commissioned
PARAGUAY	C 1	Odero, Genoa	May 1931

Displacement, tons: 836 standard, 885 full load
Dimensions, feet (metres): 231 × 35 × 5.3 (70 × 10.7 × 1.7)
Main machinery: 2 boilers; 2 Parsons turbines; 3,800 hp (2.83 MW); 2 shafts
Speed, knots: 17
Range, n miles: 1,700 at 16 kt
Complement: 86
Guns: 4—4.7 in (120 mm) (2 twin) 3—3 in (76 mm), 2—40 mm.
Mines: 6
Radars: Navigation (Paraguay); I-band

Comment: Refitted in 1975. Has 0.5 in side armour plating and 0.3 in on deck. Still in restricted operational service with boiler problems. Plans to re-engine with diesels have not yet been implemented and the ship is probably non-operational. Based at Asunción. Gun tubs on either side of bridge can be fitted with single 20 mm guns.



PARAGUAY and TENIENTE FARINA

4/2003, Hartmut Ehlers / 0681791



PARAGUAY

5/2000, Hartmut Ehlers / 0105197

1 ITAIPÚ CLASS (RIVER DEFENCE VESSEL) (PBR)

Name	No	Builders	Commissioned
ITAIPÚ	P 05 (ex-P 2)	Arsenal de Marinha, Rio de Janeiro	2 Apr 1985

Displacement, tons: 385 full load
Dimensions, feet (metres): 151.9 × 27.9 × 4.6 (46.3 × 8.5 × 1.4)
Main machinery: 2 MAN V6V16/18TL diesels; 1,920 hp(m) (1.41 MW); 2 shafts
Speed, knots: 14
Range, n miles: 6,000 at 12 kt
Complement: 40 (9 officers) plus 30 marines
Guns: 1 Bofors 40 mm/60, 2—81 mm mortars, 4—12.7 mm MGs
Radars: Navigation: I-band.
Helicopters: Platform for 1 HB 350B or equivalent.

Comment: Ordered late 1982. Launched 16 March 1984. Same as Brazilian Roraima class. Has some hospital facilities. Based at Asunción.



ITAIPÚ

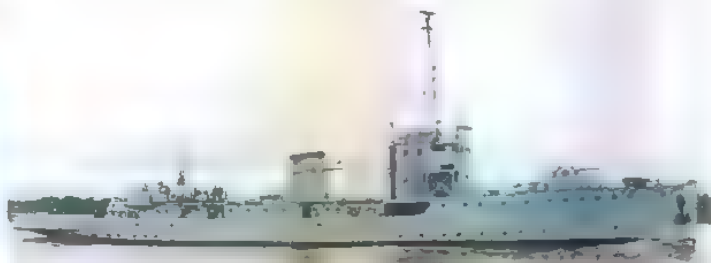
4/2003, Hartmut Ehlers / 0567473

2 BOUCHARD CLASS (PATROL SHIPS) (PBR)

Name	No	Builders	Commissioned
NANAWA (ex-Bouchard M 7)	P 02 (ex-M 1)	Rio Santiago Naval Yard	27 Jan 1937
TENIENTE FARINA (ex-Py M 10)	P 04 (ex-M 3)	Rio Santiago Naval Yard	1 July 1939

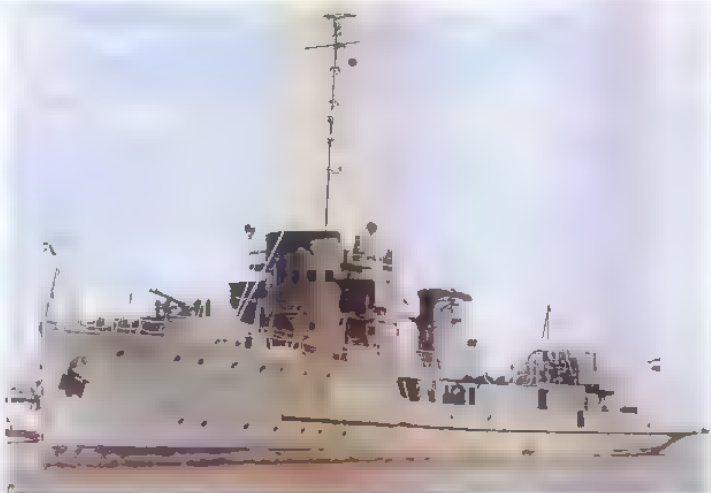
Displacement, tons: 450 standard; 620 normal; 650 full load
Dimensions, feet (metres): 197 × 24 × 8.5 (60 × 7.3 × 2.6)
Main machinery: 2 sets MAN 2-stroke diesels; 2,000 hp(m) (1.47 MW); 2 shafts
Speed, knots: 16
Range, n miles: 6,000 at 12 kt
Complement: 70
Guns: 4 Bofors 40 mm/60 (2 twin), 2—12.7 mm MGs.
Mines: 1 rail
Radars: Navigation: I-band.

Comment: Former Argentinian minesweepers of the Bouchard class. Launched on 20 March 1936 and 31 March 1938 respectively. Transferred from the Argentine Navy to the Paraguayan Navy; *Nanawa* recommissioned 14 March 1964, *Teniente Farina* 6 May 1968. Based at Asunción. A third ship, *Capitán Moza*, was scrapped between 1995–97.



NANAWA

6/1990, Paraguay Navy / 0081514



NANAWA

5/2000, Hartmut Ehlers / 0105194

1 RIVER PATROL CRAFT (PBR)

Name	No	Builders	Commissioned
CAPITÁN CABRAL (ex-Triunfo)	P 01 (ex-P 1, ex-A 1)	Werk-Conrad, Haarlem	1908

Displacement, tons: 180 standard; 206 full load
Dimensions, feet (metres): 107.2 × 23.5 × 6.7 (32.7 × 7.2 × 2.0)
Main machinery: 1 Caterpillar 3408 diesel; 360 hp (269 kW); 1 shaft
Speed, knots: 9
Complement: 25
Guns: 1 Bofors 40 mm/60, 2 Oerlikon 20 mm, 2—12.7 mm MGs
Radars: Navigation: I-band

Comment: Former tug. Launched in 1907. Still in excellent condition. Vickers guns were replaced and a diesel engine fitted by Arsenal de Marina in 1984. Based at Asunción.



CAPITÁN CABRAL

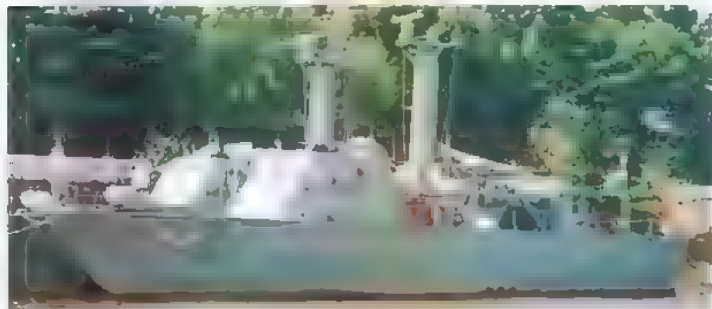
4/2003, Hartmut Ehlers / 0567474

2 MODIFIED HAI OU CLASS (PBF)

CAPITÁN ORTIZ P 06 TENIENTE ROBLES P 07

Displacement, tons: 47 full load
Dimensions, feet (metres): 70.8 x 18 x 3.3 (21.6 x 5.5 x 1)
Main machinery: 2 MTU 12V 331 TC82 diesels; 2,605 hp(m) (1.92 MW) sustained; 2 shafts
Speed, knots: 36
Range, n miles: 700 at 32 kt
Complement: 10
Guns: 1—20 mm Type 75, 3—12.7 mm MGs
Radars: Surface search; I-band

Comment: Developed by Taiwan from Dvora class hulls and presented as a gift in 1996. It is possible that these craft are the two original Dvora hulls acquired by Taiwan.



CAPITÁN ORTIZ 4/2003, Hartmut Ehlers / 0567475

2 RIVER PATROL CRAFT (PBR)

YHAGUY P 08 TEBICUARY P 09

Displacement, tons: 25
Dimensions, feet (metres): 52.8 x 14.8 x 2.6 (16.1 x 4.5 x 0.8)
Main machinery: Caterpillar diesel, 800 hp (596 kW)
Speed, knots: 40
Guns: 3—7.62 mm MGs (fitted for)
Radars: Surface search; Furuno; I-band

Comment: Two former Taiwan coast guard patrol boats transferred 23 June 1999. Capable of 40 kt and armed with two 7.62 mm MGs. Two sister craft transferred to Gambia in 1999.



TEBICUARY 4/2003, Hartmut Ehlers / 0567476

5 RIVER PATROL CRAFT (PBR)

LP 07 (ex-P 07) P 107 (ex-P 08) LP 09 (ex-P 09) LP 10 (ex-P 10) LP 11 (ex-P 11)

Displacement, tons: 18 full load
Dimensions, feet (metres): 48.2 x 10.2 x 2.6 (14.7 x 3.1 x 0.8)
Main machinery: 2 GM 6-71 diesels; 340 hp (254 kW); 2 shafts
Speed, knots: 12 **Range, n miles:** 240 at 12 kt
Complement: 4
Guns: 2—12.7 mm MGs.

Comment: Built by Arsenal de Marina, Paraguay. LP 07 launched March 1989, P 107 and LP 09 in February 1990 and LP 10-11 in October 1991. The programme was then aborted. Bases: LP 07 (Isla Margarita); LP 107 (Lake Itaipu); LP 09 (Bahia Negra); LP 10 (Asuncion); LP 11 (Encarnacion)



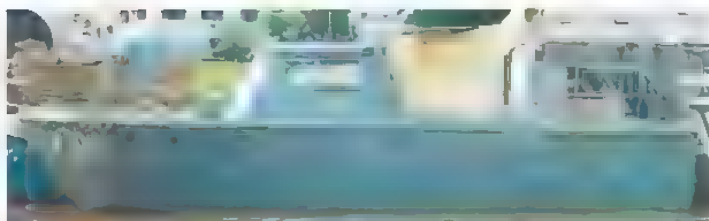
LP 10 4/2003, Hartmut Ehlers / 0567477

6 TYPE 701 CLASS (PBR)

- LP 01 (ex-P 105) - LP 102 (P 102) - LP 104 (ex-P 104)
 - LP 101 (ex-P 101) **MIGUEL SOTOA P 103** **MANUEL TRUJILLO P 106**

Displacement, tons: 15 full load
Dimensions, feet (metres): 42.5 x 12.8 x 3 (13 x 3.9 x 0.9)
Main machinery: 2 diesels; 500 hp (373 kW); 2 shafts
Speed, knots: 20
Complement: 7
Guns: 2—12.7 mm MGs

Comment: Built by Sewart in 1970. Delivered 1967-71. LP 105 is in reserve. Bases: LP 01 (Asuncion); LP 101 (Ayolas); LP 102 (Asuncion); P 103 (Lake Itaipu); LP 104 (Fuerte Olimpo); P 106 (Lake Itaipu).



LP 104 4/2003, Hartmut Ehlers / 0567478

LAND-BASED MARITIME AIRCRAFT

Notes: The Naval Aviation inventory includes four fixed wing aircraft (two Cessna 150, two Cessna 310K and one Cessna 401A) in addition to the two Helibras Esquilo. Four further Robinson R44 helicopters have not been ordered, as previously reported.

Numbers/Type: 2 Helibras HB 350B Esquilo.
Operational speed: 125 kt (232 km/h).
Service ceiling: 10,000 ft (3,050 m)
Range: 390 n miles (720 km).
Role/Weapon systems: Support helicopter for riverine patrol craft. Delivered in July 1985.



ESQUILO 5/2000, Hartmut Ehlers / 0105198

AUXILIARIES

Notes: In addition to the craft listed, there are three LCVPs (EDVP 1-3), two service craft (Arsenal 1 and 2) one utility launch (Teniente Cabrera), one suction dredger (Teniente Oscar Carreras Sagüier), one floating crane (Grúa Flotante) and one floating dry dock (Dique Flotante (ex-AFDL 26)).



EDVP-03 4/2003, Hartmut Ehlers / 0687190

1 HYDROGRAPHIC LAUNCH (YGS)

SUBOFICIAL ROGELIO LESME LPH 01 (ex-LH 1)

Displacement, tons: 18 full load
Dimensions, feet (metres): 65.5 x 10.2 x 2.6 (14.7 x 3.1 x 0.8)
Main machinery: 1 Mercedes-Benz diesel, 100 hp (74 kW); 1 shaft
Speed, knots: 13
Complement: 5

Comment: Built in 1958.

1 TRAINING SHIP/TRANSPORT (AK/AX)

Name	No	Builders	Commissioned
GUARANI (ex-Cerro Cora)	-	Tomas Ruiz de Velasco, Bilbao	Feb 1968

Measurement, tons: 714 gross, 1,047 dwt
Dimensions, feet (metres): 240.3 x 36.3 x 11.9 (73.6 x 11.1 x 3.7)
Main machinery: 1 MWM diesel; 1,300 hp(m) (956 kW); 1 shaft
Speed, knots: 13
Complement: 21
Cargo capacity: 1,000 tons

Comment: Refitted in 1975 after a serious fire in the previous year off the coast of France. Used to spend most of her time acting as a freighter on the Asunción Europe run, commercially operated for the Paraguayan Navy. Since 1991 she has only been used for river service and for training cruises Asunción-Montevidéo. Reported laid up and probably not operational.



GUARANI 4/2003, Hartmut Ehlers / 0567480

1 RIVER TRANSPORT (AKL)

TENIENTE HERREROS (ex-*Presidente Stroessner*) T 1

Displacement, tons: 420 full load
 Dimensions, feet (metres): 124 x 29.5 x 7.2 (378 x 9 x 2.2)
 Main machinery: 2 MWM diesels; 330 hp (m) (243 kW)
 Speed, knots: 10
 Complement: 10
 Cargo capacity: 120 tons

Comment: Built by Arsenal de Marina in 1964 from an old hull.



TENIENTE HERREROS 5/1991, Paraguay Navy / 0081518

1 PRESIDENTIAL YACHT (MYAC)

3 de FEBRERO (ex-26 de Febrero)

Displacement, tons: 98.5 full load
 Dimensions, feet (metres): 92.2 x 19.7 x 5.2 (28.1 x 6.0 x 1.6)
 Main machinery: 2 Rolls Royce; 517 hp (386 kW); 2 shafts
 Speed, knots: 11
 Range, n miles: 1,350 at 11 kt
 Complement: 6 + 8 guests

Comment: Built by Naval Arsenal Asunción and launched in 1972. Entered service in 1982



3 de FEBRERO

4/2003, Hartmut Ehlers 0567479

TUGS

3 TUGS (YTM/YTL)

TRIUNFO R 4 (ex-YTL 567)

ANGOSTURA R 5 (ex-YTL 211)

ESPERANZA R 7

Displacement, tons: 70 full load
 Dimensions, feet (metres): 65 x 18.4 x 7.5 (19.8 x 5 x 2.3)
 Main machinery: 1 Caterpillar 3408 diesel; 360 hp (269 kW); 1 shaft
 Speed, knots: 9
 Complement: 5

Comment: Harbour tugs transferred under MAR.YTL 211 leased in March 1966, YTL 567 loaned in April 1974. Both sold on 11 February 1977. R 5 rebuilt by Arsenal de Marina in 1992 and equipped with Caterpillar engine. Details given are for R 4 and R 5. R 7 is a smaller 15 m vessel



TRIUNFO

4/2003, Hartmut Ehlers / 0567481



Peru

ARMADA PERUANA

Country Overview

The Republic of Peru is situated in western South America. With an area of 496,225 square miles it has borders to the north with Ecuador and Colombia, to the east with Brazil and Bolivia and to the south with Chile. It has a coastline of 1,850 n miles with the Pacific Ocean. Lima is capital and largest city and is served by the port of Callao. There are further ports at Paita, Salaverry, Chimbote, Pisco, San Juan, Matarani and Ilo. Inland, Iquitos and Pucallpa are linked to the Atlantic Ocean by the Amazon River. Lake Titicaca is also an important waterway. Peru has not claimed an EEZ but is one of a few coastal states which claims a 200 n mile territorial sea

Headquarters Appointments

Commander of the Navy:
 Admiral Carlos Gamarra Elias
 Chief of the Naval Staff
 Vice Admiral Rolando Navarrete Salomon
 Inspector General:
 Vice Admiral Jorge de la Puente Ribeyro
 Commander Pacific Operations Command (Callao):
 Vice Admiral Alberto Lozada Frias

Headquarters Appointments – continued

Commander Amazon Operations
 Command (Iquitos):
 Vice Admiral José Cueto Aservi
 Director General, Coast Guard
 Rear Admiral Fergán Herrera Cuntt
 Commander, Surface Forces
 Rear Admiral Raúl Vázquez Alvarado
 Commander, Submarines:
 Rear Admiral Jaime Navach Gamio
 Commander, Special Operations Force
 Rear Admiral Erick Giovannini Freire
 Commander, Naval Aviation:
 Rear Admiral José Paredes Lora
 Commander, Naval Infantry Force:
 Captain Carlos Tello Ariaga

Personnel

(a) 2009: 23,715 (2,000 officers)
 (b) 2 years' voluntary military service

Organisation and Bases

2 Operational Commands: Pacific (Callao) and Amazon (Iquitos).
 5 Naval Zones: 1st (Piura), 2nd (Callao), 3rd (Arequipa), 4th (Pucallpa) and 5th (Iquitos)
 Coast Guard General Directorate (Callao).

Callao: Main Naval Base, dockyard with shipbuilding capacity, one dry dock, three floating docks, one floating crane; training schools, Submarine Naval Station. Main Naval Air Base near Jorge Chavez International Airport.
 San Lorenzo: Naval Station.
 Iquitos: River base for Amazon Flotilla, small building yard, repair, facilities, floating dock.
 Pucallpa: River base with logistic facilities.
 San Juan de Marcona: Naval Aviation Training School and airfield.
 Paita: Naval Station with logistic facilities.
 Chimbote: Naval Base, dockyard for small vessels, ogistic facilities.
 Puerto Maldonado: River Base
 Puno: Lake Titicaca Lake Station.
 La Punta (Naval Academy).
 Naval Stations with logistic facilities at El Salto (Tumbes), Mollendo (Arequipa), El Estrecho and Gueppi (Amazon)

Marines

The Peruvian Marines comprise 3,500 men whose Headquarters is at Ancón. The force includes a Marine Brigade, the Amphibious Support Group and Recon Forces. The Marine Brigade has three battalions: First Battalion - Guarnición de Marina; Second Battalion - Guardia Chalaca, Third Battalion

(including Fire Support Group armed with 122 mm howitzer and 120 mm mortar and Engineer Support company) - Vencedores de Punta Melpaio. The Amphibious Support Group is composed of the Vehicles and Motor Transport battalions. Recon Forces include a Commando and anti-terrorist companies. Additionally, the Peruvian Marines have jungle battalions at Iquitos and Pucallpa (BIMSE 1 and BIMSE 2).

Special Operations

The Special Operations Command is responsible for the organisation, equipment, training and control of the operations of its subordinate Units; these Units are: the North, Central, South and Northwest Special Operations Groups, the Diving and Salvage Group, the Explosives Ordnance Unit, The Special Operations Station and the Special Operations School.

Prefix to Ships' Names

BAP (Buque Armada Peruana).

Coast Guard

A separate service set up in 1975 with a number of light forces transferred from the Navy.

PENNANT LIST

Submarines

SS 31 Angamos
 SS 32 Antofagasta
 SS 33 Pisagua
 SS 34 Chipana
 SS 35 Islay
 SS 38 Arica

Frigates

FM 51 Cervajal
 FM 52 Villavieja
 FM 53 Montero
 FM 54 Mariategui
 FM 55 Aguirre
 FM 56 Palacios
 FM 57 Bolognesi
 FM 58 Quinones

CF 13

CF 14 Ucayalí
 CF 16 Manuel Clavero (bldg)
 CF 17 Putumayo (bldg)
 CM 21 Velarde
 CM 22 Santillana
 CM 23 De los Heros
 CM 24 Herrera
 CM 25 Larrea
 CM 26 Sanchez Carrión

DT 143

DT 144 Callao Eten

Survey Ships

AH 171 Carrasco
 AH 172 Stiglich
 AH 175 Carrillo
 AH 176 Melo
 AEH 174 Macha

Cruisers

CLM 81 Almirante Grau

Patrol Forces

CF 11 Amazonas
 CF 12 Loreto

Amphibious Forces

DT 141 Paita
 DT 142 Pisco

Auxiliaries

ABH 302 Morona
 ABH 306 Puno

ACA 111

ACA 118 Caloyeras
 ACP 118 Noguera
 ACP 119 Gauden
 AMB 160 Unanue
 ALY 313 Marte
 ARB 120 Mejía
 ARB 121 Huertas
 ARB 123 Guardian Rios
 ARB 126 Duenas
 ARB 128 Olaya
 ARB 129 Selandon
 ATC 131 Mollendo
 ATP 154 Bayovar
 ATP 155 Zorritos
 ART 322 San Lorenzo

SUBMARINES

Notes: Replacement of the current submarine *Rotilla* is under consideration.

6 ANGAMOS/ISLAY (TYPE 209/1200) CLASS (SSK)

Name	No	Builders	Laid down	Launched	Commissioned
ANGAMOS (ex-Casma)	SS 31	Howaldtswerke, Kiel	15 July 1977	31 Aug 1979	19 Dec 1980
ANTOFAGASTA	SS 32	Howaldtswerke, Kiel	3 Oct 1977	19 Dec 1979	20 Feb 1981
PISAGUA	SS 33	Howaldtswerke, Kiel	15 Aug 1978	19 Oct 1980	12 July 1983
CHIPANA	SS 34	Howaldtswerke, Kiel	1 Nov 1978	19 May 1981	20 Sep 1982
ISLAY	SS 35	Howaldtswerke, Kiel	15 Mar 1971	11 Oct 1973	29 Aug 1974
ARICA	SS 36	Howaldtswerke, Kiel	1 Nov 1971	5 Apr 1974	21 Jan 1975

Displacement, tons: 1,185 surfaced; 1,290 dived
Dimensions, feet (metres): 183.7 × 20.3 × 17.9
 (56 × 6.2 × 5.5)

Main machinery: Diesel-electric; 4 MTU 12V 493 AZ80 GA31L diesels; 2,400 hp(m) (176 MW) sustained; 4 Siemens alternators; 1.7 MW; 1 Siemens motor; 4,600 hp(m) (3.38 MW) sustained; 1 shaft

Speed, knots: 11 surfaced/snorting; 21.5 dived

Range, n miles: 240 at 8 kt

Complement: 35 (5 officers) (*Islay* and *Arica*); 31 (others)

Torpedoes: 8–21 in (533 mm) tubes. 14 AEG SST4, wire-guided; active/passive homing to 12/28 km (6.5/15 n miles) at 35/23 kt; warhead 260 kg. Swim-out discharge

Countemeasures: ESM Radar warning

Weapons control: Sepa Mk 3 or Signaal Sinbad M8/24 (*Angamos* and *Antofagasta*).

Radars: Surface search: Thomson-CSF Calypso; I-band.

Sonars: Atlas Elektronik CSU 3; active/passive search and attack; medium/high frequency.

Thomson Sintra DUUX 2C or Atlas Elektronik PRS 3; passive ranging.

Programmes: Two Type 209 (SS 35-36) ordered 1969. Two further Type 209 boats (SS 31-32) ordered 12 August 1976. Two Type 1200 (SS 33-34) ordered 21 March 1977

Designed by Ingenieurkontor, Lübeck for construction by Howaldtswerke, Kiel and sale by Ferrostaal, Essen all acting as a consortium.

Modernisation: Sepa Mk 3 fire control fitted progressively from 1986. *Angamos* modernised with new batteries,

sonar and EW suite. Torpedoes are to be replaced by Atlas Elektronik SUT Mod 3. An update programme for all six boats is in progress. Work on *Islay* and *Arica* is to be of more limited scope than the other four boats.

Structure: A single-hull design with two ballast tanks and forward and after trim tanks. Fitted with snort and remote machinery control. The single screw is slow revving, very high-capacity batteries with GRP lead-acid cells and battery cooling-by Wilh Hagen and VARTA. Fitted with two periscopes and Omega receiver. Foreplanes retract. Diving depth, 250 m (820 ft).

Operational: Endurance, 50 days. Four are in service, two in refit or reserve at any one time. *Angamos* took part in multinational exercises in mid-2004 during which she achieved 156 days at sea.



PISAGUA

6/2004, Peruvian Navy / 1127035



ISLAY

6/2004, Peruvian Navy / 1127035

CRUISERS

1 DE RUYTER CLASS (CG/CLM)

Name	No	Builders	Laid down	Launched	Commissioned
ALMIRANTE GRAU (ex-De Ruyter)	CLM 81	Wilton-Fijenoord, Schiedam	5 Sep 1939	24 Dec 1944	18 Nov 1953

Displacement, tons: 12,165 full load
Dimensions, feet (metres), 624.5 × 56.7 × 22
 (190.3 × 17.3 × 6.7)
Main machinery: 4 Werkspoor-Yarrow boilers; 2 De Schelde-
 Parsons turbines; 85,000 hp (62.5 MW); 2 shafts
Speed, knots: 32
Range, n miles: 7,000 at 12 kt
Complement: 953 (49 officers)

Missiles: SSM, 8 OTO Melara/Matra Otomat Mk 2 (TG 1) ●; active radar homing to 80 km (43.2 n miles) at 0.9 Mach; warhead 210 kg, sea-skimmer for last 4 km (2.2 n miles).
Guns: 8 Bofors 6 in (152 mm)/53 (4 twin) ●; 15 rds/min to 26 km (14 n miles); weight of shell 46 kg
 4 Otobreda 40 mm/70 (2 twin) ●; 120 rds/min to 12.5 km (6.8 n miles); weight of shell 0.96 kg
 4 Bofors 40 mm/70 ●; 300 rds/min to 12 km (6.6 n miles); weight of shell 0.96 kg.

Countermeasures: Decoys: 2 Dagaie and 1 Sagaie chaff launchers.

Combat data systems: Signaal Sewaco PE SATCOM ●

Weapons control: 2 Lirod 8 optronic directors ●

Radars: Air search: AN/SPS-6 ●; D-band.

Surface search/target indication: Signaal DA08 ●; E/F-band.

Navigation: Rascal Decca 1226; I-band.

Fire control: Signaal WM25 ●; I/J-band (for 6 in guns), range 46 km (25 n miles).

Signaal STIR ●; I/J/K-band; range 140 km (76 n miles) for 1 m² target.

Programmes: Transferred by purchase from Netherlands 7 March 1973 and commissioned in Peruvian Navy 23 May 1973.

Modernisation: Taken in hand for a two and a half year modernisation at Amsterdam Dry Dock Co in March 1985. This was to include reconditioning of mechanical and electrical engineering systems, fitting of SSM and SAM, replacement of electronics and fitting of one CSEE Sagaie and two Dagaie launchers. In 1986 financial constraints limited the work but much had been done to update sensors and fire-control equipment. Sailed for Peru 23 January 1988 without her secondary gun armament, which was completed at Sima Yard, Callao. Sonar has been removed. SATCOM fitted aft.

Operational: Expected to be decommissioned in 2010.



ALMIRANTE GRAU

(Scale 1 : 1,800), Ian Sturton / 0126352



ALMIRANTE GRAU

11/2004, Globke Collection / 112/04/

FRIGATES

4 AGUIRRE (LUPO) CLASS (FFGHM)

Name	No	Builders	Laid down	Launched	Commissioned
AGUIRRE (ex-Orsa)	FM 56 (ex-F 567)	Fincantieri, Muggiano	1 Aug 1977	1 Mar 1979	1 Mar 1980
PALACIOS (ex-Lupo)	FM 56 (ex-F 564)	Fincantieri, Riva Trigoso	11 Oct 1974	29 July 1976	12 Sep 1977
BOLOGNESI (ex-Perseo)	FM 57 (ex-F 566)	Fincantieri, Riva Trigoso	24 Feb 1977	12 July 1978	1 Mar 1980
QUINONES (ex-Sagittario)	FM 58 (ex-F 565)	Fincantieri, Riva Trigoso	4 Feb 1976	22 June 1977	18 Nov 1978

Displacement, tons: 2,208 standard; 2,500 full load

Dimensions, feet (metres): 371.3 × 37.1 × 12.1

(113.2 × 11.3 × 3.7)

Main machinery: CODOG; 2 GE/Fiat LM 2500 gas turbines, 50,000 hp (37.3 MW) sustained; 2 GMT BL 230, 20M diesels; 10,000 hp(m) (7.3 MW) sustained; 2 shafts; LIPS cp props

Speed, knots: 35 (21 on diesels)

Range, n miles: 4,350 at 16 kt

Complement: 185 (20 officers)

Missiles: SSM, 8 OTO Melara/TESEO Mk 2 (TG 2) ●; active radar homing to 180 km (91.2 n miles) at 0.9 Mach; warhead 210 kg, sea-skimmer.

SAM Raytheon NATO Sea Sparrow RIM-7M Mk 29 octupole launcher ●; semi-active radar homing to 14.6 km (8 n miles) at 2.5 Mach; warhead 39 kg.

Guns: 1 OTO Melara 5 in (127 mm)/54 ●; 45 rds/min to 16 km (8.7 n miles); weight of shell 32 kg.
 4 Breda 40 mm/70 (2 twin) ●; 300 rds/min to 12.5 km (6.8 n miles); weight of shell 0.96 kg.
 2 Oerlikon 20 mm may be fitted.

Torpedoes: 6—324 mm Mk 32 (2 triple) tubes ● Mk 44, anti-submarine, active homing to 5 km (2.7 n miles) at 30 kt; warhead 34 kg (shaped charge).

Countermeasures: Decoys: 2 Breda 105 mm SCLAR 20-barrelled trainable launchers ●; multipurpose; chaff to 5 km (2.7 n miles); illuminants to 12 km (6.6 n miles); HE bombardment

ESM: SLR-4; intercept.

ECM: 2 SLO-D; jammer

Torpedo decoy: SLO-25 Nixie

Combat data systems: Selenia IPN 20 (SADOC 2) action data automation. Link 11 (SATCOM)

Weapons control: 2 Elsig Mk 10 Argo with NA-21 directors. Dardo system for 40 mm

Radars: Air search: Selenia SPS-774 (RAN 10S) ●; E/F-band.

Surface search: SMA SPS 702 ●; I-band

SMA SPQ-2F ●; I-band.

Navigation: SMA SPN-748; I-band.

Fire control: Selenia SPG-70 (RTN 10X) ● I/J-band.

2 Selenia SPG-74 (RTN 20X) ●; I/J-band.

1 US MK 95 Mod 1 ●; I-band.

Sonars: Raytheon DE 1160B; hull-mounted; active search and attack; medium frequency.

Helicopters: 1 Agusta AB 212ASW ●.



BOLOGNESI

(Scale 1 : 1,200), Ian Sturton / 1150932



PALACIOS

6/2006, Peruvian Navy / 1164741

Programmes: Palacios and Aguirre formally transferred from the Italian Navy on 3 November 2004, without ammunition, torpedoes, SSM and helicopters. Following eight-month refits at Fincantieri, Muggiano they both arrived at Callao in mid-2005. A contract for the refit and

transfer of two further decommissioned ships, Sagittario and Perseo was signed on 28 October 2005. Both ships were commissioned on 23 January 2006. Bolognesi arrived at Callao on 18 August 2006 and Quinones on 20 January 2007.

4 CARVAJAL (MODIFIED LUPO) CLASS (FFGHM)

Name	No	Builders	Laid down	Launched	Commissioned
CARVAJAL	FM 51	Fincantieri, Riva Trigoso	8 Aug 1974	17 Nov 1976	5 Feb 1979
VILLAVISENCO	FM 52	Fincantieri, Riva Trigoso	6 Oct 1976	7 Feb 1978	25 June 1979
MONTERO	FM 53	SIMA, Callao	Oct 1978	8 Oct 1982	25 July 1984
MARIATEGUI	FM 54	SIMA, Callao	1979	8 Oct 1984	10 Oct 1987

Displacement, tons: 2,208 standard; 2,500 full load

Dimensions, feet (metres): 371.3 x 37.1 x 12.1
(113.2 x 11.3 x 3.7)

Main machinery: CODLOG, 2 GE/Fiat LM 2500 gas turbines, 50,000 hp (37.3 MW) sustained; 2 GMT A 230 20 M diesel; 8,000 hp (m) (5.88 MW) sustained; 2 shafts, LIPS cp props

Speed, knots: 35

Range, n miles: 3,450 at 20.5 kt

Complement: 185 (20 officers)

Missiles SSM 8 OTO Melara/Matra Otomat Mk 2 (TG 1) ●; active radar homing to 80 km (43.2 n miles) at 0.9 Mach; warhead 210 kg; sea-skimmer for last 4 km (2.2 n miles). SAM. Selenia Elsig Albatros octuple launcher ●; 8 Aspide, semi-active radar homing to 13 km (7 n miles) at 2.5 Mach; height envelope 15–5,000 m (49.2–16,405 ft); warhead 30 kg. An SA-N-10 launcher (MPG 86) may be fitted on the stern.

Guns: 1 OTO Melara 5 in (127 mm)/54 ●; 45 rds/min to 16 km (8.7 n miles); weight of shell 32 kg. 4 Breda 40 mm/70 (2 twin) ●; 300 rds/min to 12.5 km (6.8 n miles); weight of shell 0.96 kg.

Torpedoes: 6–324 mm ILAS (2 triple) tubes ●, Mk 44; anti-submarine; active homing to 5 km (2.7 n miles) at 30 kt; warhead 34 kg (shaped charge).

Countermeasures: Decoys: 2 Breda 105 mm SCLAR 20-barrelled trainable launchers ●, multipurpose; chaff to 5 km (2.7 n miles); illuminants to 12 km (6.6 n miles); HE bombardment.

ESM: Elettronica Lambda; intercept.

MARIATEGUI

Combat data systems: Selenia IPN-10 action data automation

Weapons control: 2 Elsig Mk 10 Argo with NA-21 directors, Dardo system for 40 mm.

Radars: Air search: Selenia RAN 10S (FM 52–54) ●; E/F-band. Signal LW 08 (FM 51), D-band.

Surface search: Selenia RAN 11LX ●; D/I-band

Navigation: SMA 3 RM 20R; I-band

Fire control: 2 RTN 10X ●; I/J-band.

2 RTN 20X ●; I/J-band (for Dardo).

Sonars: EDO 610E; hull-mounted, active search and attack; medium frequency

Helicopters: 1 Agusta AB 212ASW ●, 1 Agusta ASH 3D Sea King (deck only) (FM 51 and 54).

Programmes. *Montero* and *Mariategui* were the first major warships to be built on the Pacific Coast of South America, although some equipment was provided by Fincantieri

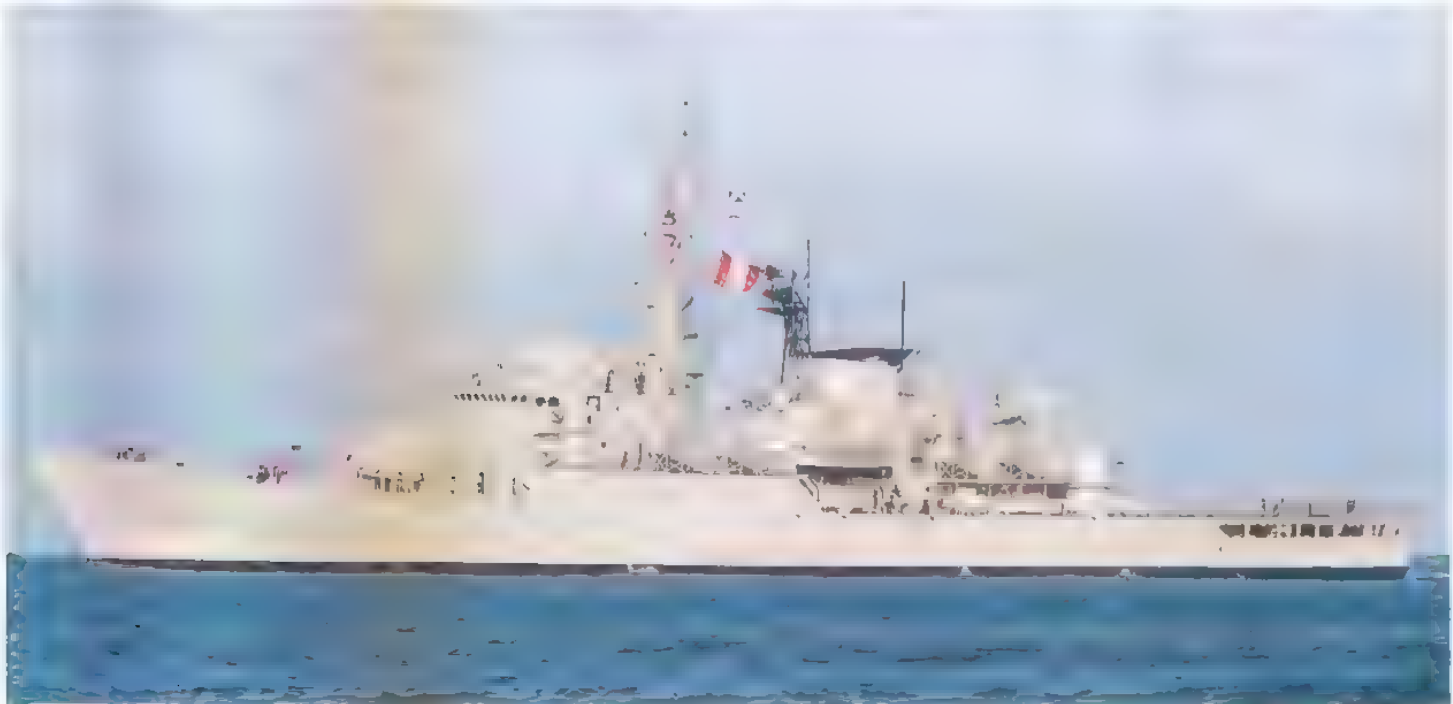


(Scale 1 : 1,200), Ian Sturton / 0105275

Modernisation: FM 51 and FM 54 have had flight deck extensions in order to operate Sea Kings from the deck although they cannot be stowed in the hangar. Similar extensions to FM 52 and 53 were made in 2007 SA-N-10 (MPG-86) may be fitted on the sterns of two ships. LW 08 (ex-*Almirante Grau*) replaced RAN 10S in FM 51 in 2003. A mid-life refit of FM 51–54, to include propulsion systems and the modernisation of Aspide, is reported to be under consideration.

Structure: FM 51–54 differ from those built for Italian service by having a fixed hangar and higher 40 mm mounts. The SAM system is also different. The ships were commissioned with a step-down from the flight deck to the stern although this has been modified in FM 51 and 54.

Operational: Helicopter provides an over-the-horizon targeting capability for SSM. HIFR facilities fitted to FM 52 and 53 in 1989 to allow refuelling of Sea King helicopters.



MARIATEGUI

8/2006, Michael Nitz / 1335412



CARVAJAL

6/2008, Anneti Collection / 1335411

SHIPBORNE AIRCRAFT

Numbers/Type: 5 Agusta AB 212ASW.

Operational speed: 106 kt (196 km/h).

Service ceiling: 14,200 ft (4,330 m).

Range: 230 n miles (425 km).

Role/Weapon systems: ASW and surface search helicopter for smaller escorts. Sensors: Selenia search radar, Bendix ASQ 18 dipping sonar, ECM. Weapons: ASW; two Mk 44, Mk 46 or 244/S torpedoes or depth bombs.



AB 212

8/2006, Michael Nitz / 1335400

Numbers/Type: 3 Agusta-Sikorsky ASH-3D Sea King.

Operational speed: 120 kt (222 km/h).

Service ceiling: 12,200 ft (3,720 m).

Range: 630 n miles (1,165 km).

Role/Weapon systems: ASW helicopter; can be operated from two FFGs. Sensors: Selenia search radar, Bendix ASQ-18 dipping sonar, sonobuoys. Weapons: ASW; four Mk 44, Mk 46 or 244/S torpedoes or depth bombs or mines. ASV; two AM 39 Exocet missiles.



ASH-3D

6/2004, Peruvian Navy / 1127039

LAND-BASED MARITIME AIRCRAFT (FRONT LINE)

Notes: (1) There are also three Mi-8T transport helicopters.

(2) There are three Fokker: one F-27 200, one F-27 600 and one F-27 500.

(3) There are two Antonov AN 32B transport aircraft

(4) Five Beech T-34C are used for training

(5) There is one Cessna 206 and two Cessna 150

(6) There are three Bell 206B training helicopters.

(7) Six Enstrom F-28F training helicopters were ordered in January 2008.



Mi-8T

6/2000, Peruvian Navy / D105209



ENSTROM F-28F

6/2008*, Peruvian Navy / 1435410

Numbers/Type: 5 Beechcraft Super King Air 200T.

Operational speed: 282 kt (523 km/h).

Service ceiling: 35,000 ft (10,670 m).

Range: 2,030 n miles (3,756 km).

Role/Weapon systems: Coastal surveillance and EEZ patrol duties. Sensors: Search radar, cameras. Weapons: Unarmed.

PATROL FORCES

Notes: (1) Procurement of 10 hovercraft for river policing is under consideration.

(2) Eight 7.4 m river patrol craft, similar to the Piranhas class, operate on the River Amazon.

6 VERLARDE (PR-72P) CLASS
(FAST ATTACK CRAFT—MISSILE) (CM/PGGFM)

Name	No	Builders	Launched	Commissioned
VELARDE	CM 21	SFCN, France	16 Sep 1978	25 July 1980
SANTILLANA	CM 22	SFCN, France	11 Sep 1978	25 July 1980
DE LOS HEROS	CM 23	SFCN, France	20 May 1979	17 Nov 1980
HERRERA	CM 24	SFCN, France	16 Feb 1979	26 Feb 1981
LARREA	CM 25	SFCN, France	12 May 1979	16 June 1981
SANCHEZ CARRIÓN	CM 26	SFCN, France	28 June 1979	18 Sep 1981

Displacement, tons: 470 standard; 560 full load

Dimensions, feet (metres): 210 × 27.4 × 5.2 (64 × 8.4 × 2.6)

Main machinery: 4 SACM AGO 240 V16 M7 (CM 21, 23, 25) or 4 MTU 12V 595 (CM 22, 24, 26) diesels; 22,200 hp(m) (16.32 MW) sustained; 4 shafts

Speed, knots: 37

Range, n miles: 2,500 at 16 kt

Complement: 36 plus 10 spare

Missiles: SSM: 4 Aerospatiale MM 38 Exocet; inertial cruise; active radar homing to 42 km (23 n miles) at 0.9 Mach; warhead 165 kg; sea-skimmer.

SAM: An SA-N-10 launcher (MPG-86) may be fitted on the stern

Guns: 1 OTO Melara 3 in (76 mm)/62, 85 rds/min to 16 km (8.7 n miles); weight of shell 6 kg.

2 Breda 40 mm/70 (twin); 300 rds/min to 12.5 km (6.8 n miles); weight of shell 0.96 kg.

Countermeasures: ESM Thomson-CSF DR 2000; intercept.

Weapons control: CSEE Panda director Vega system.

Radars: Surface search: Thomson-CSF Triton; G-band, range 33 km (18 n miles) for 2 m² target

Navigation: Racal Decca 1226; I-band

Fire control: Thomson-CSF/Castor II; I/J-band; range 15 km (8 n miles) for 1 m² target.

Programmes: Ordered late 1976. Hulls of *Velarde*, *De los Heros*, *Larrea* subcontracted to Lorient Naval Yard, the others being built at Villeneuve-la-Garenne. Classified as corvettes

Modernisation: CM 22, 24 and 26 re-engined in 2000. The other three craft are to be similarly modernised



VELARDE

11/2004, Globke Collection / 1047863

2 MARAÑÓN CLASS (RIVER GUNBOATS) (CF/PGR)

Name	No	Builders	Commissioned
MARAÑÓN	CF 13 (ex-CF 401)	John I Thornycroft & Co Ltd	July 1951
UCAYALI	CF 14 (ex-CF 402)	John I Thornycroft & Co Ltd	June 1951

Displacement, tons: 365 full load

Dimensions, feet (metres): 154.8 w l > 32 < 4 (47.2 × 9.7 × 1.2)

Main machinery: 2 MTU 485 diesels; 800 hp (597 kW); 2 shafts

Speed, knots: 12

Range, n miles: 6,000 at 10 kt

Complement: 40 (2 officers)

Guns: 2–3 in (76 mm)/50, 3 Bofors 40 mm/60, 2 Oerlikon 20 mm.

Comment: Ordered early in 1950 and launched 7 March and 23 April 1951 respectively. Employed on police duties in Upper Amazon. Superstructure of aluminium alloy. Based at Iquitos.



MARAÑÓN

6/2006, Peruvian Navy / 1154740

2 LORETO CLASS (RIVER GUNBOATS) (CF/PGR)

Name	No	Builders	Commissioned
AMAZONAS	CF 11 (ex-CF 403)	Electric Boat Co, Groton	1935
LORETO	CF 12 (ex-CF 404)	Electric Boat Co, Groton	1935

Displacement, tons: 250 standard
 Dimensions, feet (metres): 145 x 22 x 4 (44.2 x 6.7 x 1.2)
 Main machinery: 2 diesels; 750 hp (551 kW); 2 shafts
 Speed, knots: 12
 Range, n miles: 4,000 at 10 kt
 Complement: 35 (2 officers)
 Guns: 1—3 in (76 mm). 3 Bofors 40 mm/60. 2 Oerlikon 20 mm.

Comment: Launched in 1934. In Upper Amazon Flotilla, based at Iquitos. The after 3 in gun has been replaced by a third 40 mm. Likely to be replaced by the Manuel Clavero class.



LORETO 6/2008*, Peruvian Navy / 1335409

1 + 1 (2) MANUEL CLAVERO CLASS (RIVER GUNBOATS) (CF/PGR)

Name	No	Builders	Launched	Commissioned
MANUEL CLAVERO	CF 16	Sima Iquitos	10 June 2008	2009
PUTUMAYO	CF 17	Sima Iquitos	2008	2009

Displacement, tons: 344 full load
 Dimensions, feet (metres): 149.9 x 34.8 x 7.5 (45.7 x 10.6 x 2.3)
 Main machinery: 3 CAT diesels; 1,365 hp (1 MW); 3 shafts
 Speed, knots: 14
 Range, n miles: 6,580 at 10 kt
 Complement: 28 (3 officers) + 20 marines
 Guns: 2—40 mm AGLs. 5—12.7 mm MGs. 2—7.62 mm MGs.
 Radars: Navigation: Furuno; I-band

Comment: Construction of the first of class began on 6 May 2006. The second is expected in early 2009 and both are to replace the Loreto class. Two further vessels may be ordered. Two 5.8 m fast interception craft are carried



MANUEL CLAVERO 6/2008*, Peruvian Navy / 1335408

AMPHIBIOUS FORCES

Notes: (1) There are plans for up to three 300 ft LSTs to be locally built when funds are available
 (2) Two Newport class LSTs (possibly *Freno* and *Racine*) may be acquired from the US Navy in 2009

4 PAITA (TERREBONNE PARISH) CLASS (LSTH)

Name	No	Builders	Commissioned
PAITA (ex-Walworth County LST 1164)	DT 141	Ingalls SB	26 Oct 1953
PISCO (ex-Waldo County LST 1163)	DT 142	Ingalls SB	17 Sep 1953
CALLAO (ex-Washoe County LST 1165)	DT 143	Ingalls SB	30 Nov 1953
ETEN (ex-Traverse County LST 1160)	DT 144	Bath Iron Works	19 Dec 1953

Displacement, tons: 2,590 standard; 5,800 full load
 Dimensions, feet (metres): 384 x 55 x 17 (117.1 x 16.8 x 5.2)
 Main machinery: 4 GM 16-278A diesels; 6,000 hp (4.48 MW); 2 shafts
 Speed, knots: 15
 Range, n miles: 15,000 at 9 kt
 Complement: 116
 Military lift: 2,000 tons; 395 troops
 Guns: 5 Bofors 40 mm/60 (2 twin, 1 single).
 Radars: Navigation: I-band

Comment: Four transferred from USA on loan 7 August 1984, recommissioned 4 March 1985. Have small helicopter platform. Original 3 in guns replaced by 40 mm. Lease extended by grant aid in August 1989, again in August 1994, and again in April 1999. All are active.



PAITA 11/2004, Globke Collection / 1047862

3 PUNTA MALPELO CLASS (RIVER ASSAULT CRAFT) (DLS/PBF)

Name	No	Builders	Commissioned
PUNTA MALPELO	DLS 381	Construcciones Náuticas, Peru	1996
PUNTA MERO	DLS 382	Construcciones Nauticas, Peru	1996
PUNTA SAL	DLS 383	Construcciones Náuticas, Peru	1998

Displacement, tons: To be announced
 Dimensions, feet (metres): 42.0 x 11.0 x 3.0 (12.8 x 3.36 x 0.91)
 Main machinery: 2 Diesel Volvo Penta TAMD/B; 286 hp (200 kW); 2 Hamilton waterjets
 Speed, knots: 32
 Range, n miles: 500 at 27 kt
 Complement: 7
 Guns: 1—40 mm AGL. 1—12.7 mm MG. 2—7.62 mm MGs.

Comment: Acquired in 1996.

SURVEY AND RESEARCH SHIPS

Notes: AH 177 is a 5 ton fast survey craft.

1 INSHORE SURVEY CRAFT (AGSC/EH)

Name	No	Builders	Commissioned
MACHA	AEH 174	SIMA, Chimbote	Apr 1982

Displacement, tons: 49 standard; 53 full load
 Dimensions, feet (metres): 64.9 x 17.1 x 3 (19.8 x 5.2 x 0.9)
 Main machinery: 2 Caterpillar 3406-TA diesels; 543 hp (400 kW); 2 shafts
 Speed, knots: 13
 Complement: 8 (2 officers)

Comment: Side scan sonar for plotting bottom contours. EH (Embarcacion Hidrográfica).



MACHA 6/2000, Peruvian Navy / 0105213

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1 DOKKUM CLASS (AGSC/EH)

Name	No	Builders	Commissioned
CARRASCO (ex-Abcoude)	AH 171 (ex-M 810)	Smulders, Schiedam	18 May 1956

Displacement, tons: 373 standard, 453 full load
Dimensions, feet (metres): 152.9 × 28.9 × 7.5 (48.6 × 8.8 × 2.3)
Main machinery: 2 Fijenoord MAN V64 diesels; 2,500 hp(m) (1.84 MW); 2 shafts
Speed, knots: 16
Range, n miles: 2,500 at 10 kt
Complement: 27-36
Guns: 2 Oerlikon 20 mm/70.
Radars: Navigation. Racal Decca TM 1229C; I-band.

Comment: Service with the Netherlands Navy as a minesweeper included modernisation in the mid-1970s and a life prolonging refit in the late 1980s. *Carrasco* placed in reserve in 1993 and transferred to Peru 16 July 1994. The ship has been acquired for hydrographic duties. Two more were planned to follow in mid-1996 but the transfer was cancelled.



CARRASCO 6/2004, Peruvian Navy / 112/040

2 VAN STRAELEN CLASS (AGSC/EH)

Name	No	Builders	Commissioned
CARRILLO (ex-van Harnel)	AH 175	De Vries, Amsterdam	14 Oct 1960
MELO (ex-van der Wel)	AH 176	De Vries, Amsterdam	6 Oct 1961

Displacement, tons: 169 full load
Dimensions, feet (metres): 108.6 × 18.2 × 5.2 (33.1 × 5.6 × 1.6)
Main machinery: 2 GM diesels; 1,100 hp(m) (808 kW) sustained; 2 shafts
Speed, knots: 13
Complement: 17 (2 officers)
Guns: 1–20 mm

Comment: Both built as inshore minesweepers. Acquired 23 February 1985 for conversion with new engines and survey equipment.



MELO 2000, Peruvian Navy / 0105/12

1 RIVER SURVEY CRAFT (AGSC/AH)

Name	No	Builders	Commissioned
STIGLICH	AH 172	Sima, Iquitos	1981

Displacement, tons: 230 standard; 250 full load
Dimensions, feet (metres): 112.2 × 25.9 × 5.6 (34.2 × 7.9 × 1.7)
Main machinery: 2 Caterpillar 3304 diesels, 600 hp (367 kW); 2 shafts
Speed, knots: 9
Complement: 22 (2 officers)

Comment: *Stiglich* is based at Iquitos for survey work on the Upper Amazon.



STIGLICH 6/1999, Peruvian Navy / 008/533

AUXILIARIES

Notes: (1) All auxiliaries may be used for commercial purposes if not required for naval use.
 (2) There are three small river hospital craft: *Corrientes* (ABH 303), *Curaray* (ABH 304) and *Pastaza* (ABH 305).
 (3) There are four Rio Comaina class 30 m fuel barges (ABP 336-339), *Rio Comaina*, *Rio Huazaga*, *Rio Chinganaza*, *Rio Cenepa*.
 (4) There are two 15 m river cargo barges (ABC 360-361).

1 MOLLENDO CLASS (TRANSPORT) (AOR)

Name	No	Builders	Commissioned
MOLLENDO (ex-Ilo)	ATC 131	SIMA, Callao	15 Dec 1971

Displacement, tons: 18,400 full load
Measurement, tons: 13,000 dwt
Dimensions, feet (metres): 507.7 × 67.3 × 27.2 (154.8 × 20.5 × 8.3)
Main machinery: 1 Burmeister & Wain 6K47 diesel; 11,600 hp(m) (8.53 MW); 1 shaft
Speed, knots: 16.6
Complement: 60
Cargo capacity: 13,000 tons

Comment: Sister ship *Rimac* has been scrapped.



MOLLENDO 3/2006, Hachiro Nakai / 133/487

3 HARBOUR TANKERS (FUEL/WATER) (YW/YO)

CALOYERAS ACA 111 (ex-YW 128)	NOGUERA ACP 118 (ex-YO 221)
GAUDEN ACP 119 (ex-YO 171)	

Displacement, tons: 1,390 full load
Dimensions, feet (metres): 174 × 32 × 13.3 (52.3 × 9.8 × 4.1)
Main machinery: 1 GM diesel; 560 hp (418 kW); 1 shaft
Speed, knots: 8
Complement: 23
Cargo capacity: 200,000 gallons
Radars: Navigation: Raytheon, I-band.

Comment: YO 221 (fuel) transferred from US to Peru January 1975; YO 171 (fuel) 20 January 1981; YW 128 (water) 26 January 1985.



GAUDEN 6/2006, Peruvian Navy / 1184/39

1 TORPEDO RECOVERY VESSEL (YPT)

Name	No	Builders	Commissioned
SAN LORENZO	ART 322	Lüresen/Burmeister	1 Dec 1981

Displacement, tons: 68 standard; 65 full load
Dimensions, feet (metres): 82.7 × 18.4 × 5.6 (25.2 × 5.6 × 1.7)
Main machinery: 2 MTU 8V 396 TC82 diesels; 1,740 hp(m) (1.28 MW) sustained; 2 shafts
Speed, knots: 19. Range, n miles: 500 at 15 kt
Complement: 9

Comment: Can carry four long or eight short torpedoes.



SAN LORENZO 6/2006, Peruvian Navy / 1164/37

1 MORONA CLASS (RIVER HOSPITAL CRAFT) (ABH)

Name	No	Builders	Commissioned
MORONA	ABH 302	Sima, Iquitos	13 May 1976

Displacement, tons: 150 full load
 Dimensions, feet (metres): 98.4 × 19.7 × 2.0 (30.0 × 6.0 × 0.6)
 Main machinery: 2 Caterpillar 3304 diesels, 150 hp (112 kW) sustained; 2 shafts
 Speed, knots: 12
 Complement: 22 (2 officers)

Comment: *Morona* is used as a hospital craft and has a red cross on her superstructure.



MORONA 6/2008, Peruvian Navy / 1335406

1 LAKE HOSPITAL CRAFT (AH)

Name	No	Builders	Commissioned
PUNO (ex- <i>Yapura</i>)	ABH 306	J Watt Co, Thames Iron Works	18 May 1872

Displacement, tons: 500 full load
 Dimensions, feet (metres): 125.1 × 19.7 × 13.1 (38.13 × 6.0 × 4.0)
 Main machinery: 1 diesel; 1 shaft
 Speed, knots: 14
 Complement: 24 (1 officer)

Comment: Stationed on Lake Titicaca. 500 grt and has a diesel engine. The second of the class was finally paid off in 1990.



PUNO 8/1999, A Campanera I Rovira / 0081536

1 MARTE CLASS (SAIL TRAINING CRAFT) (AXS)

Name	No	Builders	Commissioned
MARTE (ex- <i>Neptuna</i> , ex- <i>Noah's Ark</i>)	ALY 313	James O Rasborough, Halifax, Canada	1974

Displacement, tons: 49 standard, 55 full load
 Dimensions, feet (metres): 66.6 × 17.0 × 6.4 (20.30 × 5.18 × 1.95)
 Main machinery: Two Perkins 130C diesels; 260 hp (194 kW); 2 props
 Speed, knots: 8
 Complement: 26
 Radars: Surface search: Furuno, I-band

Comment: Used for cadet instruction at the Naval Academy.



MARTE 6/2004, Peruvian Navy / 1127042

3 FLOATING DOCKS (AH)

ADF 104	ADF 106	ADF 107
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Displacement, tons: 4,500 (104); 1,900 (106); 5,200 (107)

Comment: 106 (ex-US AFDL 33) transferred 1959, 107 (ex-US ARD 8) transferred 1961; 104 built at SIMA, Callao in 1991

2 BAYÓVAR CLASS (TANKERS) (AOT)

Name	No	Builders	Commissioned
BAYÓVAR (ex- <i>Petr Schmidt</i>)	ATP 154	Kherson Shipyard	1987
ZORRITOS (ex- <i>Grigoriy Nesterenko</i>)	ATP 155	Kherson Shipyard	1986

Displacement, tons: 38,290 full load
 Measurement, tons: 18,625 grt
 Dimensions, feet (metres): 587.3 × 93.0 × 36.1 (179.0 × 25.3 × 11.0)
 Main machinery: 1 B&W 6L67GFC diesel; 11,900 hp (8.9 MW); 1 shaft
 Speed, knots: 15
 Complement: To be announced

Comment: Russian-built tankers acquired on 22 December 2006 and commissioned into the Peruvian Navy at Callao on 15 April 2007. They have replaced *Talara* and *Lobitos*.



BAYÓVAR 6/2008, Peruvian Navy / 1335407

TUGS

Notes: (1) There are three river tugs *Río Tapuina* AER 180, *Río Gaudín* AER 186 and *Río Zambrano* AER 187.

(2) There are also five small harbour tugs *Mejía* ARB 120, *Huertas* ARB 121, *Dueñas* ARB 126, *Olaya* ARB 128 and *Selendón* ARB 129.

(3) There is a 43 m salvage tug *Unanue* (AMB 160), first commissioned in 1944, transferred from the US in 1961.

1 CHEROKEE CLASS (SALVAGE TUG) (ATS)

Name	No	Builders	Commissioned
GUARDIAN RIOS (ex- <i>Pluto</i> ATF 90)	ARB 123	Cramp, Philadelphia, PA	1 Apr 1943

Displacement, tons: 1,640 full load
 Dimensions, feet (metres): 205 × 38.5 × 17 (62.5 × 11.7 × 5.2)
 Main machinery: Diesel-electric; 4 GM 12-278 diesels; 4,400 hp (3.28 MW); 4 generators; 1 motor; 3,000 hp (2.24 MW); 1 shaft
 Speed, knots: 16.5
 Range, n miles: 6,500 at 16 kt
 Complement: 99
 Guns: 2—20 mm.

Comment: Transferred from USA on loan in 1960, sold 17 May 1974. Fitted with powerful pumps and other salvage equipment.



GUARDIAN RIOS 6/2006, Peruvian Navy / 1164738

COAST GUARD

5 RIO NEPEÑA CLASS (LARGE PATROL CRAFT) (WPB)

Name	No	Builders	Commissioned
RIO NEPEÑA	PC 243	SIMA, Chimbote	1 Dec 1981
RIO TAMBO	PC 244	SIMA, Chimbote	10 Mar 1982
RIO OCOÑA	PC 245	SIMA, Chimbote	14 July 1983
RIO HUARMEY	PC 246	SIMA, Chimbote	8 Oct 1984
RIO ZAÑA	PC 247	SIMA, Chimbote	12 Feb 1985

Displacement, tons: 253 standard; 296 full load
Dimensions, feet (metres): 167 × 24.8 × 5.6 (50.9 × 7.4 × 1.7)
Main machinery: 4 Bazen MAN V8V diesels; 5,640 hp(m) (4.15 MW); 2 shafts
Speed, knots: 23
Range, n miles: 3,050 at 17 kt
Complement: 39 (4 officers)
Guns: 1 Oerlikon 20 mm 2—12.7 mm MGs.
Radars: Surface search: Decca T226; I-band.

Comment: Have aluminium alloy superstructures. The prototype craft was scrapped in 1990. *Rio Ocoña* completed refit in July 1996 and the rest of the class were refitted at one per year.



RIO OCOÑA

11/2004, Globke Collection / 1047861

6 CHICAMA (DAUNTLESS) CLASS (PBR)

CHICAMA PC 216	CHORRILLOS PC 218	CAMANA PC 220
HUANCHACO PC 217	CHANCAY PC 219	CHALA PC 221

Displacement, tons: 14 full load
Dimensions, feet (metres): 40 × 14 × 4.4 (12.2 × 4.3 × 1.3)
Main machinery: 2 Caterpillar 3208TA diesels; 870 hp (650 kW); 2 shafts
Speed, knots: 27. **Range, n miles:** 600 at 18 kt
Complement: 5 (1 officer)
Guns: 1—12.7 mm MG. 1—7.62 mm MG.
Radars: Surface search: Furuno B21; I-band.

Comment: Ordered in February 2000 under FMS funding. Built by SeaArk Marine, Arkansas. First pair delivered in August 2000 remainder in November 2000. Formerly river patrol craft, now operational on Pacific Coast.



CHANCAY

6/2004, Peruvian Coast Guard / 1177045

1 RIVER PATROL CRAFT (PBR)

Name	No	Builders	Commissioned
RIO PIURA	PC 242 (ex-P 252)	Viareggio, Italy	5 Sep 1960

Displacement, tons: 44 standard; 55 full load
Dimensions, feet (metres): 65.7 × 17 × 3.2 (20 × 5.2 × 1)
Main machinery: 2 GM 8V-71 diesels; 460 hp (344 kW) sustained, 2 shafts
Speed, knots: 15
Range, n miles: 1,000 at 16 kt
Complement: 9 (2 officers)
Guns: 2—12.7 mm MGs. 1 Oerlikon 20 mm
Radars: Navigation: Raytheon; I-band

Comment: Ordered in 1959. Armament changed in 1992. Refitted in 1996



RIO PIURA

6/2004, Peruvian Coast Guard / 1177043

1 PGM 71 CLASS (LARGE PATROL CRAFT) (PB)

Name	No	Builders	Commissioned
RIO CHIRA	PM 223 (ex-PGM 111)	SIMA, Callao	29 May 1972

Displacement, tons: 136 standard; 147 full load
Dimensions, feet (metres): 118.2 × 21 × 6 (36.0 × 6.4 × 1.8)
Main machinery: 2 Detroit GN-71 diesels, 1,450 hp (1.08 MW); 2 shafts
Speed, knots: 15
Range, n miles: 1,500 at 10 kt
Complement: 16 (3 officers)
Guns: 1—12.7 mm MG
Radars: Surface search: Raytheon, I-band.

Comment: Acquired from the Navy in 1975. Paid off in 1994 but back in service again in 1997, with refurbished engines.



RIO CHIRA

2000, Peruvian Coast Guard / 0105718

10 ZORRITOS CLASS (RIVER PATROL CRAFT) (PBR)

Name	No	Builders	Commissioned
ZORRITOS	PC 222	SIMA, Callao	23 Sep 2003
PUNTA ARENAS	PC 224	SIMA, Callao	23 Sep 2003
SANTA ROSA	PC 225	SIMA, Callao	23 Sep 2003
PACASMAYO	PC 226	SIMA, Callao	23 Sep 2003
BARRANCA	PC 227	SIMA, Callao	23 Sep 2003
COISHCO	PC 228	SIMA, Callao	Oct 2004
INDEPENDENCIA	PC 229	SIMA, Callao	Oct 2004
SAN NICOLAS	PC 230	SIMA, Callao	Oct 2004
MATARANI	PC 234	SIMA, Callao	Oct 2004
SAMA	PC 238	SIMA, Callao	Oct 2004

Displacement, tons: 12 full load
Dimensions, feet (metres): 40.0 × 13.8 × 2.3 (12.2 × 4.2 × 0.7)
Main machinery: 2 Caterpillar 3126 diesels; 550 hp (411 kW); 2 shafts
Speed, knots: 24
Complement: 5 (1 officer)
Guns: 1—12.7 mm MG
Radars: Surface search: Furuno; I-band.



SAN NICOLAS

11/2004, Globke Collection / 1133139

9 LA CRUZ CLASS (HARBOUR PATROL CRAFT) (PBR)

Name	No	Builders	Commissioned
LA CRUZ	DCB 350	Cougar Marine, Miami	1992
CABO BLANCO	DCB 351	Cougar Marine, Miami	1992
COLÁN	DCB 352	Cougar Marine, Miami	1992
SAMANCO	DCB 353	Cougar Marine, Miami	1992
BESIQUE	DCB 354	Cougar Marine, Miami	1992
SALINAS	DCB 355	Cougar Marine, Miami	1993
ANCÓN	DCB 356	Cougar Marine, Miami	1993
PARACAS	DCB 357	Cougar Marine, Miami	1993
LA PUNTA	DCB 358	Cougar Marine, Miami	1993

Displacement, tons: 2.0
Dimensions, feet (metres): 21.6 × 7.2 × 0.6 (6.6 × 2.2 × 0.2)
Main machinery: 1 Evinrude outboard diesel; 200 hp (150 kW)
Speed, knots: 30. **Range, n miles:** 240 at 15 kt
Complement: 4

1 RÍO CAÑETE CLASS (COASTAL PATROL CRAFT) (PBR)

Name	No	Builders	Commissioned
RÍO CAÑETE	PC 231	Astillero España	1985

Displacement, tons: 4
 Dimensions, feet (metres): 33 × 12 × 6 (10.0 × 3.7 × 1.8)
 Main machinery: 2 diesels, 230 hp (170 kW); 2 shafts
 Speed, knots: 18
 Complement: 6

Comment: Built in Spain in 1985. Classified as coast patrol.



RÍO CAÑETE 6/2008*, Peruvian Navy / 1335405

2 RÍO SANTA CLASS (COASTAL PATROL CRAFT) (PBR)

Name	No	Builders	Commissioned
RÍO SANTA	PC 232	Cia Nauticas - Callao	1981
RÍO MAJES	PC 233	Cia Nauticas - Callao	1982

Displacement, tons: 14 standard; 15 full load
 Dimensions, feet (metres): 34.5 × 10.5 × 6.2 (10.5 × 3.1 × 1.9)
 Main machinery: 2 Evinrude BE200CXCM outboard, 400 hp (300 kW)
 Speed, knots: 20. Range, n miles: 86 at 20 kt
 Complement: 6
 Radars: Surface search: Furuno.

Comment: Built in 1981-82



RÍO SANTA 6/2008*, Peruvian Navy / 1335404

2 RÍO VIRU CLASS (COASTAL PATROL CRAFT) (PBR)

Name	No	Builders	Commissioned
RÍO VIRU	PC 235	Camcraft Inc, Louisiana	1981
RÍO LURIN	PC 236	Camcraft Inc, Louisiana	1982

Displacement, tons: 13 standard; 14 full load
 Dimensions, feet (metres): 43.0 × 13 × 6 (13.1 × 4 × 1.8)
 Main machinery: 2 General Motors Detroit Diesel 6-71 diesels; 500 hp (373 kW); 2 shafts
 Speed, knots: 15. Range, n miles: 210 at 11 kt
 Complement: 6
 Guns: 1-12.7 mm MG.
 Radars: Surface search. Raytheon 2800; I-band.

Comment: Aluminium hulls



RÍO VIRU 6/2008*, Peruvian Navy / 1335403

3 MÁNCORA CLASS (HARBOUR PATROL BOATS) (PBR)

Name	No	Builders	Commissioned
MÁNCORA	DCB 212	Cougar Marine, Florida	1993
HUAURA	DCB 213	Cougar Marine, Florida	1993
QUILCA	DCB 214	Cougar Marine, Florida	1993

Displacement, tons: 3.5
 Dimensions, feet (metres): 25 × 7.6 × 3 (7.62 × 2.33 × 0.91)
 Main machinery: 1 Volvo Penta AD 41B diesel; 200 hp (150 kW); 1 shaft
 Speed, knots: 32
 Range, n miles: 180 at 35 kt
 Complement: 3



MÁNCORA 6/2008*, Peruvian Navy / 1335402

25 RIVER AND LAKE PATROL CRAFT (PBR)

PUCUSANA PC 215	RÍO HUALLAGA PF 260	RÍO PATAYACU LIF 271
CONTAMANA PF 250	RÍO SANTIAGO PF 261	RÍO ZAPOTÉ LIF 272
NUEVA REGENA PF 251	RÍO PUTUMAYO PF 262	RÍO CHAMBIRA LIF 273
ATALAYA PF 252	RÍO NANAY PF 263	RÍO TAMBOPATA PF 274
ZORRILLOS PF 253	RÍO NAPO LIF 264	RÍO RAMIS PL 290
POYENI PF 254	RÍO YAVARI LIF 265	RÍO ILAVE PL 291
AGUAYTIA PF 255	RÍO MATADOR LIF 266	JULI PL 293
PUERTO INCA PF 256	RÍO ITAYA LIF 270	MOHO PL 294
SAN ALEJANDRO PF 257		

Comment: PC 215 is a 9 m craft constructed at Callao in 1997. PF 250-257 are aluminium craft built by Sima, Iquitos. PF 260-263 are 10 m craft built by Sima, Iquitos 1994-95. LIF 264-266 are 8 m craft built by Sima, Iquitos 1998-99. They are employed on the Amazon River. LIF 270-273 are 6 m craft built by Sima, Iquitos 1998-99. Deployed on the Amazon River. PF 274 is an aluminium-hulled 8 m craft, originally commissioned into the Peruvian Navy in 1977. PL 290-291 are 10 m craft built by American Shipbuilding, Florida in 1982. They are based on Lake Titicaca. PL 293-294 are 12 m craft, similar to the Zorritos class, and are based on Lake Titicaca.



RÍO HUALLAGA 6/2008*, Peruvian Navy / 1335401



RÍO NAPO 6/2008*, Peruvian Navy / 0105221



Philippines

Country Overview

The Republic of the Philippines was formally proclaimed in 1946. Situated between Taiwan to the north and Indonesia and Malaysia to the south, the country comprises about 7,100 islands with a total coastline of 19,597 n miles with the South China, Philippine and Celebes Seas. Eleven islands, Bohol, Cebu, Leyte, Luzon, Masbate, Mindanao, Mindoro, Negros, Palawan, Panay, and Samar, contain the majority of the population. Most remaining islands are less than 1 square mile in area. The capital, principal city and port is Manila. Other important ports include Davao, Cebu and Zamboanga. An archipelagic state, territorial seas (12 n miles) are claimed. A 200 n mile EEZ has also been claimed but the limits have not been defined.

Headquarters Appointments

Flag Officer-in-Command:

Rear Admiral Ferdinand S Golez

Commander Fleet:

Rear Admiral George T Uy

Commandant Coast Guard:

Vice Admiral Wilfredo D Tamayo

Commandant Marines:

Major General Mohammad Ben Dolorfino

Personnel

(a) 2009: 22,000 Navy; 8,700 Marines; 3,600 Coast Guard
(b) Reserves: 17,000

Organisation

The Naval Headquarters is at Manila. The fleet is divided into functional units including the Ready Force, Patrol Force, Service Force, Assault Craft Force, Naval Air Group and Naval Special Warfare Group. There are six operational areas of responsibility: Southern Luzon, Northern Luzon; Central, West; Western Mindanao and Eastern Mindanao. The Coast Guard was transferred to the Department of Transport and Communication in 1998. There are eight Coast Guard Districts, 47 stations and 154 Coast Guard Detachment units.

Marine Corps

Marines comprise three tactical brigades composed of 10 tactical battalions, one support regiment, a service group, a guard battalion and a reconnaissance battalion. Headquarters at Ternate, Manila Bay. Deployed in Mindanao and Palawan.

Bases

Main Cavite.

Operational: San Vicente, Mactan, Ternate.
Stations: Cebu, Davao, Legaspi, Bonifacio, Tacloban, San Miguel, Utugan, Balabne, Puerto Princesa, Pagasa.

Prefix to Ships' Names

BRP: Barko Republika Pilipinas

Strength of the Fleet

Type	Active	Building
Frigates	(1)	—
Corvettes	13	—
Fast Attack Craft	6	—
Large Patrol Craft	5	1 (3)
Coastal Patrol Craft	37	2
LST/LSV Transports	8	—
LCM/LCU/RUC/LCVP	44	—
Repair Ship	1	—
Tankers	4	—
Coast Guard		
Tenders	4	—
Patrol Craft	68	1

Frigates

PF 11 Rajah Humabon

Corvettes

PS 19 Miguel Malvar
PS 20 Magat Salamat
PS 22 Sultan Kudarat
PS 23 Datu Marikudo
PS 28 Cebu
PS 29 Negros Occidental
PS 31 Pangasinan
PS 32 Iloilo
PS 35 Emilio Jacinto
PS 36 Apolinario Mabini
PS 37 Artemio Ricarte
PS 38 General Mariano Alvarez
PS 70 Quezon
PS 74 Rizal

Patrol Forces

PG 101 Kagitingan
PG 102 Bagong Lakas
PG 104 Bagong Silang
PG 110 Tomas Batilo
PG 111 Bonny Serrano
PG 112 Bienvenido Salting
PG 114 Salvador Abcede
PG 115 Ramon Aguirre
PG 116 Nicolas Mahusay
PG 140 Emilio Aguinaldo
PG 141 Antonio Luna

PG 370 José Andrade
PG 371 Enrique Jurado
PG 372 Alfredo Peckson
PG 374 Simeon Castro
PG 375 Carlos Albert
PG 376 Heracleo Alano
PG 377 Liberato Picar
PG 378 Hilario Ruiz
PG 379 Rafael Pargas
PG 380 Nestor Reinoso
PG 381 Dioscoro Papa
PG 383 Ismael Lomibao
PG 384 Loovigildo Gantioque
PG 385 Federico Martir
PG 386 Filipino Flojo
PG 387 Anastacio Cacayarin
PG 388 Manuel Gomez
PG 389 Testimo Figuracion
PG 390 José Loor SR
PG 392 Juan Magluyan
PG 393 Florencia Nuno
PG 394 Alberto Navaret
PG 395 Felix Apolinario
PG 396 Brigadier Abraham Campo
PG 840 Conrado Yap
PG 842 Tedorico Dominado Jr
PG 843 Cosme Acosta
PG 844 Jose Artiaga Jr
PG 846 Nicanor Jimenez
PG 847 Leopoldo Regis
PG 848 Leon Tadina
PG 849 Loreto Danipog
PG 851 Apollo Tiano
PG 853 Sulpicio Hernandez

Auxiliaries

LT 86 Zamboanga Del Sur
LT 87 South Cotabato
LT 501 Laguna
LT 504 Lanao Del Norte
LT 516 Kalinga Apayao
LC 550 Bacolod City
LC 551 Dagupan City
AT 26 Ang Pangulo
AW 39 Lake Bulusan
AW 34 Lake Paoyay
AF 72 Lake Tael
AF 78 Lake Buhi
AC 90 Mactan
AD 617 Yakal

Coast Guard

AE 46 Cape Bojeador
PG 61 Agusan
PG 62 Catanduanes
PG 63 Romblon
PG 64 Palawan
AT 71 Mangyan
AU 76 Bessang Pass
AE 79 Limasawa
AG 89 Kallaga
AU 100 Tirad Pass
001 San Juan
002 Esda II

PENNANT LIST

FRIGATES

Notes: *Rajah Lakundula*, paid off in 1988, is still afloat as an alongside HQ and depot ship.

1 CANNON CLASS (FF)

Name	No	Builders	Laid down	Launched	Commissioned
RAJAH HUMABON (ex-Hatsuhi DE 263, ex-Atherton DE 169)	PF 11 (ex-PF 78)	Norfolk Navy Yard, Portsmouth, VA	14 Jan 1943	27 May 1943	29 Aug 1943

Displacement, tons: 1,390 standard; 1,750 full load
Dimensions, feet (metres): 306 × 36.6 × 14
(93.3 × 11.2 × 4.3)
Main machinery: Diesel electric; 2 GM EMD 16V-645E7 diesels; 5,800 hp (4.32 MW); 4 generators; 2 motors; 2 shafts
Speed, knots: 18
Range, n miles: 6,000 at 14 kt
Complement: 165

Guns: 3 US 3 in (76 mm)/50 Mk 22; 20 rds/min to 12 km (6.6 n miles); weight of shell 6 kg.
6 US/Bofors 40 mm/56 (3 twin). 4 Oerlikon 20 mm/70; 4—12.7 mm MGs.

Weapons control: Mk 52 GFCS with Mk 41 rangefinder for 3 in guns; 3 Mk 51 Mod 2 GFCS for 40 mm

Radars: Surface search: Raytheon SPS-5; G/H-band. Navigation: RCA/GE Mk 28; I-band.

Sonars: SQS-17B, hull-mounted; active search and attack; medium/high frequency.

Programmes: *Hatsuhi* originally transferred by the US to Japan 14 June 1955 and paid off June 1975 reverting to US Navy. Transferred to Philippines 23 December 1978. Towed to South Korea 1979 for overhaul and modernisation. Recommissioned 27 February 1980. A sister ship *Datu Kalantiao* lost during Typhoon Clara 20 September 1981.

Modernisation: Upgrade plans have been suspended.

Operational: Hedgehog A/S mortars have been reported.



RAJAH HUMABON

10/2001, Chris Sattler / 0126280

CORVETTES

3 JACINTO (PEACOCK) CLASS (FS)

Name	No	Builders	Launched	Commissioned	Recommissioned
EMILIO JACINTO (ex-Peacock)	PS 35 (ex-P 239)	Hall Russell, Aberdeen	1 Dec 1982	14 July 1984	4 Aug 1987
APOLINARIO MABINI (ex-Plover)	PS 36 (ex-P 240)	Hall Russell, Aberdeen	12 Apr 1983	20 July 1984	4 Aug 1997
ARTEMIO RICARTE (ex-Starling)	PS 37 (ex-P 241)	Hall Russell, Aberdeen	11 Sep 1983	10 Aug 1984	4 Aug 1997

Displacement, tons: 763 full load
Dimensions, feet (metres): 204.1 x 32.8 x 8.9
 (62.6 x 10 x 2.7)

Main machinery: 2 Crossley Pielstick 18 PA6 V 280 diesels, 14,000 hp (m) (10.6 MW) sustained; 2 shafts; 1 retractable Schottel prop; 181 hp (135 kW)

Speed, knots: 25

Range, n miles: 2,500 at 17 kt

Complement: 31 (6 officers) plus 7 spare berths

Guns: 1--3 in (76 mm)/62 OTO Melara compact 85 kds. min to 16 km (8.6 n miles) anti-surface; 12 km (6.5 n miles) anti-aircraft; weight of shell 6 kg

1 MSI Defence Systems 25 mm.
 4 FN 762 mm MGs.

Weapons control: Radamec 1500 optronic director
Radars: Sperry Marine Bridgemaster E; E/F/I/J-bands.

Programmes: Letter of Intention to purchase from the UK signed in November 1996. Transferred 1 August 1997 after sailing from Hong Kong on 1 July 1997. Others of the class in service with the navy of the Irish Republic.

Modernisation: An upgrade programme was agreed in 2002 and a contract was signed on 6 December 2004 for phase one of the work which included overhaul of

the 76 mm gun, installation of a MSI Defense Systems 25 mm mounting on the stern, replacement of Sea Archer fire-control system with a Radamec 1500 optronic director, replacement of the navigation radar with Sperry Marine Bridgemaster E and new navigation systems. Phase one was completed in September 2006. Phases two and three are to involve new propulsion and safety systems.

Structure: Fitted with telescopic cranes, lorry drive and replenishment at sea equipment. In UK service, two fast pursuit craft were carried.

Operational: These ships are the workhorses of the fleet. Based at Cavite.



ARTEMIO RICARTE

6/2008*, Ships of the World / 1353255

1 CYCLONE CLASS (COASTAL PATROL SHIP) (PB)

Name	No	Builders	Commissioned
GENERAL MARIANO ALVARES (ex-Cyclone)	PS 38 (ex-PC 1)	Bollinger, Lockport	7 Aug 1993

Displacement, tons: 386 full load
Dimensions, feet (metres): 179 x 25.9 x 7.9
 (54.6 x 7.9 x 2.4)

Main machinery: 4 Paxman Valenta 16RP200CM diesels, 13,400 hp (10 MW) sustained; 4 shafts

Speed, knots: 35

Range, n miles: 2,500 at 12 kt

Complement: 28 (4 officers) plus 8

Countermeasures: Decoys: 2 Mk 52 sextuple and/or Wallop

Super Barricade Mk 3 chaff launchers

ESM: Privateer APR-39; radar warning

Weapons control: Marconi VISTAR IM 405 IR system

Radars: Surface search: 2 Sperry RASCAR, E/F/I/J-band

Sonars: Wesmar; hull-mounted; active; high frequency

Programmes: Transferred from the USN to the Philippines in February 2004 following refit at Bollinger. Recommissioned on 8 March 2004.

Modernisation: All armament was removed before transfer from the USN. New armament is likely to include two 25 mm guns and 12.7 mm machine guns.

Structure: Design based on Vosper Thornycroft Ramadan class modified for USN requirements including 1 in armour on superstructure. The craft has a slow speed lorry capability and has been modified to incorporate a semi-dry well, boat ramp and stern gate to facilitate deployment and recovery of a fully loaded RIB while the ship is making way.

GENERAL MARIANO ALVARES
 3/2004, US Embassy, Manila
 x 3167



2 AUK CLASS (FS)

Name	No	Builders	Laid down	Launched	Commissioned
RIZAL (ex-Murrelet MSF 372)	PS 74 (ex-PS 69)	Savannah Machine & Foundry Co, GA	24 Aug 1944	29 Dec 1944	21 Aug 1945
QUEZON (ex-Vigilance MSF 324)	PS 70	Associated Shipbuilders, Seattle, WA	28 Nov 1942	5 Apr 1943	28 Feb 1944

Displacement, tons: 1,090 standard; 1,250 full load
Dimensions, feet (metres): 221.2 x 32.2 x 10.8 (67.4 x 9.8 x 3.3)
Main machinery: Diesel-electric; 2 GM EMD 16V-64E6 diesels; 5,800 hp (4.32 MW); 2 generators; 2 motors; 2 shafts
Speed, knots: 18
Range, n miles: 5,000 at 14 kt

Complement: 80 (5 officers)
Guns: 2 US 3 in (76 mm)/50 Mk 26; 20 rds/min to 12 km (6.6 n miles); weight of shell 6 kg.
 4 US/Bofors 40 mm/56 (2 twin); 160 rds/min to 11 km (5.9 n miles); weight of shell 0.9 kg.
 2 Oerlikon 20 mm (twin), 2-12.7 mm MGs.
Radars: Surface search Raytheon SPS-5C; G/H-band
Navigation: DAS 3; I-band.

Programmes: Rizal transferred from the US to the Philippines on 18 June 1965 and Quezon on 19 August 1967
Modernisation: Upgrade plans have been suspended
Structure: Upon transfer the minesweeping gear was removed and a second 3 in gun fitted aft
Operational: Both ships were to have been deleted in 1994 but have been retained until new class of OPVs is built. Sonar equipment and depth charges have been removed.



RIZAL

10/2001, Chris Sattler / 0534058

8 PCE 827 CLASS (FS)

Name	No	Builders	Commissioned
MIGUEL MALVAR (ex-Ngoc Hoi, ex-Brettleboro PCER 852)	PS 19	Pullman Standard Car Co, Chicago	26 May 1944
MAGAT SALAMAT (ex-Chi Lang II, ex-Gayety MSF 239)	PS 20	Winslow Marine Co, Seattle, WA	14 June 1944
SULTAN KUDARAT (ex-Dang Da II, ex-Crestview PCER 895)	PS 22	Willamette Iron & Steel Corporation, Portland, OR	30 Oct 1943
DATU MARIKUDO (ex-Van Kiep II, ex-Amherst PCER 853)	PS 23	Pullman Standard Car Co, Chicago	16 June 1944
CEBU (ex-PCE 881)	PS 28	Albina E and M Works, Portland, OR	31 July 1944
NEGROS OCCIDENTAL (ex-PCE 884)	PS 29	Albina E and M Works, Portland, OR	30 Mar 1944
PANGASINAN (ex-PCE 891)	PS 31	Willamette Iron & Steel Corp, Portland, OR	15 June 1944
ILDILO (ex-PCE 897)	PS 32	Willamette Iron & Steel Corp, Portland, OR	6 Jan 1945

Displacement, tons: 640 standard, 914 full load
Dimensions, feet (metres): 184.5 x 33.1 x 9.5 (56.3 x 10.1 x 2.9)
Main machinery: 2 GM 12-278A diesels; 2,200 hp (1.64 MW); 2 shafts
Speed, knots: 15
Range, n miles: 6,600 at 11 kt
Complement: 85 (8 officers)
Guns: 1 US 3 in (76 mm)/50, 20 rds/min to 12 km (6.6 n miles); weight of shell 6 kg.
 2 to 6 US/Bofors 40 mm/56 (single or 1-3 twin), 160 rds/min to 11 km (5.9 n miles); weight of shell 0.9 kg.
 2 Oerlikon 20 mm/70; 800 rds/min to 2 km.
Radars: Surface search: SPS-50 (PS 23), SPS-21D (PS 19, 28), CRM-NIA-75 (PS 29, 31, 32), SPS-53A (PS 20).
Navigation: RCA SPN-18; I/J-band.

Programmes: Five transferred from the US to the Philippines in July 1948 (PS 28-32); PS 22 to South Vietnam from US Navy on 29 November 1961, PS 20 in April 1962, PS 19 on 11 July 1966, and PS 23 in June 1970. PS 19, 20 and 22 to Philippines November 1975 and PS 23 5 April 1976.

Modernisation: PS 19, 22, 31 and 32 refurbished in 1990-91, PS 23 and 28 in 1992 and the last pair in 1996/97.

Structure: First three were originally fitted as rescue ships (PCER). A/S equipment has been removed or is inoperable. PS 20 has some minor structural differences having been built as an Admirable class MSF.

Operational: PS 29 is probably not operational



CEBU

5/2000, M Declerck / 0105727

LAND-BASED MARITIME AIRCRAFT

Notes: There are two Cessna 177 Cardinal transport aircraft.

Numbers/Type: 7 PADC (Pilatus Britten-Norman) Islander F27MP.

Operational speed: 150 kt (280 km/h)

Service ceiling: 18,900 ft (5,760 m)

Range: 1,500 n miles (2,775 km)

Role/Weapon systems: Short-range MR and SAR aircraft. First purchased in 1989. Three transferred from the Air Force. An upgrade programme, including engines, avionics and communications systems has been completed on five aircraft. The remaining two aircraft are to be similarly modernised. Sensors: Search radar, cameras. Weapons: Unarmed.

Numbers/Type: 5 PADC (MBB) BO 105C.

Operational speed: 145 kt (270 km/h)

Service ceiling: 17,000 ft (5,180 m)

Range: 355 n miles (657 km)

Role/Weapon systems: Sole shipborne helicopter; some shore-based for SAR, some commando support capability. Purchased at the rate of one per year from 1986 to 1992. Upgrade of avionics and communications is planned. Sensors: Some fitted with search radar. Weapons: Unarmed.



F-27MP

10/2001, Adolfo Ortigueira Gil / 0561482

PATROL FORCES

Notes: Plans to procure three offshore patrol craft have been suspended although they remain a long-term aspiration.

2 AGUINALDO CLASS (LARGE PATROL CRAFT) (PBO)

Name	No	Builders	Commissioned
EMILIO AGUINALDO	PG 140	Cavite, Sangley Point	21 Nov 1990
ANTONIO LUNA	PG 141	Cavite, Sangley Point	27 May 1999

Displacement, tons: 236 full load
Dimensions, feet (metres): 144.4 x 24.3 x 5.2 (44 x 7.4 x 1.6)
Main machinery: 2 MTU 16V-396TB94 diesels, 3,480 hp (2.59 MW) sustained; 2 shafts
Speed, knots: 28 **Range, n miles:** 1,100 at 18 kt
Complement: 58 (6 officers)
Guns: 2 Bofors 40 mm/60, 2 Oerlikon 20 mm, 4-12.7 mm MGs.
Radars: Surface search: Raytheon; I-band

Comment: Steel hulls of similar design to *Tirad Pass*. First of class launched 23 June 1984 but only completed in 1990. Second laid down 2 December 1990 and launched 23 June 1992. A third ship was laid down on 14 February 1994 and launched in April 2000. While the superstructure is 70 per cent completed, outfitting was not completed due to budget constraints.



EMILIO AGUINALDO 6/1993, DOR1540

2 POINT CLASS (PB)

Name	No	Builders	Commissioned
ALBERTO NAVARET (ex-Point Evans)	PG 394 (ex-82354)	CGYard, Maryland	10 Jan 1967
BRIGADIER ABRAHAM CAMPO (ex-Point Doran)	PG 396 (ex-82375)	CGYard, Maryland	1 June 1970

Displacement, tons: 67 full load
Dimensions, feet (metres): 83 x 17.2 x 5.8 (25.3 x 5.2 x 1.8)
Main machinery: 2 Caterpillar 3412 diesels; 1,600 hp (1.19 MW); 2 shafts
Speed, knots: 23 **Range, n miles:** 1,500 at 8 kt
Complement: 10
Guns: 2-12.7 mm MGs.
Radars: Surface search: Furuno; I-band

Comment: PG 394 transferred from US Coast Guard 16 November 1999. Second transferred 22 March 2001. This class is in service with many other navies.



POINT CLASS (US colours) 4/1992, van Ginderen Collection / DOR1549

3 KAGITINGAN CLASS (LARGE PATROL CRAFT) (PB)

Name	No	Builders	Commissioned
KAGITINGAN	P 101	Hamelin SY, Germany	9 Feb 1979
BAGONG LAKAS	PG 102 (ex-P 102)	Hamelin SY, Germany	9 Feb 1979
BAGONG SILANG	PG 104 (ex-P 104)	Hamelin SY, Germany	July 1979

Displacement, tons: 150 full load
Dimensions, feet (metres): 121.4 x 20.3 x 5.6 (37 x 6.2 x 1.7)
Main machinery: 2 MTU MB 16V-538TB91 diesels, 2,500 hp (1.86 MW) sustained; 2 shafts
Speed, knots: 21
Complement: 30 (4 officers)
Guns: 2-30 mm (twin), 4-12.7 mm MGs, 2-762 mm MGs.
Radars: Surface search: I-band

Comment: Based at Cavite. P 103 paid off and used for spares. All still in service.



BAGONG LAKAS 1993, Philippine Navy / 0506161

8 TOMAS BATILO (SEA DOLPHIN) CLASS (FAST ATTACK CRAFT) (PBF)

TOMAS BATILO PG 110	SALVADOR ARCEDE PG 114	+2
BONNY SERRANO PG 111	RAMON AGUIRRE PG 115	
BIENVENIDO SALTING PG 112	NICOLAS MAHUSAY PG 116	

Displacement, tons: 150 full load
Dimensions, feet (metres): 121.4 x 22.6 x 5.6 (37 x 6.9 x 1.7)
Main machinery: 2 MTU 20V-538TB91 diesels; 9,000 hp (6.71 MW) sustained; 2 shafts
Speed, knots: 38
Range, n miles: 600 at 20 kt
Complement: 31 (5 officers)
Guns: 2 Emerson Electric 30 mm (twin); 1,200 rds/min combined to 6 km (3.2 n miles); weight of shell 0.35 kg
 1 Bofors 40 mm/60, 2 Oerlikon 20 mm.
Weapons control: Optical director
Radars: Surface search: Raytheon 1645; I-band

Comment: Six transferred from South Korea on 15 June 1995. Part of the PKM 200 series. Different armament to South Korean ships of the same class. A further two were transferred on 7 December 2006. Refit of two other vessels is under consideration.



BIENVENIDO SALTING 6/1996, Philippine Navy / 0506311

22 JOSÉ ANDRADA CLASS (COASTAL PATROL CRAFT) (PB)

JOSÉ ANDRADA PG 370	ISMAEL LOMIBAO PG 383
ENRIQUE JURADO PG 371	LEOVIGILDO GANTIOQUE PG 384
ALFREDO PECKSON PG 372	FEDERICO MARTIR PG 385
SIMEON CASTRO PG 374	FILIPINO FLOJO PG 386
CARLOS ALBERT PG 375	ANASTACIO CACAYORIN PG 387
HERACLEO ALANO PG 376	MANUEL GOMEZ PG 388
LIBERATO PICAR PG 377	TESTIMO FIGURACION PG 389
HILARIO RUIZ PG 378	JOSÉ LOOR SR PG 390
RAFAEL PARGAS PG 379	JUAN MAGLUYAN PG 392
NESTOR REINOSO PG 380	FLORENCA NUNO PG 393
DIOSCORO PAPA PG 381	FELIX APOLINARIO PG 395

Displacement, tons: 56 full load
Dimensions, feet (metres): 78 x 20 x 5.8 (23.8 x 6.1 x 1.8)
Main machinery: 2 Detroit 16V-92TA diesels; 1,380 hp (1.03 MW) sustained; 2 shafts
Speed, knots: 28
Range, n miles: 1,200 at 12 kt
Complement: 8-12 (1 officer)
Guns: 1 Bushmaster 25 mm or Bofors 40 mm/60
 4-12.7 mm Mk 28 MGs, 2-762 mm M60 MGs.
Radars: Surface search: Raytheon SPS-64(V)2; I-band

Comment: There are four batches of this class. Batch I (PCF 370-378), Batch II (PCF 379-390), Batch III (PCF 392-393) and Batch IV (PCF 395). The main difference between batches include weapons, electronics and accommodation. First four ordered from Hafter Marine in August 1989 under FMS and built at Equitable Shipyards, New Orleans, as were a further four ordered in 1990. Eight more ordered in March 1993 with co-production between Hafter Marine and AG&P Shipyard, Batangas. An additional three were ordered in 1995. Built to US Coast Guard standards with an aluminium hull and superstructure. The main gun may be fitted in all after some minor modifications. PG 392 delivered in March 1998, PG 393 in July 1998 and PG 395 on 10 October 2000.



TESTIMO FIGURACION 5/2000, M Declerck / 0105226



JUAN MAGLUYAN 6/2008, Ships of the World / 1353253

612 Philippines/Patrol forces – Auxiliaries

4 PCF 65 (SWIFT MK 3) CLASS (COASTAL PATROL CRAFT) (PB)

PC 351–354

Displacement, tons: 29 standard; 37 full load
Dimensions, feet (metres): 65 × 16 × 3.4 (19.8 × 4.9 × 1)
Main machinery: 3 GM 12V-71TI diesels; 840 hp (616 kW) sustained; 3 shafts
Speed, knots: 25
Complement: 8
Guns: 2–12.7 mm MGs.
Radars: Surface search: Koden; I-band.

Comment: Improved Swift type inshore patrol boats built by Peterson and delivered 1975–76. Aluminium construction. Some that were laid up have been returned to service. New radars fitted.



PC 354

5/1998, John Mortimer / 0081551

10 CONRADO YAP (SEA HAWK/KILLER) CLASS (COASTAL PATROL CRAFT) (PBF)

CONRADO YAP PG 840
 TEDORICO DOMINADO JR PG 842
 COSME ACOSTA PG 843
 JOSÉ ARTIAGA JR PG 844
 NICANOR JIMENEZ PG 846

LEOPOLDO REGIS PG 847
 LEÓN TADINA PG 848
 LORETO DANIFO PG 849
 APOLLO TIANO PG 851
 SULPICIO FERNANDEZ PG 853

Displacement, tons: 74.5 full load
Dimensions, feet (metres): 83.7 × 17.7 × 6.2 (25.5 × 5.4 × 1.9)
Main machinery: 2 MTU 16V-538TB91 diesels; 5,000 hp (m) (3.72 MW); 2 shafts
Speed, knots: 38
Range, n miles: 290 at 20 kt
Complement: 15 (3 officers)
Guns: 1 Bofors 40 mm/60, 2 Oerlikon 20 mm (twin) Mk 16.
Radars: Surface search: Raytheon 1645; I-band.

Comment: Type PK 181 built by Korea Tacoma and Hyundai 1975–78. Twelve craft transferred from South Korea 19 June 1993. Eight were commissioned 23 June 1993 and a further four on 23 June 1994. However PC 845 and PC 852 have not been reactivated and are probably used as spares.



CONRADO YAP CLASS

1993, Philippine Navy / 0506162

SURVEY AND RESEARCH SHIPS

Notes: (1) Survey ships are operated by Coast and Geodetic Survey of Ministry of National Defence and are not naval. These include: *Atymba*, *Alunya*, *Arnya*, *Bantay Kalikasan* and *Explorer*.
 (2) Two research ships *Fort San Antonio* (AM 700) and *Fort Abad* (AM 701) were acquired in 1993.

AUXILIARIES

Notes: (1) All LSTs, LSVs, LCMs and LCUs are classified as Transports.
 (2) Procurement of a multirole vessel, capable of transporting 500 troops, is under consideration. The broad requirement is for a 150 m vessel capable of 20 kt.

2 BACOLOD CITY (FRANK S BESSON) CLASS (LSVH)

Name	No	Builders	Commissioned
BACOLOD CITY	LC 550	Moss Point Marine	1 Dec 1993
DAGUPAN CITY (ex-Cagayan De Oro City)	LC 551	Moss Point Marine	5 Apr 1994

Displacement, tons: 4,265 full load
Dimensions, feet (metres): 272.8 × 60 × 12 (83.1 × 18.3 × 3.7)
Main machinery: 2 GM EMD 16V-645E6 diesels; 5,800 hp (4.32 MW) sustained; 2 shafts; bow thruster; 250 hp (187 kW)
Speed, knots: 11.8
Range, n miles: 6,000 at 11 kt
Complement: 30 (6 officers)
Military lift: 2,280 tons (900 for amphibious operations) of vehicles, containers or cargo, plus 150 troops, 2 LCVPs on davits
Radars: Navigation: Raytheon SPS-64(V)2; I-band
Helicopters: Platform for 1 BO 105C

Comment: Contract announced by Trinity Marine 3 April 1992 for two ships with an option on a third which was not taken up. Ro-ro design with 10,500 sq ft of deck space for cargo. Capable of beaching with 4 ft over the ramp on a 1 : 30 offshore gradient with a 900 ton cargo. Similar to US Army vessels but with only a bow ramp. The stern ramp space is used for accommodation for 150 troops and a helicopter platform is fitted over the stern.



BACOLOD CITY

6/2008, Ships of the World / 1353254



DAGUPAN CITY

12/1999, Sattler/Steele / 0081544

5 LST 512-1152 CLASS (TRANSPORT SHIPS) (LST)

Name	No	Builders	Commissioned
ZAMBOANGA DEL SUR (ex-Cam Ranh, ex-Marion County LST 975)	LT 86	Bethlehem Steel, Hingham, Mass	3 Feb 1945
SOUTH COTABATO (ex-Cayuga County LST 529)	LT 87	Bethlehem Steel, Hingham, Mass	28 Feb 1944
LAGUNA (ex-FLST 230)	LT 501	American Bridge, Ambridge, PA	3 Nov 1943
LANAO DEL NORTE (ex-FLST 568)	LT 504	Missouri Valley Bridge and Iron Co, Evensville, Ind	29 May 1944
KALINGA APAYAO (ex-Can Tho, ex-Garrett County AGP 786, ex-LST 786)	LT 516 (ex-AE 516)	Dravo Corp., Pittsburgh, PA	28 Aug 1944

Displacement, tons: 1,620 standard; 2,472 beaching; 4,080 full load
Dimensions, feet (metres): 328 × 50 × 14 (100 × 15.2 × 4.3)
Main machinery: 2 GM 12-567A diesels; 1,800 hp (1.34 MW); 2 shafts
Speed, knots: 10
Complement: Varies-approx 60-110 (depending upon employment)
Military lift: 2,100 tons, 18 tanks or 10 tanks plus 200 troops
Guns: 6 US/Bofors 40 mm (2 twin, 2 single) or 4 Oerlikon 20 mm (in refitted ships).
Radars: Navigation: Raytheon SPS-64(V)2; I-band.

Programmes: Transferred from US Navy in 1976 with exception of LT 87 and LT 516 which were used as light craft repair ships in South Vietnam and have retained amphibious capability (transferred to Vietnam 1970 and to Philippines 1976, acquired by purchase 5 April 1976). LT 86 transferred (grant aid) 17 November 1975. LT 501 and 504 commissioned in Philippine Navy 8 August 1978 and LT 507 on 18 October 1978.

Modernisation: Several have had major refits including replacement of frames and plating as well as engines and electrics and provision for four 20 mm guns to replace the 40 mm guns.

Structure: Some of the later ships have tripod masts, others have pole masts.

Operational: All are used for general cargo work in Philippine service. Fourteen were deleted in 1989 and one sank in 1991. Two paid off in 1992 and one in 1993. *South Cotabato* was also paid off in 1993 but brought back in to service in 1994. *Benguet* broke down in the South China Sea in April 1995 and had to be taken in tow. *Benguet* again grounded in the Spratly Islands on 3 November 1999 and after a month on the rocks is probably beyond economical repair. One further ship, *Sierra Madre* is reported to be used as an observation post in the Spratly Islands. Replacements are needed but have not been given priority.



LANAO DEL NORTE

1993, Philippine Navy / 0506163

1 ACHELOUS CLASS (REPAIR SHIP) (ARL)

Name	No	Builders	Commissioned
YAKAL (ex-Satyr ARL 23, ex-LST 852)	AD 617 (ex-AR 517)	Chicago Bridge & Iron	20 Nov 1944

Displacement, tons: 4,342 full load
Dimensions, feet (metres): 328 × 50 × 14 (100 × 15.2 × 4.3)
Main machinery: 2 GM 12-567A diesels; 1,800 hp (1.34 MW); 2 shafts
Speed, knots: 11.6
Complement: 220 approx
Guns: 4 US/Bofors 40 mm (quad), 10 Oerlikon 20 mm (5 twin)

Comment: Transferred from the US to the Philippines on 24 January 1977 by sale (Originally to South Vietnam 30 September 1971). Converted during construction Extensive machine shop, spare parts stowage, and logistic support.



YAKAL 1994, Philippine Navy / 0081545

42 LCM/LCU

Comment: Ex-US minor landing craft mostly transferred in the mid-1970s. 11 LCM 6, five LCM 8, eight LCU, 14 RUC and two LCVP. Used as transport vessels.



LCU 286 5/1998, van Ginderen Collection / 0052705

1 ALAMOSA CLASS (SUPPLY SHIP) (AK)

Name	No	Builders	Commissioned
MACTAN (ex-Kukul, ex-Coiquith)	AC 90 (ex-TK 90)	Froemming, Milwaukee	22 Sep 1944

Displacement, tons: 2,500 light, 7,570 full load
Dimensions, feet (metres): 338.5 × 50 × 13 (103.2 × 15.2 × 5.5)
Main machinery: 1 Nordberg diesel; 1,700 hp (1.27 MW); 1 shaft
Speed, knots: 11
Complement: 85
Guns: 2—12.7 mm MGs.

Comment: Transferred from the US Coast Guard on 1 March 1972. Used to supply military posts and lighthouses in the Philippine archipelago. Was to have been paid off in 1994 but has been kept in service.



MACTAN 4/1996, Philippine Navy / 0508312

1 TRANSPORT VESSEL (AP)

Name	No	Builders	Commissioned
ANG PANGULO (ex-The President, ex-Roxas, ex-Lapu-Lapu)	AT 25 (ex-TP 777)	Ishikawajima, Japan	1959

Displacement, tons: 2,239 standard; 2,727 full load
Dimensions, feet (metres): 257.6 × 42.6 × 21 (78.5 × 13 × 6.4)
Main machinery: 2 Mitsui DE642/VBF diesels; 5,000 hp(m) (3.68 MW); 2 shafts
Speed, knots: 18. **Range, a miles:** 6,900 at 15 kt
Complement: 81 (8 officers)
Guns: 3 Oerlikon 20 mm/70 Mk 4, 8—7.62 mm MGs.
Radars: Navigation RCA CRMN-1A-75; I-band

Comment: Built as war reparation; launched in 1958. Was used as presidential yacht and command ship with accommodation for 50 passengers. Originally named *Lapu-Lapu* after the chief who killed Magellan; renamed *Roxas* on 9 October 1962 after the late Manuel Roxas, the first President of the Philippines Republic. Renamed *The President* in 1967 and *Ang Pangulo* in 1975. In early 1987 was earmarked to transport President Marcos to Hong Kong and exile. The ship is now used as an attack transport, and still as a Presidential Yacht.



ANG PANGULO 5/1998, John Mortimer / 0081546

2 YWTYPE (WATER TANKERS) (AWT)

Name	No	Builders	Commissioned
LAKE BULUSAN	AW 33 (ex-YW 111)	Marine Iron, Duluth	1 Aug 1945
LAKE PAOAY	AW 34 (ex-YW 130)	Leatham D Smith, Sturgeon Bay	28 Aug 1945

Displacement, tons: 1,237 full load
Dimensions, feet (metres): 174 × 32.7 × 13.2 (53 × 10 × 4)
Main machinery: 2 GM 8-278A diesels; 1,500 hp (1.12 MW); 2 shafts
Speed, knots: 7.5
Complement: 29
Cargo capacity: 200,000 gallons
Guns: 1 Bofors 40/60 1 Oerlikon 20 mm.

Comment: Basically similar to YOG type but adapted to carry fresh water. Transferred from the US to the Philippines on 16 July 1975.



LAKE PAOAY 5/1998, van Ginderen Collection / 0052708

2 YOG TYPE (TANKERS) (YO)

Name	No	Builders	Commissioned
LAKE BUHI (ex-YOG 73)	AF 78 (ex-YO 78)	Puget Sound, Bremerton	28 Nov 1944
LAKE TAAL (ex-YOG 72)	AF 72 (ex-YO 72)	Puget Sound, Bremerton	14 Apr 1945

Displacement, tons: 447 standard; 1,400 full load
Dimensions, feet (metres): 174 × 32.7 × 13.2 (53 × 10 × 4)
Main machinery: 2 GM 8-278A diesels; 1,500 hp (1.12 MW); 2 shafts
Speed, knots: 8
Complement: 28
Cargo capacity: 6,570 barrels diesel and gasoline
Guns: 2 Oerlikon 20 mm/70 Mk 4.

Comment: Former US Navy gasoline tankers. Transferred in July 1967 on loan and by purchase 5 March 1980.



LAKE BUHI 1993, Philippine Navy / 0506194

614 Philippines/Auxiliaries — Coast guard

4 FLOATING DOCKS (YFD)

YD 200 (ex-AFDL 24) YD 204 (ex-AFDL 20) YD 205 (ex-AFDL 44) — (ex-AFDL 40)

Comment: Floating steel dry docks built in the USA; all are former US Navy units with YD 200 transferred in July 1948, YD 204 in October 1961 (sale 1 August 1980), YD 205 in September 1969 and AFDL 40 in 1994.

Capacities: YD 205, 2,800 tons; YD 200 and YD 204, 1,000 tons. In addition there are two floating cranes, YU 206 and YU 207, built in US in 1944 and capable of lifting 30 tons.

TUGS

Notes: A number of harbour tugs have been acquired from the US. The latest type is ex-Army of 390 tons, a speed of 12 kt and a bollard pull of 12 tons.



HARBOUR TUG

5/1998, John Mortimer / 0052709

COAST GUARD

Notes: (1) Some of the PCF craft listed are manned by the Navy as is the buoy tender *Mangyan*.

(2) The Coast Guard also operates one LCM 6 (BM 270), one LCVP (BV 182) and a River Utility Craft VU 463.

(3) Ten Rodman 101 and four Rodman 38 were ordered for delivery to the Police by 2005.

4 SAN JUAN CLASS (WPBO)

Name	No	Builders	Commissioned
SAN JUAN	001	Tenix Defence Systems	19 June 2000
EDSA II (ex-Don Emilio)	002 (ex-419)	Tenix Defence Systems	14 Dec 2000
PAMPANGA	003	Tenix Defence Systems	30 Jan 2003
BATANGAS	004	Tenix Defence Systems	8 Aug 2003

Displacement, tons: 500 full load

Dimensions, feet (metres): 183.7 × 34.5 × 9.8 (56 × 10.5 × 3)

Main machinery: 2 Caterpillar 3612 diesels; 4,800 hp(m) (3.53 MW) sustained; 2 shafts; cp props

Speed, knots: 24.5

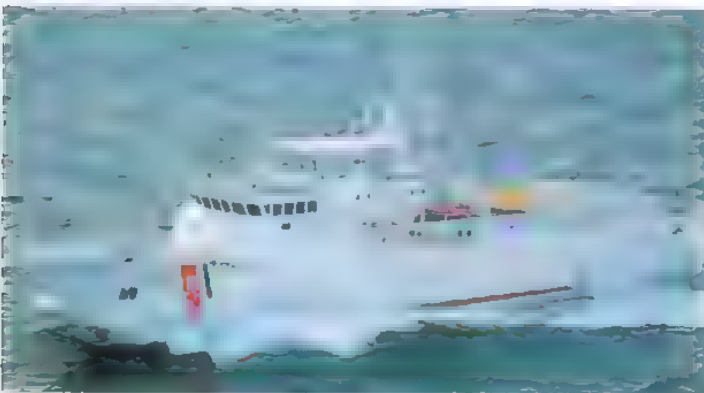
Range, n miles: 3,000 at 15 kt

Complement: 38

Radars: Navigation: I-band

Helicopters: Platform for one light.

Comment: First reported ordered in mid-1997. Construction of first of class started in February 1999. Steel hull and aluminium superstructure. Primarily used for SAR with facilities for 300 survivors. Fire-fighting and pollution control equipment included. A contract for a further two vessels was finalised in December 2001.



SAN JUAN

6/2000, Tenix Shipbuilding / 0105228

4 ILOCOS NORTE CLASS (PATROL CRAFT) (PB)

Name	No	Builders	Commissioned
ILOCOS NORTE	3501	Tenix Defence Systems	9 May 2003
NUEVA VIZCAYA	3502	Tenix Defence Systems	8 Aug 2003
ROMBLON	3503	Tenix Defence Systems	20 Oct 2003
DAVAO DEL NORTE	3504	Tenix Defence Systems	16 Jan 2004

Displacement, tons: 115

Dimensions, feet (metres): 114.9 × 24.0 × 7.5 (35.0 × 7.3 × 2.3)

Main machinery: 2 diesels; 2 shafts. 1 footer waterjet

Speed, knots: 23

Range, n miles: 2,000 at 12 kt

Complement: 11

Guns: 2—30 mm (1 twin). 2—12.7 mm MGs.

Radars: Navigation: I-band

Comment: Contract on 9 December 2001 for the construction of four search and rescue vessels. An option for a further ten craft is unlikely to be taken. Based on Bay class design with steel hull and aluminium superstructure.



NUEVA VIZCAYA

8/2003, Tenix / 0569803

1 BALSAM CLASS (TENDER) (AKLH)

Name	No	Builders	Commissioned
KALINGA (ex-Redbud, WAGL 398, ex-Redbud, T-ACL 398)	AG 89	Marine Iron, Duluth	2 May 1944

Displacement, tons: 950 standard; 1,041 full load

Dimensions, feet (metres): 180 × 37 × 13 (54.8 × 11.3 × 4)

Main machinery: Diesel-electric; 2 diesels; 1,710 hp (1.28 MW); 2 generators; 1 motor;

1,200 hp (895 kW); 1 shaft

Speed, knots: 12

Range, n miles: 3,500 at 7 kt

Complement: 53

Guns: 2—12.7 mm MGs

Radars: Navigation: Sperry SPS-53, I/J-band.

Helicopters: Platform for 1 light

Comment: Originally US Coast Guard buoy tender (WAGL 398). Transferred to US Navy on 25 March 1949 as AG 398 and then to the Philippine Navy 1 March 1972. One 20 ton derrick. New engines fitted



KALINGA

1994, Philippine Navy / 0506201

3 BUOY TENDERS (ABU)

CAPE BOJEADOR (ex-FS 203) AE 46 (ex-TK 46)
LIMASAWA (ex-Nettie WAK 129, ex-FS 169) AE 79 (ex-TK 79)
MANGYAN (ex-Nasami, ex-FS 408) AT 71 (ex-AE 71, ex-AS 71)

Displacement, tons: 470 standard, 950 full load

Dimensions, feet (metres): 180 × 32 × 10 (54.9 × 9.8 × 3)

Main machinery: 2 GM 6-278A diesels; 1,120 hp (836 kW); 2 shafts

Speed, knots: 10

Range, n miles: 4,150 at 10 kt

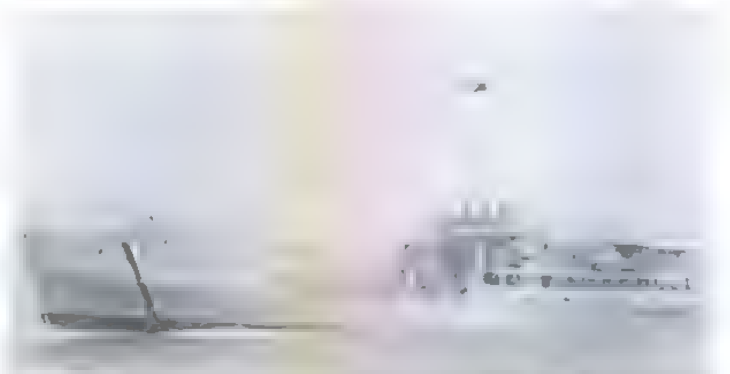
Complement: 50

Cargo capacity: 400 tons

Guns: 1—12.7 mm MG can be carried

Radars: Navigation: RCA CRMN 1A 75; I-band

Comment: Former US Army FS 381 and FS 330 type freight and supply ships built in 1943-44. First two are employed as tenders for buoys and lighthouses. *Mangyan* transferred 24 September 1976 by sale. *Limasawa* acquired by sale 31 August 1978. One 5 ton derrick. *Cape Bojeador* paid off in 1988 but was back in service in 1991 after a major overhaul. *Mangyan* reclassified AT in 1993 and belongs to the Navy. Masts and superstructures have minor variations.



CAPE BOJEADOR

1993, Philippine Navy / 0506165

2 LARGE PATROL CRAFT (PB)

Name	No	Builders	Commissioned
TIRAD PASS	AU 100 (ex-SAR 100)	Sumidagawa, Japan	1974
BESSANG PASS	AU 75 (ex-SAR 99)	Sumidagawa, Japan	1974

Displacement, tons: 279 full load
Dimensions, feet (metres): 144.3 × 24.3 × 4.9 (44 × 7.4 × 1.5)
Main machinery: 2 MTU 12V 536 TB82 diesels; 4,050 hp(m) (2 98 MW); 2 shafts
Speed, knots: 27.5
Range, n miles: 2,300 at 14 kt
Complement: 32
Guns: 4—12.7 mm (2 twin) MGs.

Comment: Paid for under Japanese war reparations. Similar type as *Emilio Aguinaldo*. *Bessang Pass* grounded in 1983 but was recovered.



TIRAD PASS 1992, Philippine Navy / 0081548

4 PGM-39 CLASS (LARGE PATROL CRAFT) (PB)

Name	No	Builders	Commissioned
AGUSAN (ex-PGM 39)	PG 61	Tacoma, WA	Mar 1960
CATANDUANES (ex-PGM 40)	PG 62	Tacoma, WA	Mar 1960
ROMBLON (ex-PGM 41)	PG 63	Peterson Builders, WI	June 1960
PALAWAN (ex-PGM 42)	PG 64	Tacoma, WA	June 1960

Displacement, tons: 124 full load
Dimensions, feet (metres): 100.3 × 18.6 × 6.9 (30.6 × 5.7 × 2.1)
Main machinery: 2 MTU MB 12V 493 TY57 diesels; 2,200 hp(m) (1.6 MW) sustained; 2 shafts
Speed, knots: 17
Range, n miles: 1,400 at 11 kt
Complement: 26-30
Guns: 2 Oerlikon 20 mm, 2—12.7 mm MGs, 1—81 mm mortar
Radars: Surface search: Alpelco DFR-12; I/J-band.

Comment: Steel-hulled craft built under US military assistance programmes. Assigned US PGM-series numbers while under construction. Transferred upon completion. These craft are lengthened versions of the US Coast Guard 95 ft Cape class patrol boat design. Operational status is doubtful.



AGUSAN 1994, Philippine Navy / 0081550

10 PCF 46 CLASS (COASTAL PATROL CRAFT) (PB)

DB 411	DB 417	DB 422	DB 428	DB 435
DB 413	DB 419	DB 426	DB 431-432	

Displacement, tons: 21 full load
Dimensions, feet (metres): 45.9 × 14.5 × 3.3 (14 × 4.4 × 1)
Main machinery: 2 Cummins diesels, 740 hp (552 kW); 2 shafts
Speed, knots: 25
Range, n miles: 1,000 at 15 kt
Complement: 8
Guns: 2—12.7 mm (twin) MGs, 1—762 mm M60 MG
Radars: Surface search: Kelvin Hughes 17; I-band.

Comment: Built by Marcelo Yard, Manila and were to have been delivered 1976-78 at the rate of two per month. By the end of 1976, 26 had been completed but a serious fire in the shipyard destroyed 12 new hulls and halted production. Some deleted.



DB 435

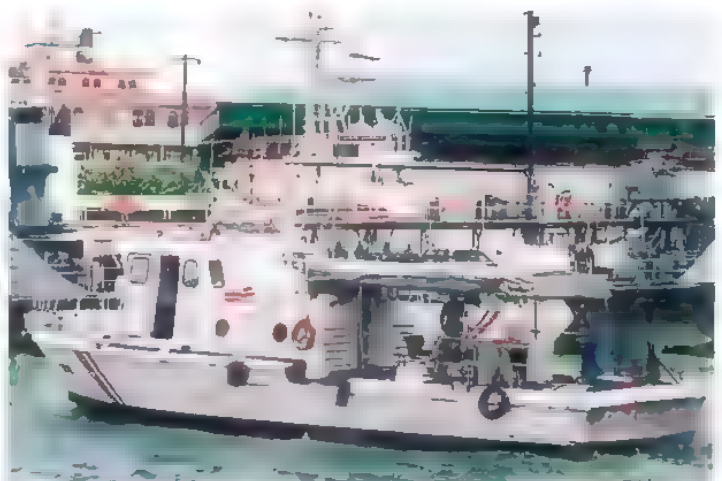
1993, Philippine Navy / 0505166

12 PCF 50 (SWIFT MK 1 AND MK 2) CLASS (COASTAL PATROL CRAFT) (PB)

DF 300-303	DF 305	DF 307-313
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Displacement, tons: 22.5 full load
Dimensions, feet (metres): 50 × 13.6 × 4 (15.2 × 4.1 × 1.2) (Mk 1) 51.3 × 13.6 × 4 (15.6 × 4.1 × 1.2) (Mk 2)
Main machinery: 2 GM 12-71 diesels; 680 hp (504 kW) sustained; 2 shafts
Speed, knots: 28
Range, n miles: 685 at 16 kt
Complement: 6
Guns: 2—12.7 mm (twin) MGs, 2 M—79 40 mm grenade launchers.
Radars: Surface search: Decca 202; I-band.

Comment: Most built in the USA. Built for US military assistance programmes and transferred in the late 1980s. Some built in 1970 in the Philippines (ferro-concrete) with enlarged superstructure. DF 300-303 are Swift Mk 1. DF 305 and DF 307-313 are Swift Mk 2.



DF 308

5/1998, van Ginderen Collection / 0081552

10 PCF 65 (SWIFT MK 3) CLASS (COASTAL PATROL CRAFT) (PB)

DF 325-332	DF 334	DF 347
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Displacement, tons: 29 standard; 37 full load
Dimensions, feet (metres): 65 × 16 × 3.4 (19.8 × 4.9 × 1)
Main machinery: 3 GM 12V-71T1 diesels; 840 hp (616 kW) sustained; 3 shafts
Speed, knots: 25
Complement: 8
Guns: 2—12.7 mm MGs
Radars: Surface search: Kodan; I-band.

Comment: Improved Swift type inshore patrol boats built by Peterson and delivered 1975-76. Aluminium construction. Some that were laid up have been returned to service. New radars fitted.



DF 347

5/1998, Sattler & Steele 0057/11

3 DE HAVILLAND CLASS (PB)

DF 321-323

Displacement, tons: 25 full load
Dimensions, feet (metres): 54.8 × 16.4 × 4.3 (16.7 × 5 × 1.3)
Main machinery: 2 diesels; 740 hp (552 kW); 2 shafts
Speed, knots: 25
Range, n miles: 450 at 14 kt
Complement: 8
Guns: 2—12.7 mm MGs.

Comment: Locally built in the mid-1980s. Others of this type have been paid off and numbers are uncertain.



DF 321 5/1998, van Ginderen Collection / 0052/13

1 CORREGIDOR CLASS (BUOY TENDER) (ABU)

<i>Name</i>	<i>No</i>	<i>Builders</i>	<i>Commissioned</i>
CORREGIDOR	AG 891	Nigata Engineering, Japan	2 Mar 1938

Displacement, tons: 1,130 full load
Dimensions, feet (metres): 186.7 × 26.1 × 12.5 (56.9 × 11.0 × 3.8)
Main machinery: 2 Niigata diesels; 2 shafts
Speed, knots: 13
Range, n miles: 4,000 at 11 kt
Complement: 37
Radars: Navigation, I-band

Comment: Lighthouse and buoy tender. Similar to *Jedayat* in service in Indonesia.

11 CUTTERS (PBR)

CGC 103 CGC 110 CGC 115 CGC 128-130 CGC 132-136

Displacement, tons: 13 full load
Dimensions, feet (metres): 40 × 13.6 × 3 (12.2 × 4.1 × 0.9)
Main machinery: 2 Detroit diesels; 560 hp (418 kW); 2 shafts
Speed, knots: 28
Complement: 5
Guns: 1—12.7 mm MG, 1—7.62 mm MG.

Comment: Built at Cavite Yard from 1984. One deleted in 1994. Used for harbour patrols. There are also some small unarmed Police craft.



CGC 130 1994, Philippine Navy / DOB155.1



Poland MARYNARKA WOJENNA

Country Overview

The modern democratic era of the Republic of Poland began in 1989 after forty-two years of communist rule. Situated in central Europe, the country has an area of 120,725 square miles and is bordered to the north by Russia (Kaliningrad), to the east by Lithuania, Belarus, and Ukraine, to the south by the Czech Republic and Slovakia and to the west by Germany. It has a 265 n mile coastline with the Baltic Sea. Warsaw is the capital and largest city while Gdansk, Szczecin and Gdynia are the principal ports. Territorial seas (12 n miles) are claimed but while it has claimed a 200 n mile EEZ, its limits have not been fully defined by boundary agreements.

Headquarters Appointments

Commander-in-Chief:
 Vice Admiral Andrzej Karweta
Deputy Commander-in-Chief
 Rear Admiral Waldemar Gluszeko
Chief of Naval Training:
 Vice Admiral Maciej Wąglewski
Commander Maritime Operations Centre:
 Rear Admiral Jerzy Patz
Commander 3rd Flotilla:
 Rear Admiral Marek Kurzyk
Commander 8th Flotilla:
 Rear Admiral Jerzy Lenda

Diplomatic Representation

Defence and Naval Attache in London:
 Colonel K Szymanski

Personnel

(a) 2009: 14,100
 (b) 12 months' national service

Prefix to Ships' Names

ORP, standing for *Okret Rzeczypospolitej Polskiej*

Strength of the Fleet

Type	Active	Building
Submarines—Patrol	5	—
Frigates	2	2 (5)
Corvettes	4	—
Fast Attack Craft—Missile	2	—
Coastal Patrol Craft	4	—
Minehunters—Coastal	20	(14)
LSTs	5	—
LCUs	3	—
Survey and Research Ships	2	—
AGIs	2	—
Training Ships	2	—
Salvage Ships	6	—
Tankers	4	—
Logistic Support Ship	1	—

Sea Department of the Border Guard (MOSG)

A para-naval force, subordinate to the Minister of the Interior.

Bases

Gdynia (3rd Naval Flotilla), Swinoujscie (8th Coastal Defence Flotilla), Kolobrzeg, Gdansk (Frontier Guard)

Naval Aviation

HQ at Gdynia-Babie Doly
 28th Naval Squadron (Gdynia) (An-28, W-3, SH-2G, Mi-17, Mi-2)
 29th Naval Squadron (Darlowo) (W-3, Mi-14)
 30th Naval Squadron (Siemrowice) (An-28)

Coast Defence

Two divisions with 24-57 mm guns.

DELETIONS

Corvettes

2008 *Metalowiec, Rolnik*

Patrol Forces

2006 *Swinoujscie, Wladyslawowo*, KP 167, KP 168, KP 171, KP 174

Auxillaries

2006 *Semko, Slimak*
 2007 *Krab, Gniewko*, H 3, M 37, B 8, B 12

PENNANT LIST

Submarines

291 Orzel
 294 Sokol
 295 Sep
 296 Bielik
 297 Kondor

Frigates

272 General Kazimierz Pulaski
 273 General Tadeusz Kosciuszko

Corvettes

240 Kaszub
 421 Orkan
 422 Piorun
 423 Grom

Mine Warfare Forces

621 Flaming
 623 Mewa
 624 Czajka
 630 Goplo
 631 Gardno
 632 Bukowo
 633 Dabie
 634 Jamno
 635 Mialno
 636 Wicke
 637 Resko
 638 Sarbasko
 639 Neko
 640 Naklo
 641 Druzno
 642 Hancza
 643 Mamry
 644 Wigry
 645 Sniardwy
 646 Wdzydze

Amphibious Forces

621 Lublin
 622 Gmizno
 623 Krakow
 624 Poznan
 625 Torun
 651 KD 11
 652 KD 12
 653 KD 13

Survey Ships and AGIs

262 Nawigator
 263 Hydrograf
 265 Heweliusz
 266 Arctowski

Auxillaries

251 Wodnik
 253 Iskra

281 Piast
 282 Lech
 511 Kontradmiral X Czernicki
 R 11 Gniewko
 R 14 Zbyszko
 R 15 Macko
 SD 11 Wrona
 SD 13 —
 Z 1 Baityk
 Z 3 Krab
 Z 8 Meduza

Maritime Frontier Guard

SG 311 Kaper I
 SG 312 Kaper II
 SG 323 Zefir
 SG 325 Tecza

SUBMARINES

4 SOKÓL (KOB BEN) (TYPE 207) CLASS (SSK)

Name	No	Builders	Laid down	Launched	Commissioned	Recommissioned
SOKÓL (ex-Stord)	294 (ex-S 308)	Rhein Stahl – Nordseewerke, Emden	1 Apr 1966	2 Sep 1966	14 Feb 1967	4 June 2002
SEP (ex-Skolpen)	295 (ex-S 306)	Rhein Stahl – Nordseewerke, Emden	1 Nov 1965	24 Mar 1966	17 Aug 1966	16 Aug 2002
BIELIK (ex-Svanne)	296 (ex-S 309)	Rhein Stahl – Nordseewerke, Emden	8 Sep 1966	27 Jan 1967	12 Jun 1967	8 Sep 2003
KONDOR (ex-Kunna)	297 (ex-S 319)	Rhein Stahl – Nordseewerke, Emden	3 Mar 1964	16 Jul 1964	29 Oct 1964	20 Oct 2004

Displacement, tons: 459 standard, 524 dived

Dimensions, feet (metres): 155.5 x 15 x 14
(47.4 x 4.6 x 4.3)

Main machinery: Diesel-electric; 2 MTU 12V 493 AZ80 GA31L diesels; 1,200 hp(m) (880 kW) sustained, 1 motor; 1,800 hp(m) (1.32 MW) sustained; 1 shaft

Speed, knots: 12 surfaced, 18 dived

Range, n miles: 5,000 at 8 kt (snorting)

Complement: 21 (5 officers)

Torpedoes: 8–21 in (533 mm) bow tubes.

Countermeasures: ESM: Argo radar warning.

Weapons control: Kongsberg MSI-70U TFCS.

Radars: Surface search: Kelvin Hughes 1007; I-band.

Sonars: Atlas Elektronik CSU 83; passive search and attack; medium/high frequency.

Programmes: Commissioned into the Norwegian Navy from 1964, the original building cost was shared between the Norwegian and US governments. Decommissioned from the Norwegian Navy in 2001. Following announcement on 18 January 2002, four submarines transferred to the Polish Navy. A fifth, ex-Kobben, was transferred for spares and as a floating training base

The contract also includes provision of in-service support. These submarines are understood to be a stop-gap measure to maintain a submarine capability until about 2012 when these may be replaced.

Modernisation: All modernised at Urivale Shipyard, Bergen between 1989–1992

Structure: A development of the German Type 205 class, they have a diving depth of 650 ft (200 m). Pilkington optonics CK 30 search periscope.

Operational: Based at Gdynia



SOKÓL

8/2007, Maritime Photographic / 1166699



KONDOR

11/2007, Ian Harris / 1106690

1 KILO CLASS (PROJECT 877EM) (SSK)

Name	No	Builders	Commissioned
ORZEL	291	Sudomekh, Leningrad	29 Apr 1986

Displacement, tons: 2,457 surfaced; 3,180 dived
Dimensions, feet (metres): 238.2 x 32.5 x 21.3 (72.6 x 9.9 x 6.5)
Main machinery: Diesel-electric; 2 DL 42M diesels; 3,650 hp(m) (2.68 MW); 2 generators; 6 MW; 1 PG 141 motor; 5,900 hp(m) (4.34 MW); 1 shaft; 2 auxiliary motors; 204 hp(m) (150 kW); 1 economic speed motor; 130 hp (95 kW)
Speed, knots: 10 surfaced; 17 dived; 9 snorting
Range, n miles: 6,000 at 7 kt snorting; 400 at 3 kt dived
Complement: 60 (16 officers)
Missiles: SAM: 8 SA-N-5 (Strela 2M)
Torpedoes: 6–21 in (533 mm) tubes. Combination of 53-65, anti-surface, passive/wake homing to 19 km (10.3 n miles) at 45 kt; warhead 300 kg and TEST-71; anti-submarine; active/passive homing to 15 km (8.1 n miles) at 40 kt; warhead 205 kg 53-56 WA and SET 53 M can also be carried. Total of 18 torpedoes.
Mines: 24 in lieu of torpedoes.
Countermeasures: ESM: Brick Group (MRP-25); radar warning, Quad Loop HF D/F
Weapons control: Murena MWU 110TFCS.
Radars: Surface search: Racal Decca Bridgemaster; I-band
Sonars: Shark Teeth (MGK-400); hull-mounted; passive search and attack (some active capability); low/medium frequency
Mouset Roar (MG 519); active mine detection; high frequency
Programmes: This was the second transfer of this class, the first being to India and others have since gone to Romania, Algeria, Iran and China. It was expected that more than one would be acquired as part of an exchange deal with the USSR for Polish-built amphibious ships, but this class is considered too large for Baltic operations and subsequent transfers were of the Foxtrot class.
Structure: Diving depth, 240 m (787 ft). Has two torpedo tubes modified for wire guided anti-submarine torpedoes.
Operational. Based at Gdynia



ORZEL

5/2007, J Cielak / 1166588

FRIGATES

0 + 2 (5) PROJECT 621 GAWRON II (MEKO A 100) CLASS (FSGHM)

Name	No	Builders	Laid down	Launched	Commissioned
-	-	Naval Shipyard, Gdynia	28 Oct 2001	2009	2011
-	-	Naval Shipyard, Gdynia	2003	2009	2012

Displacement, tons: 2,035 full load
Dimensions, feet (metres): 312.3 x 43.6 x 11.8 (95.2 x 13.13 x 3.6)
Main machinery: CODAG; 1 General Electric LM 2500 gas turbine; 2 diesels; 2 shafts
Speed, knots: 30
Range, n miles: 4,000 at 15 kt
Complement: 74

Missiles: SSM: 8 Saab RBS-15 Mk 3
 SAM: Raytheon RIM-162 Evolved Sea Sparrow; VLS
Guns: 1–3 in (76 mm)/62 2–35 mm. RAM
A/S mortars: 2 ASW 601
Countermeasures: Decoys: 1-10 barrellled Jastrzab 122 mm; chaff and IR flares
ESM: Radar warning
TCM: C310 torpedo decoy system
Combat data systems: Signaal TACTICOS or Saab Tech 9LV.



PROJECT 621

(Scale 1 : 900), Ian Sturton / 052683/

Radars: Air/surface search; fire control; navigation
Sonars: Hull mounted; active; medium frequency.
Helicopters: Platform for 1 medium

Programmes: Design definition by German Corvette Consortium (Blohm + Voss, Lürssen, Thyssen and HDW) which is to act as subcontractor to the shipbuilder

There are options for a further five vessels. Details of the design and of the building programme have not been released but, given continuing funding problems, it is unlikely that the first of class will enter service before 2011
Structure: The design is based on the MEKO A 100



PROJECT 621

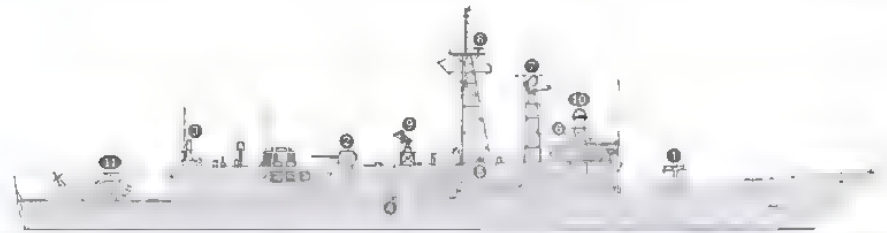
2001, Polish Navy / 0114/88

2 OLIVER HAZARD PERRY CLASS (FFGHM)

Name	No	Builders	Laid down	Launched	Commissioned	Recommissioned
GENERAL KAZIMIERZ PUŁASKI (ex-Clark)	272 (ex-FFG 11)	Bath Iron Works	17 July 1978	24 Mar 1979	9 May 1980	15 Mar 2000
GENERAL TADEUSZ KOŚCIUSZKO (ex-Wadsworth)	273 (ex-FFG 9)	Todd Shipyards, San Pedro	13 July 1977	29 July 1978	28 Feb 1980	28 June 2002

Displacement, tons: 2,750 light; 3,638 full load
Dimensions, feet (metres): 445 x 45 x 14.8; 24.5 (sonar)
 (135.6 x 13.7 x 4.5; 7.5)
Main machinery: 2 GE LM 2500 gas turbines; 41,000 hp
 (30.59 MW) sustained; 1 shaft, cp prop
 2 auxiliary retractable props, 650 hp (484 kW)
Speed, knots: 29
Range, n miles: 4,500 at 20 kt
Complement: 200 (15 officers) including 19 aircrew

Missiles: SSM: 4 McDonnell Douglas Harpoon Block 1G; active radar homing to 95 km (51 n miles) at 0.9 Mach; warhead 227 kg
SAM: 36 Raytheon SM-1MR Block VI; command guidance; semi-active radar homing to 38 km (20.5 n miles) at 2 Mach
 1 Mk 13 Mod 4 launcher for both SSM and SAM missiles
Guns: 1 OTO Melara 3 in (76 mm)/62 Mk 75; 85 rds/min to 16 km (8.7 n miles) anti-surface; 12 km (6.6 n miles) anti-aircraft, weight of shell 6 kg.
 1 General Electric/General Dynamics 20 mm/76 6-barrelled Mk 15 Vulcan Phalanx; 3,000 rds/min combined to 15 km
 4 -12.7 mm MGs
Torpedoes: 6-324 mm Mk 32 (2 triple) tubes; 24 Whitehead A244 Mod 3. To be replaced by Mu-90 Impact from 2002
Countermeasures: Decoys: 2 Loreal Hycor SRBOC 6-barrelled fixed Mk 36; IR flares and chaff to 4 km (2.2 n miles). T-Mk 6 Fanfare/SLO-25 Nixie; torpedo decoy.



PUŁASKI

(Scale 1 : 1,200), Ian Sturton / 0105279

ESM/ECM: SLO-32(V)2; radar warning. Sidekick modification adds jammer and deception system.
Combat data systems: NTDS with Link 11 and 14. SATCOM SRR-1, WSC-3 (UHF)
Weapons control: SWG-1 Harpoon LCS. Mk 92 (Mod 2), WCS with CAS (Combined Antenna System). The Mk 92 is the US version of the Signal WM28 system. Mk 13 weapon direction system. 2 Mk 24 optical directors.
Radars: Air search: Raytheon SPS-49(V)4; C/D-band
 Surface search: ISC Cardion SPS 55; I-band
 Fire control: Lockheed STIR (modified SPG-60); I/J-band
 Sperry Mk 92 (Signal WM28); I/J-band
 Navigation: Furuno; I-band
 Tacan. URN 25. IFF Mk XII AIMS UPX-29.

Sonars: SQQ 89(V)2 (Raytheon SQS 56 and Gould SQR 19); hull mounted active search and attack, medium frequency and passive towed array; very low frequency.

Helicopters: 2 Kaman SH-2G Seasprite

Programmes: Pułaski approved for transfer from US by grant in 1999

Modernisation: Harpoon missiles are to be replaced by RBS 15 Mk 2 missiles from about 2009

Structure: Details given are for the ship in service with the JS Navy

Operational: Based at Gdynia.



PUŁASKI

10/2007, Michael Nitz / 1166657



PUŁASKI

3/2008, B Sullivan / 135325/



KOŚCIUSZKO

10/2007, J Ciśtek / 1166686

CORVETTES

1 KASZUB CLASS (PROJECT 620) (FSM)

Name	No	Builders	Laid down	Launched	Commissioned
KASZUB	240	Northern Shipyard, Gdansk	9 June 1994	11 May 1995	15 Mar 1997

Displacement, tons: 1,051 standard; 1,183 full load
Dimensions, feet (metres): 270 × 32.8 × 10.2; 16.1 (sonar)
 (82.3 × 10 × 3.1; 4.9)
Main machinery: CODAD; 4 Cegielski-Sulzer AS 16V 25/30 diesels; 16,900 hp(m) (12.42 MW); 2 shafts; cp props
Speed, knots: 27. **Range, n miles:** 3,500 at 14 kt; 350 at 26 kt
Complement: 82 (10 officers)

Missiles: SAM: 2 SA-N-5 quad launchers ●; IR homing to 10 km (5.5 n miles) at 1.5 Mach. VLS system to replace after 23 mm gun.

Guns: 1 USSR 3 in (76 mm)/59 AK 176 ●; 120 rds/min to 16 km (8.5 n miles); weight of shell 5.9 kg
 6 ZU-23-2M Wrobel 23 mm/87 (3 twin) ●; 400 rds/min combined to 2 km

Torpedoes: 4–21 in (533 mm) (2 twin) tubes ●. SET-53M, passive homing to 15 km (8.1 n miles) at 29 kt; warhead 100 kg.

A/S mortars: 2 RBU 6000 12-tubed trainable ●; range 6,000 m; warhead 31 kg; 120 rockets.

Depth charges: 2 rails. 12 charges.

Countermeasures: Decoys: 1–10 barrelled 122 mm Jastrzab launcher ● for chaff.

ESM: Intercept

Weapons control: Drakon TFCS.

Radars: Air/surface search: Strut Curve (MR 302) ●; F-band.

Surface search: Racal Bridgmaster C-252 ●; I-band.

Navigation: Racal Bridgmaster C-341; I-band.

IFF: RAWAR SA-10M2

Sonars: MG 322T; hull-mounted; active search; medium frequency.

MG 329M; stern-mounted dipping type mounted on the transom; active; high frequency.

Programmes: Second of class cancelled in 1989 and a class of up to ten more ships based on the Kaszub hull



KASZUB

(Scale 1 : 900), Ian Sturton / 0081558



KASZUB

5/2008*, J. Cisiak / 1353258

and specialised for anti-submarine warfare has been shelved.

Structure: Design based on Grisha class but with many alterations. The 76 mm gun was fitted in late 1991. New

decoy system fitted in 1999. There is space for a fire-control director on the bridge roof
Operational: Based at Gdynia.



KASZUB

7/2006, A. A. de Kruijf / 1164451

3 ORKAN (SASSNITZ) CLASS (PROJECT 660 (ex-151)) (FSGM)

Name	No	Builders	Launched	Commissioned
ORKAN	421	Peenewerft/Northern Shipyard, Gdansk	29 Sep 1990	18 Sep 1992
PIORUN	422	Peenewerft/Northern Shipyard, Gdansk	19 Oct 1990	11 Mar 1994
GROM (ex-Huragan)	423	Peenewerft/Northern Shipyard, Gdansk	11 Dec 1990	28 Mar 1995

Displacement, tons: 331 standard; 326 full load
Dimensions, feet (metres): 163.4 oa; 147.6 wl × 28.5 × 7.2
 (49.8; 45 × 8.7 × 2.2)

Main machinery: 3 Type M 520T diesels; 16,000 hp(m) (11.93 MW) sustained; 3 shafts

Speed, knots: 38. **Range, n miles:** 1,600 at 14 kt

Complement: 36 (4 officers)

Missiles: SSM: 8 (2 quad) launchers; Saab RBS-15 Mk 3; active radar homing to 200 km (108 n miles) at 0.8 Mach, warhead 150 kg.

SAM: SA-N-5 Grail quad launcher; manual aiming; IR homing to 8 km (3.2 n miles) at 1.5 Mach, warhead 1.5 kg.

Guns: 1 USSR 3 in (76 mm)/59 AK 176; 120 rds/min to 16 km (8.5 n miles); weight of shell 5.9 kg

1–30 mm/65 AK 630, 6 barrels; 3,000 rds/min combined to 2 km

Countermeasures: Decoys: 8–9 barrelled Jastrzab 81 mm and 1–10 barrelled Jastrzab 122 mm chaff and IR launchers.

ESM: PIT intercept.

Combat data systems: Signaal/TACTICOS.

Weapons control: Thales STING optronic director

Radars: Surface search: AMB Sea Giraffe, G-band

Fire control: Bass Tilt MR-123, H/I-band

Navigation: PIT; I-band.

IFF: Square Head; Salt Pot.

Programmes: Originally six of this former GDR Sassnitz class were to be built at Peenewerft for Poland. Three units were acquired and completed at Gdansk.

Modernisation: Contract with Thales Naval Nederland (TNNL) as prime contractor for upgrade of all three ships signed 29 June 2001. New equipment includes RBS-15 Mk 3 missiles, TACTICOS combat data system, STING optronic director, AMB Sea Giraffe surveillance radar, PIT navigational radar and ESM equipment, improved communications and Link 11. Refit of *Piorun* was completed by 2003 and the other two ships in 2006. RBS 15 Mk 3 missiles are to replace Mk 2 missiles from 2009

Structure: Unlike the German Coast Guard vessels of the same class, these ships have retained three engines.

Operational: Based at Gdynia.



PIORUN

5/2008*, J. Cisiak / 1353259

SHIPBORNE AIRCRAFT

Numbers/Type: 4 Kaman SH-2G (P) Seasprite.

Operational speed: 130 kt (241 km/h).

Service ceiling: 22,500 ft (6,860 m)

Range: 367 n miles (697 km)

Role/Weapon systems: First two delivered in 2002. Second pair in August 2003. Sensors: LN66/HP radar; ALR 66 ESM, ALE-39 ECM, AQS-81(V)2 MAD, AAQ-16 FLIR, ARR 57/84 sonobuoy receivers. Weapons: ASW: two A244S torpedoes (Mu 90 from 2002), ASV: one 762 mm MG.



SH-2G

7/2006, J Ciślak / 1164448

LAND-BASED MARITIME AIRCRAFT (FRONT LINE)

Notes: In addition there are 6TS training aircraft.

Numbers/Type: 10/2/1/2 PZL Mielec M-28 B1R/M-28E/M-28RF/M-28TD Bryza.

Operational speed: 181 kt (335 km/h).

Service ceiling: 13,770 ft (4,200 m)

Range: 736 n miles (1,365 km).

Role/Weapon systems: Based on the USSR Cash light transport and used for maritime patrol and SAR. First one delivered in January 1995. B1R upgrade programme includes MSC-400 mission system, ARS-400 radar (with SAR/ISAR modes), torpedoes, sonobuoys, MAD, direction finder and Link 11. Sensors: Search radar ARS 400; ESM. Weapons: 2 SAB 100 bombs.



M-28 B1R

5/2008*, J Ciślak / 1353260

Numbers/Type: 10/3 Mil Mi-14PL Haze A/Mi-14PS Haze C.

Operational speed: 120 kt (222 km/h).

Service ceiling: 16,000 ft (4,870 m)

Range: 500 n miles (1,100 km).

Role/Weapon systems: PL for ASW, PS for SAR. PL operates in co-operation with surface units. Adapted for landing and taking off from water. Sensors: I-2ME search radar, APM-60, MAD, sonobuoys, MGM 329M VDS. Weapons: ASW; Whitehead A 244 torpedoes, depth bombs and mines. Arming with Penguin ASM is also under consideration.



Mi-14PL

8/2008*, J Ciślak / 1353761

Numbers/Type: 2/7 PZL Świdnik W-3 Soko/W-3RM Anakonda

Operational speed: 119 kt (220 km/h)

Service ceiling: 19,672 ft (6,000 m).

Range: 335 n miles (620 km).

Role/Weapon systems: W-3 for transport, W-3RM for SAR. Operates in co-operation with surface units. Adapted for landing and taking off from water. Sensors: RDS-82 VP Meteo, FLIR.



W-3RM

5/2008*, J Ciślak / 1353262

Numbers/Type: 3/1 Mil Mi-2RM Hoplite/Mi-2D.

Operational speed: 100 (180 km/h).

Service ceiling: 13,200 ft (4,000 m).

Range: 300 n miles (550 km).

Role/Weapon systems: Mi 2D is for transport aircraft and Mi-2RM is for SAR.



Mi-2RM

7/2000, J Ciślak / 0105737

Numbers/Type: 2 Mi-17 Hip.

Operational speed: 124 kt (230 km/h).

Service ceiling: 16,400 ft (5,000 m).

Range: 324 n miles (600 km).

Role/Weapon systems: Transport aircraft. First one delivered in 2001



Mi-17

7/2006, J Ciślak / 1164445

For details of the latest updates to *Jane's Fighting Ships* online and to discover the additional information available exclusively to online subscribers please visit jfs.janes.com

AMPHIBIOUS FORCES

5 LUBLIN CLASS (PROJECT 767) (LST/MINELAYERS) (LST/ML)

Name	No	Builders	Launched	Commissioned
LUBLIN	821	Northern Shipyard, Gdansk	12 July 1988	12 Oct 1989
GNIEZNO	822	Northern Shipyard, Gdansk	7 Dec 1988	23 Feb 1990
KRAKOW	823	Northern Shipyard, Gdansk	7 Mar 1989	27 June 1990
POZNAN	824	Northern Shipyard, Gdansk	5 Jan 1990	8 Mar 1991
TORUN	825	Northern Shipyard, Gdansk	8 June 1990	24 May 1991

Displacement, tons: 1,350 standard; 1,745 full load
Dimensions, feet (metres): 313 × 35.4 × 6.6 (95.4 × 10.8 × 2)
Main machinery: 3 Cegielski 6ATL25D diesels; 5,390 hp(m) (3.96 MW, sustained, 3 shafts)
Speed, knots: 16
Range, n miles: 1,400 at 16 kt
Complement: 50 (5 officers)
Military lift: 9 Type T-72 tanks or 9 APC or 17 medium or light trucks. 80 troops plus equipment (821-823); 125 troops plus equipment (824); 135 troops and equipment (825)
Missiles, SAM/Guns: 8 ZU-23-2MR 23 mm Wrobel II (4 twin); combination of 2 SA-N-5 missiles, IR homing to 6 km (3.2 n miles) at 1.5 Mach; warhead 1.5 kg and guns; 400 rds/min combined
Depth charges: 9 throwers for counter-mining.
Mines: 50-134
Countermeasures: Decoys: 2 12-barrelled 70 mm Derkacz chaff launchers (821 and 825), 2 12-barrelled Jastrzab chaff launchers (822 824).
Radars: Navigation SRN 7453 and SRN 443XTA; I-band.

Comment: Designed with a through deck from bow to stern and can be used as minelayers as well as for amphibious landings. Folding bow and stern ramps and a stern anchor are fitted. The ship has a pressurised cttedel for NBC defence and an upper deck washdown system. Mining capabilities upgraded in 1997/98. Based at Swinoujscie.



GNIEZNO 8/2008, J Cisiak / 1353263

3 DEBA CLASS (PROJECT 716) (LCU)

Name	No	Builders	Launched	Commissioned
KD 11	851	Naval Shipyard, Gdynia	13 Nov 1987	7 Aug 1988
KD 12	852	Naval Shipyard, Gdynia	2 July 1990	2 Jan 1991
KD 13	853	Naval Shipyard, Gdynia	26 Oct 1990	3 May 1991

Displacement, tons: 176 full load
Dimensions, feet (metres): 122 × 23.3 × 5.6 (37.2 × 7.1 × 1.7)
Main machinery: 3 Type M 401A diesels; 3,000 hp(m) (2.2 MW); 3 shafts
Speed, knots: 21
Range, n miles: 430 at 16 kt
Complement: 12
Military lift: 1 tank or 2 vehicles up to 20 tons and 50 troops
Guns: 2 ZU-23-2M 23 mm (twin).
Radars: Surface search SRN 207A; I-band

Comment: The plan was to build 12 but the programme was suspended at three through lack of funds. A similar design has been assembled in Iran. Can carry up to six launchers for strung-out charges. Based at Swinoujscie.



KD 11 8/2003, J Cisiak / 0567514

MINE WARFARE FORCES

Notes: The next generation Mine Countermeasures programme (Kormoran II) is under consideration.

3 KROGULEC CLASS (PROJECT 206FM) (MHCM)

Name	No	Builders	Commissioned
FLAMING	621	Gdynia Shipyard	11 Oct 1966
MEWA	623	Gdynia Shipyard	21 May 1967
CZAJKA	624	Gdynia Shipyard	23 June 1967

Displacement, tons: 550 full load
Dimensions, feet (metres): 190.9 × 25.3 × 6.9 (58.2 × 7.7 × 2.1)
Main machinery: 2 Sulzer/Cegielski 6AL 25/30 diesels; 2,203 hp(m) (1.62 MW); 2 shafts; LIPS cp props
Speed, knots: 17
Range, n miles: 2,000 at 12 kt
Complement: 52 (6 officers)

Missiles: SAM: 2 Fasta-4M quad launchers SA-N-5.
 2 SA N 10 (Grom) to be fitted in due course
Guns: SAM/guns: 2 Wrobel ZU-23-2MR 23 mm (twin) with 2 SA-N-5 missiles.
Depth charges: 2 racks.
Mines: 6–12 depending on type.
Countermeasures: Decoys: 6–9 barrelled Jastrzab 2 launchers for chaff ECM. PIT Bren system being fitted.
MCM: 2 Bofors MT2W mechanical, 1 TEM-PE 2MA magnetic and 1 MTA-2 acoustic sweeps.
CTM Ukwiak ROV with sonar, TV and charges. 10 ZHH 230 sonobuoys.
Combat data systems: CTM Pstrokosz command support system
Radars: Navigation: Racal Decca Br dgemaster, I-band.
IFF: RAWAR SC-10D2
Sonars: CTM SHL-100MA hull mounted; active minehunting; high frequency; Politechnica Gdansk SHL200VDS

Comment: All taken out of service in 1997. New armament and minehunting equipment installed. Divers recompression chamber carried. Mewa returned to service in May 1999, Czajka in May 2000 and Flaming in 2001. Life extended by 10 years. Based at Swinoujscie.



CZAJKA 5/2008, J Cisiak / 1353764

13 GOPLO (NOTEC) CLASS (PROJECT 207P/207DM) (MINESWEEPERS/HUNTERS—COASTAL) (MHC)

Name	No	Builders	Launched	Commissioned
GOPLO	830	Naval Shipyard, Gdynia	16 Apr 1981	13 Mar 1982
GARDNO	831	Naval Shipyard, Gdynia	23 June 1993	31 Mar 1984
BUKOWO	832	Naval Shipyard, Gdynia	26 July 1984	23 June 1985
DABIE	833	Naval Shipyard, Gdynia	21 June 1985	11 May 1986
JAMNO	834	Naval Shipyard, Gdynia	11 Feb 1986	11 Oct 1986
MIELNO	835	Naval Shipyard, Gdynia	27 June 1986	9 May 1987
WICKO	836	Naval Shipyard, Gdynia	20 Mar 1987	12 Oct 1987
RESKO	837	Naval Shipyard, Gdynia	1 Oct 1987	26 Mar 1988
SARBSKO	838	Naval Shipyard, Gdynia	10 May 1988	12 Oct 1988
NECKO	839	Naval Shipyard, Gdynia	21 Nov 1988	9 May 1989
NAKLO	840	Naval Shipyard, Gdynia	29 May 1989	2 Mar 1990
DRUZNO	841	Naval Shipyard, Gdynia	29 Nov 1989	21 Sep 1990
HANCZA	842	Naval Shipyard, Gdynia	9 July 1990	1 Mar 1991

Displacement, tons: 216 full load
Dimensions, feet (metres): 126.3 × 24.3 × 5.9 (38.5 × 7.4 × 1.8)
Main machinery: 2 M 401A diesels, 1,874 hp(m) (1.38 MW) sustained, 2 shafts
Speed, knots: 14
Range, n miles: 1,100 at 9 kt
Complement: 29 (6 officers)
Guns: 2 ZU-23-2MR 23 mm (twin); 400 rds/min combined to 2 km
Depth charges: 24
Mines: 6-24
Countermeasures: MCM: MMTK1 mechanical; MTA 1 acoustic and TEM-PE 1 magnetic sweeps
Radars: Navigation: Bridgemaster; I-band.
Sonars: MG 89 or MG 79; active minehunting; high frequency

Comment: Goplo is an experimental prototype numbered 207D. The 23 mm guns have replaced the original 25 mm. GRP hulls. All are to be upgraded to 207DM for minehunting, and to carry divers. Named after lakes. Goplo based at Gdynia, the remainder at Swinoujscie.



GOPLO 5/2008, J Cisiak / 1353265

**4 MAMRY (NOTEC II) CLASS (PROJECT 207M)
(MINESWEEPERS/HUNTERS—COASTAL) (MHSCM)**

Name	No	Builders	Launched	Commissioned
MAMRY	643	Naval Shipyard, Gdynia	20 Sep 1991	25 Sep 1992
WIGRY	644	Naval Shipyard, Gdynia	28 Nov 1992	14 May 1993
SNIARDWY	645	Naval Shipyard, Gdynia	20 June 1993	28 Jan 1994
WDZYDZE	646	Naval Shipyard, Gdynia	24 June 1994	2 Dec 1994

Displacement, tons: 216 full load
Dimensions, feet (metres): 126.3 x 24.3 x 5.9 (38.5 x 7.4 x 1.8)
Main machinery: 2 M 401A diesels, 1,874 hp(m) (1.38 MW); 2 shafts
 2 auxiliary motors; 816 hp(m) (60 kW)
Speed, knots: 14
Range, n miles: 865 at 14 kt
Complement: 27 (5 officers)
Missiles, SAM/Guns: 2 ZU-23-2MR 23 mm Wrobel II (twin); combination of 2 SA-N-5 missiles; IR homing to 6 km (3.2 n miles) at 1.5 Mach; warhead 1.5 kg and guns; 400 rde/mn combined to 2 km.
Mines: 6-24 depending on type
Countermeasures: MCM, MMTK 1m mechanical, MTA 2 acoustic and TEM-PE 1m magnetic sweeps.
Radars: Navigation, SRN 401XTA; I-band.
Sonars: SHL 100/200; hull mounted/VDS; active minehunting; high frequency.

Comment: Modified version of the 207P and equipped to carry divers. Identical hull to the 207P. All based at Gdynia. An enlarged design, the Type 207 MCMV with a length of 43.5 m, is a longer term project.



SNIARDWY 6/2007, Frank Findler / 1166573



HEWELIUSZ 5/2008, J Ciślak / 1353265

2 SURVEY CRAFT (PROJECT 4234) (AGSC)

Name	Builders	Commissioned
K 10	Wisła, Gdansk	6 Feb 1989
K 4	Wisła, Gdansk	25 Sep 1989

Displacement, tons: 45 full load
Dimensions, feet (metres): 62 x 14.4 x 4.9 (18.9 x 4.4 x 1.5)
Main machinery: 1 Wola DM 150 diesel; 160 hp(m) (117 kW) sustained; 1 shaft
Speed, knots: 9
Complement: 10
Radars: Navigation: SRN 207A; I-band.

Comment: Coastal survey craft based at Gdynia. There are a number of survey launches and buoy tenders listed under Auxiliaries.



K 10 5/2000, J Ciślak / 0105248

SURVEY AND RESEARCH SHIPS

2 MODIFIED FINIK 2 CLASS (PROJECT 874) (AGS)

Name	No	Builders	Launched	Commissioned
HEWELIUSZ	265	Northern Shipyard, Gdansk	11 Sep 1981	27 Nov 1982
ARCTOWSKI	266	Northern Shipyard, Gdansk	20 Nov 1981	27 Nov 1982

Displacement, tons: 1,135 standard; 1,218 full load
Dimensions, feet (metres): 202.1 x 35.4 x 10.8 (61.6 x 10.8 x 3.3)
Main machinery: 2 Cegielski-Sulzer 6AL25/30 diesels; 1,920 hp(m) (1.4 MW); 2 auxiliary motors; 204 hp(m) (150 kW); 2 shafts; cp props; bow thruster
Speed, knots: 13
Range, n miles: 5,900 at 11 kt
Complement: 49 (10 officers)
Radars: Navigation: SRN 7453 Nogat; SRN 743X; I-band.

Comment: Sister ships to Russian class which were built in Poland, except that *Heweliusz* and *Arctowski* have been modified and have no buoy handling equipment. Equipment includes Atlas Deso, Atlas Ra.og and Atlas Dolog survey. Both ships are based at Gdynia. One sister ship, *Planeta*, is civilian operated and the other, *Zodiak*, was decommissioned in 2003.



ARCTOWSKI 5/2007, J Ciślak / 1166597

4 SURVEY CRAFT (PROJECT III/C) (AGSC)

M 35	M 38-40
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Displacement, tons: 10 full load
Dimensions, feet (metres): 36.1 x 10.5 x 2.3 (11 x 3.2 x 0.7)
Main machinery: 1 Puck Rekin SW 400/MZ diesel; 95 hp(m) (70 kW); 1 shaft
Speed, knots: 8
Range, n miles: 184 at 8 kt
Complement: 5
Radars: Navigation: SRN 207A; I-band.

Comment: Based at Gdynia and Swinoujście (M 35)



M 40 3/2003, J Ciślak / 0567515

INTELLIGENCE VESSELS

2 MODIFIED MOMA CLASS (PROJECT 863) (AGI)

Name	No	Builders	Commissioned
NAWIGATOR	262	Northern Shipyard, Gdansk	17 Feb 1975
HYDROGRAF	263	Northern Shipyard, Gdansk	8 May 1976

Displacement, tons: 1,677 full load
Dimensions, feet (metres): 240.5 × 35.4 × 12.8 (73.3 × 10.8 × 3.9)
Main machinery: 2 Zgoda-Sulzer 6TD48 diesels; 3,300 hp(m) (2.43 MW) sustained; 2 shafts
Speed, knots: 17
Range, n miles: 7,200 at 12 kt
Complement: 87 (10 officers)
Missiles: 2 Fasta-4M quad launchers. SA-N-5.
Guns: 4—25 mm (2 twin) (262)
Countermeasures: ESM/ECM: intercept and jammer
Radars: Navigation: 2 SRN 7453 Nogat; I-band

Comment: Much altered in the upperworks and unrecognisable as Momas. The forecastle in *Hydrograf* is longer than in *Nawigator* and one deck higher. *Hydrograf* fitted for but not with two twin 25 mm gun mountings. Forward radome replaced by a cylindrical type in *Nawigator* and after ones removed on both ships. Based at Gdynia.



NAWIGATOR 5/2007, M Declerck / 1166598



HYDROGRAF 7/2008, A Sheldon-Duplax / 1353257

TRAINING SHIPS

Notes: The three masted sailing ship *Dar Mlodziezy* is civilian owned and operated but also takes naval personnel for training

1 WODNIK CLASS (PROJECT 888) (AXTH)

Name	No	Builders	Launched	Commissioned
WODNIK	251	Northern Shipyard, Gdansk	19 Nov 1975	28 May 1976

Displacement, tons: 1,697 standard; 1,745 full load
Dimensions, feet (metres): 234.3 × 38.1 × 14.8 (72.2 × 11.9 × 4.1)
Main machinery: 2 Zgoda-Sulzer 6TD48 diesels; 2,650 hp(m) (1.95 MW) sustained; 2 shafts; cp props
Speed, knots: 16
Range, n miles: 7,200 at 11 kt
Complement: 56 (24 officers) plus 101 midshipmen
Guns: 4 ZU-23-2MR Wrobel 23 mm (2 twin). 2—30 mm AK 230 (1 twin).
Radars: Navigation: 2 SRN 7453 Nogat; I-band.
Helicopters: Platform for 1 light.

Comment: Sister to former GDR *Wilhelm Piack* and two Russian ships. Converted to a hospital ship (150 beds) in 1990 for deployment to the Gulf. Armament removed as part of the conversion but partially restored in 1992. Based at Gdynia. Second of class in reserve from 1999.



WODNIK 7/2008, B Przewin / 1353256

1 ISKRA CLASS (PROJECT B79) (SAIL TRAINING SHIP) (AXS)

Name	No	Builders	Launched	Commissioned
ISKRA	263	Gdansk Shipyard	6 Mar 1982	11 Aug 1982

Displacement, tons: 498 full load
Dimensions, feet (metres): 160.8 × 26.6 × 13.1 (49 × 8.1 × 4.0)
Main machinery: 1 Wola 75H12 diesel, 310 hp(m) (228 kW); 1 auxiliary shaft; cp prop
Speed, knots: 9 (diesel)
Complement: 14 (6 officers) plus 50 cadets
Radars: Navigation: SRN 206; I-band

Comment: Barquentine with 1,040 m² of sail. Used by the Naval Academy for training with a secondary survey role. Based at Gdynia.



ISKRA 6/2005, Michael Nitz / 1151322

AUXILIARIES

Note: Procurement of up to four Strategic Support Ships is under development. The broad requirement is for ships of approximately 10,000 tons with the capability of transporting about 500 troops plus some 20 vehicles and up to six helicopters.

1 PROJECT 890 CLASS (LOGISTICS SUPPORT VESSEL) (AKHM/APHM/AGI)

Name	No	Builders	Commissioned
KONTRADMIRAL X CZERNICKI	511	Northern Shipyard, Gdansk	1 Sep 2001

Displacement, tons: 2,250 full load
Dimensions, feet (metres): 242.1 × 45.3 × 14.1 (73.8 × 13.8 × 4.3)
Main machinery: 2 Cegielski-Sulzer AL25D diesels; 2,934 hp(m) (2.16 MW) sustained; 2 shafts
Speed, knots: 14.1
Range, n miles: 7,000 at 12 kt
Complement: 38
Military lift: 140 troops with full individual armament or ten 20 ft containers or four 20 ft containers and six STAR 266 army trucks
Missiles: SAM/Guns. 1 ZU 23-2MR Wrobel I/II mounts: combination of 2 Strela 2M (Grail) missiles and 2—23 mm guns.
Countermeasures: Decoys: 4 WNP81/9 9-barrelled 81 mm Jastrzab chaff launchers.
ESM: PIT intercept
Radars: Surface search. SRN; E/F-band
Navigation: SRN; I-band.
Helicopters: Platform for 1 helicopter (up to 10 ton).

Comment: Conversion from a Project 130 Degaussing Vessel to Logistic Support Ship in Northern Shipyard, Gdansk, included new upper and forward hull sections, provision of a helicopter deck and NBC protection. The ship has a 16 ton hydraulic crane and after ramp. The multirole ship is capable of sealift, acting as a forward maintenance unit and maritime surveillance and reconnaissance (using containerised ESM sensors) and replenishment at sea. Based at Swinoujscie.



KONTRADMIRAL X CZERNICKI 3/2006, Frank Findler / 1154318

1 BALTYK CLASS (PROJECT ZP 1200) (TANKER) (AORL)

Name	No	Builders	Commissioned
BALTYK	Z 1	Naval Shipyard, Gdynia	11 Mar 1991

Displacement, tons: 2,937 standard; 3,049 full load
 Dimensions, feet (metres): 278.2 x 43 x 15.4 (84.8 x 13.1 x 4.7)
 Main machinery: 2 Cegielski 8 ASL 25 diesels, 4,025 hp(m) (2.96 MW); 2 shafts; cp props
 Speed, knots: 15
 Range, n miles: 4,250 at 12 kt
 Complement: 34 (4 officers)
 Cargo capacity: 1,184 tons fuel, 92.7 tons lub oil
 Guns: 4 ZU-23-2M Wrobel 23 mm (2 twm)
 Radars: Navigation: SRN 7453 and SRN 207A; I-band

Comment: Beam replenishment stations, one each side. First of a projected class of four, of which the others were cancelled. Based at Gdynia.



BALTYK 1/2008, J Cisiak / 1353268

1 MOSKIT CLASS (PROJECT B 199) (TANKER) (AOTL)

Name	No	Builders	Launched	Commissioned
MEDUZA	Z 8	Rzeczna, Wroclaw Shipyard	14 Sep 1969	21 July 1970

Displacement, tons: 1,225 full load
 Dimensions, feet (metres): 190.3 x 30.5 x 10.8 (58 x 9.3 x 3.3)
 Main machinery: 1 Magdeburg diesel, 965 hp(m) (720 kW); 1 shaft
 Speed, knots: 10
 Range, n miles: 1,200 at 10 kt
 Complement: 21 (3 officers)
 Cargo capacity: 656.5 tons
 Guns: 4 ZU-23-2M 23 mm (2 twm)
 Radars: Navigation: TRN 823; I-band

Comment: Z 3 decommissioned in 2007. Based at Swinoujscie.



MEDUZA 7/2004, J Cisiak / 1044484

1 KORMORAN CLASS (YPT)

No	Builders	Launched	Commissioned
K 8	Naval Shipyard, Gdynia	26 Aug 1970	3 July 1971

Displacement, tons: 150 full load
 Dimensions, feet (metres): 114.8 x 19.7 x 5.2 (35 x 6 x 1.6)
 Main machinery: 2 Type M 50F5 diesels; 2,200 hp(m) (1.6 MW); 2 shafts
 Speed, knots: 19
 Range, n miles: 550 at 15 kt
 Complement: 24
 Guns: 2 ZU-23-2M Wrobel 23 mm (twin)
 Radars: Navigation: SRN 206/301; I-band

Comment: Armament updated in 1993. Both based at Gdynia.



K 8 6/2008, J Cisiak / 1353272

2 MROWKA CLASS (PROJECT B 208) (DEGAUSSING VESSELS) (YDG)

Name	No	Builders	Commissioned
WRONA	SD 11	Naval Shipyard, Gdynia	10 Oct 1971
-	SD 13	Naval Shipyard, Gdynia	16 Dec 1972

Displacement, tons: 660 full load
 Dimensions, feet (metres): 144.4 x 26.6 x 9.5 (44 x 8.1 x 2.9)
 Main machinery: 1 6NV D36 diesel, 957 hp(m) (704 kW); 1 shaft
 Speed, knots: 9.5 Range, n miles: 2,230 at 9.5 kt
 Complement: 37
 Guns: 2—25 mm (twin) (SD 11 and 13); 2 ZU-23-2M Wrobel 23 mm (twin) (SD 12).
 Radars: Navigation: SRN 206; I-band

Comment: SD 12 decommissioned in 2005. SD 11 based at Swinoujscie and SD 13 based at Gdynia



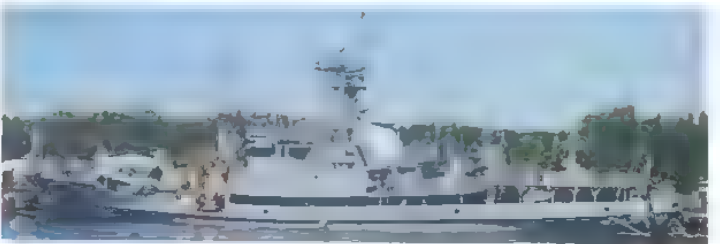
SD 13 5/2008, J Cisiak / 1353269

2 PIAST CLASS (PROJECT 570M) (SALVAGE SHIPS) (ARS)

Name	No	Builders	Commissioned
PIAST	281	Northern Shipyard, Gdansk	26 Jan 1974
LECH	282	Northern Shipyard, Gdansk	30 Nov 1974

Displacement, tons: 1,887 full load
 Dimensions, feet (metres): 238.5 x 39.0 x 13.4 (72.7 x 11.9 x 4.1)
 Main machinery: 2 Zgoda-Sulzer 6TD48 diesels; 3,300 hp(m) (2.43 MW) sustained; 2 shafts; cp props
 Speed, knots: 15 Range, n miles: 3,000 at 12 kt
 Complement: 56 (8 officers) plus 12 spare
 Missiles: SAM 2 Fasta 4M twin launchers for SA-N-5.
 Guns: 4—25 mm (2 twm).
 Radars: Navigation: 2 SRN 7453 Nogat; I-band

Comment: Basically a Morna class hull with towing and firefighting capabilities. Ice-strengthened hulls. Wartime role as hospital ships. Carry three-man diving bells capable of 100 m depth and a decompression chamber. ROV added and other salvage improvements made in 1997/98. Based at Gdynia. Guns may not be carried.



PIAST 6/2008, J Cisiak / 1353270

2 ZBYSZKO CLASS (PROJECT B 823) (SALVAGE SHIPS) (ARS)

Name	No	Builders	Commissioned
ZBYSZKO	R 14	Ustka Shipyard	8 Nov 1991
MACKO	R 15	Ustka Shipyard	20 Mar 1992

Displacement, tons: 380 full load
 Dimensions, feet (metres): 114.8 x 26.2 x 9.8 (35 x 8 x 3)
 Main machinery: 1 Sulzer 6AL20/24D; 750 hp(m) (551 kW); 1 shaft
 Speed, knots: 11. Range, n miles: 3,000 at 10 kt
 Complement: 15
 Radars: Navigation: SRN 402X; I-band.

Comment: Type B-823 ordered 30 May 1988. Carries a decompression chamber and two divers. Mobile gantry crane on the stern. Based at Gdynia.



MACKO 5/2008, J Cisiak / 1353271

1 TRANSPORT CRAFT (PROJECT MS-3600) (YFB)

M 1

Displacement, tons: 74 full load
 Dimensions, feet (metres): 94.2 x 19 x 4.3 (28.7 x 5.8 x 1.3)
 Main machinery: 3 M50F5 diesels; 3,600 hp(m) (2.65 MW); 3 shafts
 Speed, knots: 27
 Complement: 7 plus 30
 Radars: Navigation: SRN 207A; I-band

Comment: Can be used as emergency patrol craft. Based at Gdynia as an Admirals' launch



M1 5/2007, J Ciślak / 1165603

6 MISCELLANEOUS HARBOUR CRAFT (YFB)

B 3 B 7 B 11 M 12 M 21 M 22

Comment: M numbers are patrol launches, B numbers are freighters and oil lighters.



M 22 6/2008*, J Ciślak / 1353273



B 7 6/2008*, J Ciślak / 1353774

TUGS

2 H 960 CLASS (ATA)

H 8 H 8

Displacement, tons: 340 full load
 Dimensions, feet (metres): 91.2 x 26.2 x 12.1 (27.8 x 8 x 3.7)
 Main machinery: 1 Sulzer GATL 25 D diesels; 1,306 hp(m) (960 kW); 1 shaft
 Speed, knots: 12. Range, n miles: 1,150 at 12 kt
 Complement: 17 (1 officer)
 Radars: Navigation: SRN 401 XTA; I-band.

Comment: Built at Nauta Ship Repair Yard, Gdynia and commissioned 25 September 1992 and 19 March 1993 respectively. Based at Swinoujscie (H 8) and Gdynia (H 8)



H 8 6/2008*, J Ciślak / 1353275

5 HARBOUR TUGS (PROJECTS H 900, H 800, H 820) (YTB/YTM)

H 4 (Project 900) H 5 (Project 900) H 7 (Project 900) H 9 (Project 820) H 10 (Project 820)

Displacement, tons: 218 full load
 Dimensions, feet (metres): 84 x 22.3 x 11.5 (25.6 x 6.8 x 3.5)
 Main machinery: 1 Cegielski-Sulzer 6AL20/24H diesel; 935 hp(m) (687 kW); 1 shaft
 Speed, knots: 11. Range, n miles: 1,500 at 10 kt
 Complement: 17
 Radars: Navigation: SRN 206; I-band

Comment: Details given are for H 4, 5 and 7. Completed 1979-81. Have firefighting capability except H 9-10. H 9-10 completed in 1993



H 5 10/2007, J Ciślak / 1166506

SEA DETACHMENT OF THE BORDER GUARD (MOSG)

Headquarters Appointments

Commandant MOSG:
 Captain Piotr Stocki
 Deputy Commandant
 Commander Wojciech Heninborch
 Deputy Commandant:
 Commander Roman Słowiński

Bases

Gdansk (HO and Kaszubski Division)
 Swinoujscie (Pomorski Division)

General

MOSG (Morski Oddział Strazy Granicznej) formed on 1 August 1991. Vessels have blue hulls with red and yellow striped insignia. Superstructures are painted white. The use of ships' names was discontinued in 2004. MOSG also operates one PZL M 20 Mewa, one W-3 AM Anakonda helicopter and one M-28 Skytruck.

PATROL FORCES

2 KAPER CLASS (PROJECT SKS-40) (LARGE PATROL CRAFT) (WPB)

No	Builders	Commissioned
SG-311	Wisla Yard, Gdansk	21 Jan 1991
SG-312	Wisla Yard, Gdansk	3 Apr 1992

Displacement, tons: 470 full load
 Dimensions, feet (metres): 139.4 x 27.6 x 9.2 (42.5 x 8.4 x 2.8)
 Main machinery: 2 Sulzer BATL25/30 diesels, 4,720 hp(m) (3.47 MW); 2 shafts; cp props
 Speed, knots: 17. Range, n miles: 2,800 at 14 kt
 Complement: 15
 Guns: 2 - 7.62 mm MGs
 Radars: SRN 207; I-band
 Navigation: Racal Decca; I-band.

Comment: Kaper I completed at Wisla Yard, Gdansk in January 1991, Kaper II on 1 October 1994. Have Simrad fish-finding sonars fitted. Used for Fishery Protection. 311 based at Gdansk and 312 at Kołobrzeg.



SG-311 5/2004, J Ciślak / 1044493

**6 WISLOKA CLASS (PROJECT 90)
(COASTAL PATROL CRAFT) (WPB)**

SG-142 SG-144-146 SG-150 SG-152

Displacement, tons: 45 full load
Dimensions, feet (metres): 69.6 × 14.8 × 5.2 (21.2 × 4.5 × 1.6)
Main machinery: 2 Wola 31 ANM28 H12A diesels; 1,000 hp(m) (735 kW); 2 shafts
Speed, knots: 18
Range, n miles: 300 at 18 kt
Complement: 6
Guns: 2 – 12.7 mm MGs (twin).
Radars: Surface search: SRN 207, I-band.

Comment: Built at Wisla Shipyard, Gdansk and completed between October 1973 and August 1977. Three are based at Gdansk and three at Swinoujscie.



SG-152 4/2004, Hartmut Ehlers / 1044494

1 PATROL LAUNCH (PROJECT M-35) (WYFL)

SG 036

Displacement, tons: 41 full load
Dimensions, feet (metres): 35.3 × 14.4 × 5.2 (10.7 × 4.4 × 1.6)
Main machinery: 1 Wola DM 150 diesel; 150 hp (112 kW)
Speed, knots: 8
Complement: 4

Comment: Built in 1985. Similar to those in Polish naval service.



SG 036 3/2006, J Ciślak / 1164431

**6 SPORTIS CLASS (PROJECT 7500)
(FAST INTERCEPT CRAFT) (WPBF)**

SG-002-007

Displacement, tons: 2
Dimensions, feet (metres): 24.6 × 9.2 × 1.3 (7.5 × 2.8 × 0.4)
Main machinery: Volvo Penta 230 hp (170 kW)
Speed, knots: 42
Complement: 3

Comment: Built in Bojano in 1996. Four craft are to be replaced by 9.5 m fast intercept craft in late 2009.



SG-007 3/2006, J Ciślak / 1164430

1 PATROL CRAFT (PROJECT MI-6) (WPB)

SG-008

Displacement, tons: 16
Dimensions, feet (metres): 42.7 × 12.14 × 3.6 (13.0 × 3.7 × 1.1)
Main machinery: 1 Wola; 200 hp (147 kW); 1 shaft
Speed, knots: 11
Complement: 4

Comment: Harbour craft built at Wisla Shipyard, Gdansk, 1989.



SG-008 3/2006, J Ciślak / 1164429

4 IC 16 M III (PBF)

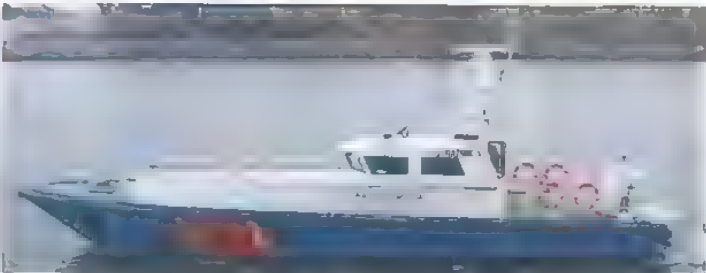
SG 213-216

Displacement, tons: 19 full load
Dimensions, feet (metres): 52.2 × 13.0 × 2.95 (15.9 × 3.96 × 0.9)
Main machinery: 2 Scania diesels; 1,580 hp(m) (1.18 MW); 2 Rolls-Royce FF 410 waterjets
Speed, knots: 42 Range, n miles: 330 at 32 kt
Complement: 4
Radars: Surface search: Furuno M 1934C; I-band.

Comment: Four ordered from Dockstavarvet, Sweden and entered into service October-November 2007.



SG-213 6/2008, J Ciślak / 1353278



SG-215 10/2007, J Ciślak / 1166609

2 STRAZNIK CLASS (PROJECT SAR-1500) (WPBF)

No	Builders	Commissioned
SG-211	Damen Yard, Gdynia	28 Apr 2000
SG-212	Damen Yard, Gdynia	7 July 2000

Displacement, tons: 26
Dimensions, feet (metres): 49.9 × 17.7 × 2.95 (15.2 × 5.39 × 0.90)
Main machinery: 2 MAN D2848 diesels; 1,360 hp (1,000 kW); water jet system
Speed, knots: 35 Range, n miles: 200 at 30 kt
Complement: 4 (1 officer)
Guns: 1 – 7.62 mm MG
Radars: Surface search: SIMRAD, I-band.

Comment: Contract between MOSG and Damen Shipyard signed 5 October 1999. Based on Dutch SAR 1500 lifeboat. Hull and superstructure of aluminium alloy



SG-211 10/2007, J Ciślak / 1166607

**6 MODIFIED SPORTIS CLASS (PROJECT S-6100)
(FAST INTERCEPT CRAFT) (WPBF)**

SG 061-066

Displacement, tons: 19
Dimensions, feet (metres): 20.0 x 7.5 x 1.3 (6.1 x 2.3 x 0.4)
Main machinery: 2 Johnson outboard motors; 120 hp (89.6 kW)
Speed, knots: 35
Complement: 2

Comment: Built at Bojano in 2001. Located at Border units along the coast.



SG 063

6/2003, MOSG / 0567506

2 GRIFFON 2000 TDX CLASS (HOVERCRAFT) (UCAC)

SG 411-412

Displacement, tons: 3.5 full load
Dimensions, feet (metres): 39.0 x 15.7 (11.9 x 4.8)
Main machinery: 1 Deutz BF 8M 1015 CP diesel, 442 hp (330 kW)
Speed, knots: 30
Range, n miles: 450 at 35 kt
Complement: 3
Radars: Navigation: SIMRAD RA 83P; I-band.

Comment: Built by Griffon Hovercraft, Southampton and delivered in 2006. Aluminium hull. Employed as patrol craft in shallow waters and rivers.



SG 411

6/2008*, J Ciśiak / 1363211



Portugal

MARINHA PORTUGUESA

Country Overview

The Republic of Portugal is situated in south-western Europe in the western portion of the Iberian Peninsula. It is bordered to the north and east by Spain and has a 967 n mile coastline with the Atlantic Ocean. The Azores and Madeira Islands in the Atlantic are integral parts of the republic, the total area of which is 35,553 square miles. Lisbon is the capital, largest city and principal port. There are further ports at Leixões (near Oporto), Setúbal, and Funchal. (Madeira) Territorial seas (12 n miles) and an EEZ (200 n miles) are claimed.

Headquarters Appointments

Chief of Naval Staff:
 Admiral Fernando José Ribeiro de Melo Gomes
Deputy Chief of Naval Staff:
 Vice Admiral Rui Cardoso de Telles Palhinha
Naval Commander:
 Vice Admiral José Carlos Torrado Saldanha Lopes
Azores Maritime Zone Commander:
 Rear Admiral Agostinho Ramos da Silva
Madeira Maritime Zone Commander:
 Captain António Manuel de Carvalho Coelho Cândido
Marine Corps Commander:
 Rear Admiral Luís Miguel de Matos Cortes Piccolochi

Diplomatic Representation

Defence and Naval Attaché in Dublin and The Hague:
 Lieutenant Colonel Jorge Manuel da Costa Ramos
Defence Attaché in Washington and Ottawa:
 Captain Carlos Nelson Lopes da Costa
Defence Attaché in Luanda, Kinshasa, Brazzaville and Windhoek:
 Colonel Jorge Dias Teixeira
Defence Attaché in Maputo, Lillongwe, Harare and Dar-Es-Salam:
 Colonel Joaquim Humberto Arnaga da Câmara Stone
Defence Attaché in Madrid, Cairo and Athens:
 Captain António Manuel Henriques Gomes
Defence Attaché in S. Tome and Libreville:
 Captain João Francisco Franco Facada

Diplomatic Representation — continued

Defence Attaché in Bissau, Conakry and Dakar:
 Colonel Francisco António Coelho Nogueira
Defence Attaché in Brasilia:
 Colonel Jorge Esteves Pereira Nunes dos Santos
Defence Attaché in Berlin, Prague, Copenhagen, Stockholm and Oslo:
 Lieutenant Colonel José Fernando Alves Gaspar
Defence Attaché in Warsaw, Budapest, Kiev, Bucharest and Bratislava:
 Colonel José Carlos de Almeida Marques
Defence Attaché in Canberra, Dili and Jakarta:
 Colonel Cipriano Fernando Mendes Figueiredo
Defence Attaché in Paris, Luxembourg and Brussels:
 Colonel Paulo José Reis Mateus
Defence Attaché in Rabat and Tunis:
 Colonel João Guilherme Machado Vieira
Defence Attaché in Praia:
 Colonel José António Sardinha Teles Alfaiça
Defence Attaché in Moscow and Sofia:
 Colonel Cláudio Martins Lopes
Défense Attaché in Rome, Tel-Aviv and Ankara:
 Lieutenant Colonel Eduardo Jorge Pontes de Albuquerque Faria

Personnel

2009: 10,100 (1,570 officers) including 1,350 marines

Marine Corps

2 battalions, 1 special operations detachment, 1 naval police unit

Naval

Main Base: Lisbon-Alferte
 Dockyard: Arsenal do Alfeite
 Fleet Support: Porto, Portimão, Funchal, Ponta Delgada, Tróia
 Air Base: Montijo (Lisbon)

Naval Air

The helicopter squadron was formally activated on 23 September 1993 at Montijo air force base, Lisbon. Operational and logistic procedures are similar to the air force.

Prefix to Ships' Names

NRP (Navio da Republica Portuguesa)

Strength of the Fleet

Type	Active (Reserve)	Building (Projected)
Submarines (Patrol)	1	2
Frigates	4	1
Corvettes	7	-
Patrol Craft	4	8
Coastal/River Patrol Craft	12	8
LPD		1
LCTs/LST	1	
Survey Ships and Craft	7	
Sail Training Ships	5	-
Replenishment Tanker	1	(1)
Buoy Tenders	2	2

DELETIONS**Submarines**

2005 *Delfim*

Frigates

2007 *Comandante Sacadura Cabral*
 2008 *Comandante Joao Belo*

PENNANT LIST**Submarines**

S 164 *Barracuda*

Frigates

F 330 *Vasco da Gama*
 F 331 *Alvares Cabral*
 F 332 *Corte Real*
 F 333 *Bartolomeu Dias*
 F 334 *D. Francisco da Almeida*

Corvettes

F 471 *Antonio Enes*
 F 475 *João Coutinho*
 F 476 *Jacinto Candido*
 F 477 *Gen. Pereira d'Eça*
 F 486 *Baptista de Andrade*

Patrol Forces

P 370 *Rio Minho*
 P 1140 *Cacina*
 P 1144 *Quanza*
 P 1146 *Zaire*
 P 1150 *Argos*
 P 1151 *Dragão*
 P 1152 *Escorpião*
 P 1153 *Cassiopeia*
 P 1154 *Hidra*
 P 1155 *Centauro*
 P 1156 *Orion*
 P 1157 *Pégaso*
 P 1158 *Sagitário*
 P 1161 *Save*

P 1165 *Águia*
 P 1167 *Cisno*

Amphibious Forces

LDG 203 *Bacamarte*

Service Forces

A 520 *Sagres*
 A 521 *Schultz Xavier*
 A 522 *D. Carlos I*
 A 523 *Almirante Gago Coutinho*
 A 5203 *Andromeda*
 A 5204 *Polar*
 A 5205 *Auriga*
 A 5210 *Berrio*
 UAM 201 *Crepula*
 UAM 813 *Bellatrix*
 UAM 814 *Canopus*

SUBMARINES

1 ALBACORA (DAPHNÉ) CLASS (SSK)

Name	No	Builders	Laid down	Launched	Commissioned
BARRACUDA	S 184	Dubigeon-Normandie, Nantes	19 Oct 1965	24 Apr 1967	4 May 1968

Displacement, tons: 869 surfaced; 1,043 dived
Dimensions, feet (metres): 189.6 × 22.3 × 17.1 (57.8 × 6.8 × 5.2)
Main machinery: Diesel-electric; 2 SEMT-Pielstick 12 PA4 V 185 diesels; 2,450 hp(m) (1.8 MW); 2 Jeumont Schneider alternators, 17 MW; 2 motors, 2,600 hp(m) (1.9 MW); 2 shafts
Speed, knots: 13.5 surfaced; 16 dived
Range, n miles: 2,710 at 12.5 kt surfaced, 2,130 at 10 kt snorting
Complement: 54 (7 officers)

Torpedoes: 12—21.7 in (550 mm) (8 bow, 4 stern) tubes. ECAN E14; anti-surface; passive homing to 12 km (6.6 n miles) at 25 kt; warhead 300 kg or ECAN L3; anti-submarine; active homing to 5.5 km (3 n miles) at 25 kt; warhead 200 kg. No reloads
Countermeasures: ESM ARUR, radar warning.
Weapons control: DLT D3 torpedo control.
Radars: Surface search Kelvin Hughes KH 1007; I band.
Sonars: Thomson Sintra DSUV 2; passive search and attack; medium frequency.

OUUA 2; active search and attack; 8.4 kHz.
L3 ELAK NAUTIK LOPAS 8300; passive search.

Modemisation: New radar fitted in 1993–94
Structure: Diving depth, 300 m (984 ft).
Operational: *Albacora* paid off mid 2000 and cannibalised for spares. *Delfin* decommissioned in 2005 and is to become a museum ship at Viana do Castelo. *Barracuda* expected to remain in service until December 2009.



BARRACUDA

9/2006, B Prázelin / 1153408



BARRACUDA

9/2006, B Prázelin / 1153409

0 + 2 TYPE 209PN CLASS (SSK)

Name	No	Builders	Laid down	Launched	Commissioned
TRIDENTE	S 170	Howaldtswerke, Kiel	7 Mar 2005	15 July 2008	2010
ARPAO	S 171	Howaldtswerke, Kiel	5 July 2008	2009	2011

Displacement, tons: 1,700 (surfaced); 1,970 (dived)
Dimensions, feet (metres): 222.8 × 20.7 × 21.8
 (679 × 6.3 × 6.8)
Main machinery: 2 MTU 16V 396 diesels; 5,600 hp (m)
 (4.17 MW); 1 Siemens Permasyn motor; 1 shaft; 2 HDW
 PEM fuel cells, 240 kW
Speed, knots: 20 (dived), 12 (surfaced)
Complement: 32 (5 officers)

Torpedoes: 8–21 in (533 mm) bow tubes, WASS Black
 Shark; wire (fibre optic cable)-guided; active/passive
 homing to 50 km (27 n miles) at 50 kt; warhead 250 kg.
 16 weapons including torpedoes and SSM

Countermeasures: To be announced
Weapons control: Atlas Elektronik ISUS 90/50
Radars: To be announced

Sonars: Cylindrical array with intercept passive array,
 passive range sonar, flank array and mine-avoidance
 sonar.

Programmes: Contract signed on 21 April 2004 with
 German Submarine Consortium (GSC) for construction
 and delivery of two boats with option for a third. The
 consortium consists of Howaldtswerke-Deutsche Werft,
 Kiel, Nordseewerke, Emden (NSWE) and Ferrostaal,
 Essen

Structure: Very similar to the Type 214 Air-Independent
 Propulsion (AIP) submarines under construction for
 Greece. Diving depth likely to be about 400 m (1,300 ft).

Operational: To form 5 Squadron on commissioning

TRIDENTE
 7/2008*, Michael Nitz
 1336040



FRIGATES

1 + 1 KAREL DOORMAN CLASS (FFGHM)

Name	No	Builders	Laid down	Launched	Commissioned
BARTOLOMEU DIAS (ex-Van Nes)	F 333 (ex-F 833)	Koninklijke Maatschappij De Scholde, Flushing	10 Jan 1990	16 May 1992	2 June 1994
D. FRANCISCO DA ALMEIDA (ex-Van Galen)	F 334 (ex-F 834)	Koninklijke Maatschappij De Scholde, Flushing	7 June 1990	21 Nov 1992	1 Dec 1994

Displacement, tons: 3,320 full load
Dimensions, feet (metres): 401.2 oa, 374.7 wl × 47.2 × 14.1
 (122.3; 114.2 × 14.4 × 4.3)
Flight deck, feet (metres): 72.2 × 47.2 (22 × 14.4)
Main machinery: CODOG; 2 RR Spey SM1C; 33,800 hp
 (25.2 MW) sustained; 2 Stork-Wärtsilä 12SW280 diesels,
 9,790 hp (m) (7.2 MW) sustained; 2 shafts, LIPS cp props
Speed, knots: 30 (Speys); 21 (diesels)
Range, n miles: 5,000 at 18 kt
Complement: 156 (16 officers) (accommodation for 163)

Missiles: SSM. 8 McDonnell Douglas Harpoon Block 1C
 (2 quad) launchers ●; active radar homing to 130 km
 (70 n miles) at 0.9 Mach, warhead 227 kg

SAM Raytheon Sea Sparrow Mk 48 vertical launchers ●;
 semi-active radar homing to 14.6 km (8 n miles) at 2.5
 Mach, warhead 39 kg, 16 missiles. Canisters mounted on
 port side of hangar.

Guns: 1–3 in (76 mm)/62 OTO Matara compact Mk 100 ●;
 100 rds/min to 16 km (8.6 n miles) anti-surface; 12 km
 (6.5 n miles) anti-aircraft; weight of shell 6 kg. 1 Signaal
 SGE-30 Goalkeeper with General Electric 30 mm
 7-barrelled ●; 4,200 rds/min combined to 2 km. 2 Oerlikon
 20 mm; 800 rds/min to 2 km

Torpedoes: 4–324 mm US Mk 32 Mod 9 (2 twin) tubes
 (mounted inside the after superstructure) ●. Honeywell
 Mk 46 Mod 5; anti-submarine; active/passive homing to
 11 km (5.9 n miles) at 40 kt; warhead 44 kg

Countermeasures: Decoys: 2 Loral Hycor SRBOC 8-tubed
 fixed Mk 36 quad launchers, IR flares and chaff to 4 km
 (2.2 n miles).
 SLQ-25 Nixie towed torpedo decoy.

ESM/ECM: Argo APECS II (includes AR 700) ESM) ●;
 intercept and jammers.

Combat data systems: Signaal SEWACO VIB action data
 automation; Link 11. SATCOM ●. WSC-6 twin serials.

Weapons control: Signaal IRSCAN infra-red detector.
 Signaal VESTA helo transponder.

Radars: Air/surface search: Signaal SMART ●; 3D, F-band.
 Air search: Signaal LW08 ●; D-band
 Surface search: Signaal Scout ●; I-band.
 Navigation: Racal Decca 1226; I-band.

Fire control: 2 Signaal STIR ●; I/J/K-band; range 140 km
 (76 n miles) for 1 m² target.

Sonars: Signaal PHS-36, hull-mounted; active search and
 attack; medium frequency.
 Thomson Sintra Anaconda DSBV 61; towed array;
 passive low frequency.

Helicopters: 1 Super Sea Lynx Mk 95 ●.

Programmes: The Declaration of Intent to purchase two ex-
 Netherlands frigates was announced on 1st November
 2006. The ships are to replace the João Belo-class
 frigates. This is to be followed by a contract for the
 supply of the two ships, a support package, weapons
 transfer, joint upgrades and crew training. Ex-Van Nes
 transferred in late 2008 and ex-Van Galen is to transfer
 on 1 November 2009.



BARTOLOMEU DIAS

(Scale 1 : 1,200), Ian Sturton / 1154924

BARTOLOMEU DIAS

7/2008*, A A de Kruijf / 1336039

Modernisation: A modernisation package is expected to be
 implemented before transfer.

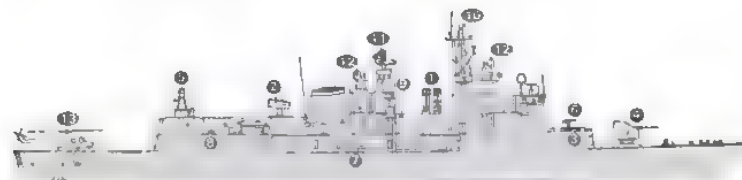
Structure: The VLS SAM is similar to Canadian Hawkfish and
 Greek MEKO classes. The ship is designed to reduce radar

and IR signatures and has extensive NBCD arrangements.
 Full automation and roll stabilisation fitted. The APECS
 jammers are mounted starboard forward of the bridge
 and port aft corner of the hangar.

3 VASCO DA GAMA (MEKO 200 PN) CLASS (FFGH)

Name	No	Builders	Laid down	Launched	Commissioned
VASCO DA GAMA	F 330	Blohm + Voss, Hamburg	1 Feb 1989	26 June 1989	18 Jan 1991
ALVARES CABRAL	F 331	Howaldtswerke, Kiel	2 June 1989	6 June 1990	24 May 1991
CORTE REAL	F 332	Howaldtswerke, Kiel	24 Nov 1989	6 June 1990	22 Nov 1991

Displacement, tons: 2,700 standard; 3,300 full load
Dimensions, feet (metres): 380.3 oa; 357.6 pp x 48.7 x 20 (115.9; 109 x 14.8 x 6.1)
Main machinery: CODLOG; 2 GE LM 2500 gas turbines; 53,000 hp (39.5 MW) sustained; 2 MTU 12V 1163 TB83 diesels; 8,840 hp (m) (6.5 MW); 2 shafts, cp props
Speed, knots: 32 gas; 20 diesel
Range, n miles: 4,900 at 18 kt; 9,600 at 12 kt
Complement: 182 (23 officers) (including aircrew of 16 (4 officers)) plus 16 Flag Staff



VASCO DA GAMA

(Scale 1 : 1,200), Ian Sturton / 0567520

Missiles: SSM. 8 McDonnell Douglas Harpoon (2 quad) launchers; active radar homing to 130 km (70 n miles) at 0.9 Mach, warhead 227 kg.
SAM Raytheon Sea Sparrow Mk 29 Mod 1 octuple launcher; RIM-7MP; semi-active radar homing to 16 km (8.5 n miles) at 2.5 Mach; warhead 38 kg. Space left for VLS Sea Sparrow.
Guns: 1 Creusot-Loire 3.9 in (100 mm)/55 Mod 68 CADAM; 60 rds/min to 17 km (9 n miles) anti-surface; 8 km (4.4 n miles) anti-aircraft; weight of shell 13.5 kg.
 1 General Electric/General Dynamics Vulcan Phalanx 20 mm Block 1B; 6 barrels per mounting, 3,000 rds/min combined to 1.5 km.
 2 Oerlikon 20 mm (on VLS deck) can be carried.
Torpedoes: 6 - 324 mm US Mk 32 (2 triple) tubes; Honeywell Mk 48 Mod 5, anti-submarine; active/passive homing to 11 km (5.9 n miles) at 40 kt; warhead 44 kg
Countermeasures: Decoys: 2 Loral Hycor Mk 36 SRBOC 6-barrelled chaff launchers; Sea Gnat.
 SLQ-25 Nixie, towed torpedo decoy.
ESM/ECM: APECS II; intercept and jammer.

Combat data systems: Signal SEWACO action data automation with STACOS tactical command; Link 11 and 14. Matra Marconi SCOT 3 SATCOM (1 set between 3 ships).
Weapons control: SWG 1A(V) for SSM. Vesta Helo transponder with datalink for OTHH.
Radars: Air search: Signal MW08 (derived from Smart 3D); 3D; G-band.
 Air/surface search: Signal DA08; F-band.
 Navigation: Kelvin Hughes Type 1007; I-band.
Fire control: 2 Signaal STIR; I/J/K-band; range 140 km (76 n miles) for 1 m² target.
 IFF Mk 12 Mod 4
Sonars: Computing Devices (Canada) SQS-510(V); hull-mounted; active search and attack; medium frequency.

a consortium of builders. As well as Portugal, which provided 40 per cent of the cost, assistance was given by NATO with some missile, CIWS and torpedo systems being provided by the US.
Modernisation: Full mid-life refits are planned 2011-2017. Upgrades are likely to include improvements to the combat data system, increased force protection capabilities and measures to counter asymmetric threats.
Structure: All-steel construction. Stab. lifiers fitted. Full RAS facilities. Space has been left for a sonar towed array and for VLS Sea Sparrow.
Operational: Designed primarily as ASW ships. SCOT SATCOM rotated between the three ships. 20 mm guns can be mounted on the VLS deck. Three year running cycles include 18 months at full readiness, three months training and six months refit.

Programmes: The contract for all three was signed on 25 July 1986. These are Meko 200 type ordered from



VASCO DA GAMA

6/2008, M Declerck / 1335419



VASCO DA GAMA

5/2008, Harald Carstens / 1335418



ALVARES CABRAL

9/2008, J Brodie / 1335488

CORVETTES

3 BAPTISTA DE ANDRADE CLASS (FSH)

Name	No	Builders	Laid down	Launched	Commissioned
BAPTISTA DE ANDRADE	F 486	Empresa Nacional Bazán, Cartagena	1 Sep 1972	13 Mar 1973	19 Nov 1974
JOÃO ROBY	F 487	Empresa Nacional Bazán, Cartagena	1 Dec 1972	3 June 1973	18 Mar 1975
AFONSO CERQUEIRA	F 488	Empresa Nacional Bazán, Cartagena	10 Mar 1973	6 Oct 1973	26 June 1975

Displacement, tons: 1,203 standard; 1,380 full load

Dimensions, feet (metres): 277.5 × 33.8 × 10.2
(84.6 × 10.3 × 3.1)

Main machinery: 2 OEW Pielstick 12 PC2.2 V 400 diesels;
12,000 hp(m) (8.82 MW) sustained; 2 shafts

Speed, knots: 22

Range, n miles: 5,900 at 18 kt

Complement: 71 (7 officers)

Guns: 1 Creusot-Loire 3.9 in (100 mm)/55 Mod 1968, 80 rds/min to 17 km (9 n miles) anti-surface; 8 km (4.4 n miles) anti-aircraft; weight of shell 13.5 kg.
2 Bofors 40 mm/70; 300 rds/min to 12 km (6.6 n miles); weight of shell 0.96 kg.

Radars: Navigation: 1 Racal Decca RM 316P and 1 KH 5000 Nucleos 2; I-band.

Helicopters: Platform only.

Programmes: Reclassified as corvettes.

Modernisation: Communications equipment updated 1988-91. Previous modernisation programme was abandoned in 1998. Between 1999 and 2001 ASW and weapons control systems removed.

Operational: Class is used for Maritime Law Enforcement/SAR/Fishery Protection and for Humanitarian Operations. To be replaced by Viana do Castelo class by 2019. To be decommissioned 2009-18.



AFONSO CERQUEIRA

7/2007, A A de Kruif / 1166896



JOÃO ROBY

7/2007, Michael Nitz / 1166895

4 JOÃO COUTINHO CLASS (FSH)

Name	No	Builders	Laid down	Launched	Commissioned
ANTONIO ENES	F 471	Empresa Nacional Bazán, Cartagena	10 Apr 1968	16 Aug 1969	18 June 1971
JOÃO COUTINHO	F 475	Blohm + Voss, Hamburg	24 Dec 1968	2 May 1969	28 Feb 1970
JACINTO CANDIDO	F 476	Blohm + Voss, Hamburg	10 Feb 1969	16 June 1969	29 May 1970
GENERAL PEREIRA D'EÇA	F 477	Blohm + Voss, Hamburg	21 Apr 1969	28 July 1969	10 Oct 1970

Displacement, tons: 1,203 standard; 1,380 full load

Dimensions, feet (metres): 277.5 × 33.8 × 10.8
(84.6 × 10.3 × 3.3)

Main machinery: 2 OEW Pielstick 12 PC2.2 V 400 diesels;
12,000 hp(m) (8.82 MW) sustained; 2 shafts

Speed, knots: 22 Range, n miles: 5,900 at 18 kt

Complement: 70 (7 officers)

Guns: 2 US 3 in (76 mm)/50 (twin) Mk 33; 50 rds/min to 12.8 km (7 n miles); weight of shell 6 kg.

2 Bofors 40 mm/60 (twin); 300 rds/min to 12 km (6.6 n miles); weight of shell 0.89 kg.

Weapons control: Mk 51 GFCS for 40 mm.

Radars: Air/surface search; Kelvin Hughes 1007; I-band.

Navigation: Racal Decca RM 1226C; I-band.

Helicopters: Platform only.

Programmes: Reclassified as corvettes.

Modernisation: A programme for this class to include SSM and PDMS has been shelved. In 1989-91 the main radar was updated and SATCOM (INMARSAT) installed. Also fitted with SIFICAP which is a Fishery Protection data exchange system by satellite to the main database ashore.

Operational: A/S equipment no longer operational and laid apart on shore. Crew reduced as a result. To be replaced by Viana do Castelo class by 2019. To be decommissioned 2009-18.



ANTONIO ENES

12/2007, Diego Quevedo / 1335417

SHIPBORNE AIRCRAFT

Notes: Procurement of three further Lynx helicopters is under consideration. Options include Mk 95 aircraft, Super Lynx 300 (including upgrade of current aircraft) or second-hand aircraft.

Numbers/Type: 5 Westland Super Navy Lynx Mk 95
Operational speed: 125 kt (231 km/h).
Service ceiling: 12,000 ft (3,660 m).
Range: 320 n miles (593 km).
Role/Weapon systems: Ordered 2 November 1980 for MEKO 200 frigates; two are updated HAS 3 and three were new aircraft, all delivered in August and November 1993. Sensors: Bendix 1500B radar; Bendix AQS-18V dipping sonar; Racal RNS 252 datalink. Weapons: Mk 46 torpedoes, 1–12.7 mm MG



SUPER LYNX 9/2002, H M Steele / 0534127

LAND-BASED MARITIME AIRCRAFT

Notes: All Air Force manned

Numbers/Type: 5/2 CASA C-212-200 Aviocar/C-212 300 Aviocar.
Operational speed: 190 kt (353 km/h).
Service ceiling: 24,000 ft (7,315 m).
Range: 1,650 n miles (3,095 km).
Role/Weapon systems: The first five are for short-range SAR support and transport operations. The last pair were ordered in February 1993 for maritime patrol and fisheries surveillance off the Azores and Madeira. Sensors: Search radar and MAD. FLIR and datalink (last pair). Weapons: Unarmed.



CASA 212 6/2001, Adolfo Ortigueira GH / 0529552

Numbers/Type: 6 Lockheed P-3 CUP Orion.
Operational speed: 410 kt (760 km/h).
Service ceiling: 29,300 ft (8,925 m).
Range: 4,000 n miles (7,410 km).
Role/Weapon systems: Five P-3P long-range surveillance aircraft acquired from Australia and modernised to 3P standard in 1987. These aircraft have been replaced by five P-3 CUP aircraft acquired from the Netherlands in 2005. Contract signed with Lockheed Martin on 3 January 2008 for upgrade work on all five aircraft. This is to include upgrade of the mission system and provision of improved ESM, acoustic processing, communications and sensor systems. First upgraded aircraft to be delivered late 2009 and programme to be completed by late 2012. Sensors: APS-134/137 radar, ASQ-81 MAD, AQS-901 sonobuoy processor, AQS-114 computer, IFF, ALR-66 ECM/ESM. Weapons: ASW, eight Mk 46 torpedoes, depth bombs or mines, ASV; 10 underwing stations for Harpoon.



P-3 CUP 2/2006, Portuguese Airforce / 1130518

Numbers/Type: 6/2/4 AgustaWestland EH 101 Mk 514/Mk 515/Mk 516.
Operational speed: 160 (296 km/h).
Service ceiling: 15,000 ft (4,572 m).
Range: 550 n miles (1,019 km).
Role/Weapon systems: Contract in 2001 for a total of 12 utility variants of the EH 101. Six Mk 514 are configured for SAR duties, two Mk 515 for fishery protection and four Mk 516 for Combat SAR. The aircraft are designed for rapid role-change. Military lift is 28 troops and up to four tonnes underslung. Sensors: Galileo search radar, FLIR and defensive aids suite. Weapons: unarmed.



EH 101 6/2007, Portuguese Navy / 1166094

PATROL FORCES

2 + 2 (6) VIANA DO CASTELO (NPO 2000) CLASS (PSOH)

Name	No	Builders	Commissioned
VIANA DO CASTELO	P 360	Viana do Castelo Shipyards	Mar 2009
FIGUEIRA DA FOZ	P 361	Viana do Castelo Shipyards	June 2009
PONTEA DELGADA	P 362	Viano do Castelo Shipyards	2011
SINES	P 363	Viano do Castelo Shipyards	2012

Displacement, tons: 1,716 full load
Dimensions, feet (metres): 272.6 × 42.5 × 12.1 (83.1 × 12.95 × 3.69)
Main machinery: 2 Wärtsilä 12V 26 diesels; 10,480 hp (7.8 MW); 2 shafts
Speed, knots: 20
Range, n miles: 5,000 at 15 kt
Complement: 38 (5 officers)
Guns: 1 Bofors 40 mm/60. 2–12.7 mm MGs.
Weapons control: Sagem optronic director.
Radars: Surface search/navigation; 2 Kelvin Hughes; E/F/I-band.
Helicopters: Platform for one Lynx Mk 95

Comment: Designed for EEZ patrol duties. Contract on 15 October 2002 with Viana do Castelo Shipyards for two Offshore Patrol vessels. Construction started in 2003 and the first two ships were floated out on 1 October 2005; a further six are planned to be delivered by 2019 to replace the corvettes. Two further modified vessels, a Buoy Tender and a Pollution Control Ship, were ordered in May 2004 and are to be delivered in 2011 and 2012.



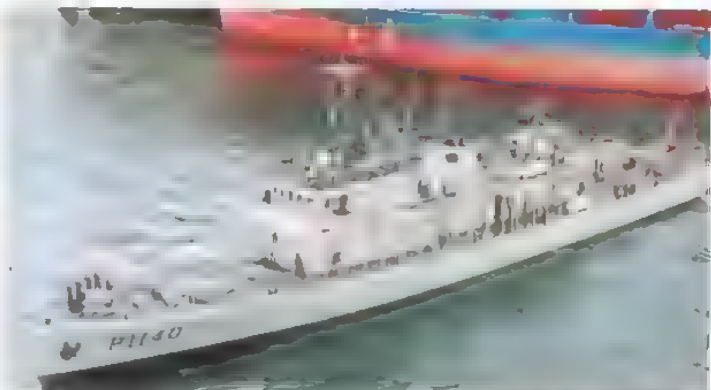
FIGUEIRA DA FOZ 6/2007, Massimo Anneti / 1166693

4 CACINE CLASS (LARGE PATROL CRAFT) (PBO)

Name	No	Builders	Commissioned
CACINE	P 1140	Arsenal do Alfeite	May 1969
QUANZA	P 1144	Estaleiros Navais do Mondego	May 1969
ZAIRE	P 1146	Estaleiros Navais do Mondego	Nov 1970
SAVE	P 1181	Arsenal do Alfeite	May 1973

Displacement, tons: 292.5 standard, 310 full load
Dimensions, feet (metres): 144 × 25.2 × 7.1 (44 × 7.7 × 2.2)
Main machinery: 2 MTU 12V 538 TB80 diesels; 3,750 hp(m) (2.76 MW) sustained; 2 shafts
Speed, knots: 20. **Range, n miles:** 4,400 at 12 kt
Complement: 33 (3 officers)
Guns: 1 Bofors 40 mm/60. 1 Oerlikon 20 mm/65.
Radars: Surface search: Kelvin Hughes Type 1007; I/J-band.

Comment: Originally mounted a second Bofors aft but most have been removed as has the 37 mm rocket launcher. Have SIFICAP satellite data handling system for Fishery Protection duties. An RIB is carried. Two of the class are based at Madeira on a two month rotational basis. Re-engined in 1992–94. To be decommissioned 2009–12 and replaced by LFC 2005 vessels from 2011.



CACINE 12/2003, Martin Mokrus / 1044180



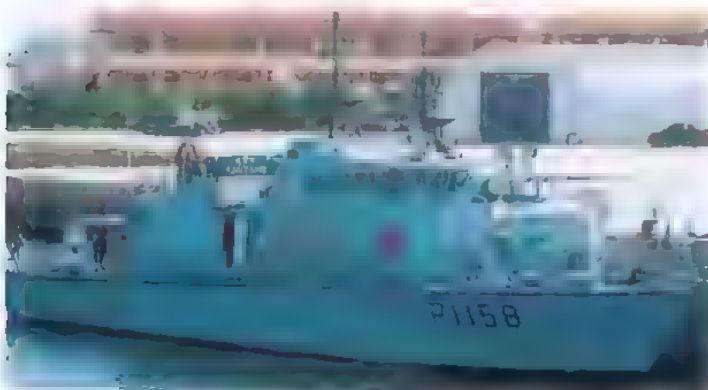
ZAIRE 5/2006, A A de Kruijff / 1040764

4 CENTAURO CLASS (RIVER PATROL CRAFT) (PBR)

Name	No	Builders	Commissioned
CENTAURO	P 1155	Arsenal do Alfeite	20 Mar 2000
ORION	P 1156	Arsenal do Alfeite	27 Mar 2001
PÉGASO	P 1157	Estaleiros Navais do Mondego	27 Mar 2001
SAGITARIO	P 1158	Estaleiros Navais do Mondego	27 Mar 2001

Displacement, tons: 89 full load
Dimensions, feet (metres): 93.2 × 19.5 × 4.6 (28.4 × 5.95 × 1.4)
Main machinery: 2 Cummins KTA-50-M2 diesels; 3,600 hp(m) (2.64 MW); 2 shafts
Speed, knots: 26. **Range, n miles:** 640 at 20 kt
Complement: 8 (1 officer)
Guns: 1 Oerlikon 20 mm/65.
Radars: 1 Furuno FCR 1411 MK3.

Comment: Similar to Argos class but of aluminium hull. Capable of full speed operation up to Sea State 3. Carries a semi-rigid boat with a 50 hp outboard engine. The boat is recoverable via a stern well at up to 10 kt. To be refitted 2012–13.



SAGITARIO 10/2006, Adolfo Ortigueira Gil / 1040677

2 ALBATROZ CLASS (RIVER PATROL CRAFT) (PBR)

Name	No	Builders	Commissioned
AGUIA	P 1165	Arsenal do Alfeite	28 Feb 1975
CISNE	P 1167	Arsenal do Alfeite	31 Mar 1976

Displacement, tons: 45 full load
Dimensions, feet (metres): 77.4 × 18.4 × 5.2 (23.6 × 5.6 × 1.6)
Main machinery: 2 Cummins diesels, 1,100 hp (820 kW); 2 shafts
Speed, knots: 20. **Range, n miles:** 2,500 at 12 kt
Complement: 8 (1 officer)
Guns: 1 Oerlikon 20 mm/65. 2–12.7 mm MGs
Radars: Surface search: Decca RM 316P, I-band

Comment: One other is used for harbour patrol duties. Two transferred to East Timor in 2001. Expected to be decommissioned 2012–13.



AGUIA 10/2006, Adolfo Ortigueira Gil / 1335470

5 ARGOS CLASS (RIVER PATROL CRAFT) (PBR)

Name	No	Builders	Commissioned
ARGOS	P 1150	Arsenal do Alfeite	2 July 1991
DRAGÃO	P 1151	Arsenal do Alfeite	18 Oct 1991
ESCORPIÃO	P 1152	Arsenal do Alfeite	26 Nov 1991
CASSIOPEIA	P 1153	Conafi	11 Nov 1991
HIDRA	P 1154	Conafi	18 Dec 1991

Displacement, tons: 94 full load
Dimensions, feet (metres): 89.2 × 19.4 × 4.6 (27.2 × 5.9 × 1.4)
Main machinery: 2 MTU 12V 396 TE84 diesels; 3,700 hp(m) (2.73 MW); sustained; 2 shafts
Speed, knots: 26. **Range, n miles:** 1,350 at 15 kt
Complement: 12 (1 officer)
Guns: 2–12.7 mm MGs (1150–1154).
Radars: Navigation: Furuno 1505 DA or Furuno FR 1411; I-band.

Comment: First five ordered in 1989 and 50 per cent funded by the EC. Of GRP construction, capable of full speed operation up to Sea State 3. Carries a RIB with a 37 hp outboard engine. The boat is recoverable via a stern well at up to 10 kt.



HIDRA 9/2007, Marco Ghigliano / 1170064

0 + 8 COASTAL (LFC 2005) PATROL CRAFT (PBO)

Displacement, tons: 660 full load
Dimensions, feet (metres): 196.5 × 32.4 × 8.8 (59.9 × 9.9 × 2.7)
Main machinery: 4 diesels; 12,100 hp (9 MW); 2 shafts
Speed, knots: 25. **Range, n miles:** To be announced
Complement: 20 (3 officers)
Guns: 1 Bofors 40 mm/60. 1–12.7 mm MG.
Weapons control: Optronic director.
Radars: To be announced.

Comment: Preliminary contract with Viana do Castelo Shipyard for the construction of eight patrol vessels was let on 19 December 2005. Designed for EEZ patrol and fishery protection, the ships are to replace the Cacine class and are to enter service 2011–14.



LFC (not to scale), Ian Sturton / 1154415

1 RIO MINHO CLASS (RIVER PATROL CRAFT) (PBR)

Name	No	Builders	Commissioned
RIO MINHO	P 370	Arsenal do Alfeite	1 Aug 1991

Displacement, tons: 72 full load
Dimensions, feet (metres): 73.5 × 19.7 × 2.6 (22.4 × 6 × 0.8)
Main machinery: 2 KHD-Deutz diesels, 664 hp(m) (488 kW); 2 Schottel pumpjets
Speed, knots: 9.5. **Range, n miles:** 420 at 7 kt
Complement: 8 (1 officer)
Guns: 1–7.62 mm MG.
Radars: Navigation. Furuno FR 1505DA; I-band.



RIO MINHO 6/2008*, Portuguese Navy / 1335421

AMPHIBIOUS FORCES

Notes: Four new LCMs are to be constructed as part of the LPD (NAVPOL) contract.

0 + 1 AMPHIBIOUS TRANSPORT SHIP (LPD)

Name	No	Builders	Laid down	Launched	Commissioned
ALFONSO DE ALBUQUERQUE	—	Viana do Castelo Shipyard	2012	2013	2014

Displacement, tons: 10,500 full load
Dimensions, feet (metres): 531.5 × 82.0 × 17.1 (162.0 × 26.0 × 5.2)
Flight deck, feet (metres): To be announced
Main machinery: Diesel-electric; 4 diesels; 18,775 hp (14 MW); 2 shafts
Speed, knots: 19. **Range, n miles:** 6,000 at 14 kt
Complement: 150
Military lift: 650 troops; 4 LCM, 76 vehicles (including 40 light armoured vehicles), 53 light inflatable boats, 3,000 m³ of storage space

Missiles: SAM. 2 RAM 21-cell/ Mk 49 launchers.
Guns: Medium calibre and CIWS.
Countermeasures: To be announced
Combat data systems: To be announced
Weapons control: To be announced
Radars: Air/surface search: 3D radar to be announced
Surface search: To be announced
Navigation: To be announced.

Helicopters: Landing spots for 4 EH-101 or 6 Lynx.

Programmes: The Portuguese Ministry of Defence signed a Declaration of Intentions on 16 February 2005 with ENVC Shipyard for the design and construction of a Landing Platform Dock (LPD). The contract is understood to be part of an offset agreement arising from the contract with the German Submarine Consortium for two Type 209PN submarines. The project is known as Navio Polivalente Logístico (NAVPOL). Construction of LCMs is understood to be included in the contract.

Structure: The design is very similar to the Scheide Enforcer 1300 and is to include a dock, flight deck, hangar, vehicle garage and hospital.

Operational: Following endorsement of the Portuguese National Defence Strategic Concept (NDSC) in 2003, the new LPD is to be the centrepiece of the future Portuguese Navy and is to be designed to support worldwide joint operations of national and allied armed forces, including humanitarian aid and/or disaster relief. The ship is to be capable of projecting and supporting a battalion of troops.



NAVPOL (Scale 1 : 1,500), Ian Sturton / 1153007

1 BOMBARDA CLASS (LCU)

Name	No	Builders	Commissioned
BACAMARTE	LDG 203	Arsenal do Alfeite	Dec 1985

Displacement, tons: 652 full load
 Dimensions, feet (metres): 184.3 x 38.7 x 6.2 (56.2 x 11.8 x 1.9)
 Main machinery: 2 MTU MB diesels; 910 hp(m) (669 kW); 2 shafts
 Speed, knots: 9.5 Range, n miles: 2,600 at 9 kt
 Complement: 21 (3 officers)
 Military lift: 350 tons
 Guns: 2 Oerlikon 20 mm.
 Radars: Navigation Decca RM 316P; I-band

Comment: Similar to French EDIC. To be decommissioned in 2015.



BACAMARTE 10/2008, Adolfo Ortigueira GN / 1040678

SURVEY SHIPS

2 STALWART CLASS (AGS)

Name	No	Builders	Commissioned
D. CARLOS I (ex-Audacious, ex-Dauntless)	A 522 (ex-T-AGOS 11)	Tacoma Boat	18 June 1989
ALMIRANTE GAGO COUTINHO (ex-Assurance)	A 523 (ex-T-AGOS 5)	Tacoma Boat	1 May 1985

Displacement, tons: 2,285 full load
 Dimensions, feet (metres): 224 x 43 x 15.9 (68.3 x 13.1 x 4.6)
 Main machinery: Diesel-electric; 4 Caterpillar D 398B diesel generators; 3,200 hp (2.39 MW); 2 GE motors; 1,600 hp (1.2 MW); 2 shafts; bow thruster, 550 hp (410 kW)
 Speed, knots: 11 Range, n miles: 4,000 at 11 kt; 6,450 at 3 kt
 Complement: 31 (6 officers) plus 15 scientists
 Radars: Navigation: 2 Raytheon; I-band

Comment: Paid off from USN in November 1995. First one acquired 21 July 1996. Refitted to serve as a hydrographic ship, operating predominantly off the west coast of Africa. Recommissioned 9 December 1996. A second of class acquired by gift 30 September 1999, has been similarly refitted and recommissioned 26 January 2000.



D. CARLOS I 11/2006, Marco Ghiglino / 1164952

2 ANDROMEDA CLASS (AGSC)

Name	No	Builders	Commissioned
ANDROMEDA	A 5203	Arsenal do Alfeite	1 Feb 1987
AURIGA	A 5205	Arsenal do Alfeite	1 July 1987

Displacement, tons: 245 full load
 Dimensions, feet (metres): 103.3 x 25.4 x 8.2 (31.5 x 7.7 x 2.5)
 Main machinery: 1 MTU 12V 396 TC62 diesel; 1,200 hp(m) (880 kW) sustained; 1 shaft
 Speed, knots: 12
 Range, n miles: 1,980 at 10 kt
 Complement: 17 (3 officers)
 Radars: Navigation. Koden; I-band.

Comment: Both ordered in January 1984. Aurga has a research submarine ROV Phantom S2 and a Klein side scan sonar. Mostly used for oceanography.



ANDROMEDA 8/1997, van Ginderen Collection / 0012932

3 SURVEY CRAFT (YGS)

CORAL UAM 801	ATLANTA (ex-Hidra) UAM 802	FISALIA UAM 805
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Comment: Craft are of 36 tons launched in 1980.



FISALIA 3/1992, van Ginderen Collection / 0081611

TRAINING SHIPS

1 SAIL TRAINING SHIP (AXS)

Name	No	Builders	Commissioned
SAGRES (ex-Guanabara, ex-Albert Leo Schlageter)	A 520	Biohm + Voss, Hamburg	10 Feb 1938

Displacement, tons: 1,725 standard; 1,940 full load
 Dimensions, feet (metres): 231 w; 295 2 oa x 39.4 x 17 (70.4, 90 x 12 x 5.2)
 Main machinery: 2 MTU 12V 183 TE92 auxiliary diesels; 1 shaft
 Speed, knots: 10.5
 Range, n miles: 5,450 at 7.5 kt on diesel
 Complement: 182 (12 officers)
 Radars: Navigation: 1 Racal Decca and 1 KH 1500 Nucleos 2; I-band

Comment: Former German sail training ship launched 30 October 1937. Sister of US Coast Guard training ship *Eagle* (ex-German *Horst Wessel*) and Soviet *Tovarisch* (ex-German *Gorch Fock*). Taken by the USA as a reparation after the Second World War in 1945 and sold to Brazil in 1948. Purchased from Brazil and commissioned in the Portuguese Navy on 2 February 1962 at Rio de Janeiro and renamed *Sagres*. Sail area, 20,793 sq ft. Height of main mast, 142 ft. Phased refits 1987-88 and again in 1991-92 which included new engines, improved accommodation, hydraulic crane and updated navigation equipment. A further refit is planned 2011 13.



SAGRES 7/2006, B Prézeln / 1040679

1 SAIL TRAINING SHIP (AXS)

Name	No	Builders	Commissioned
CREOULA	UAM 201	Lisbon Shipyard	1937

Displacement, tons: 818 standard; 1,055 full load
 Dimensions, feet (metres): 221.1 x 32.5 x 13.8 (67.4 x 9.9 x 4.2)
 Main machinery: 1 MTU 8V 183 TE92 auxiliary diesel; 665 hp(m) (490 kW); 1 shaft

Comment: Ex-deep sea sail fishing ship used off the coast of Newfoundland for 36 years. Bought by Fishing Department in 1976 to turn into a museum ship but because she was still seaworthy it was decided to convert her to a training ship. Recommissioned in the Navy in 1987. Refit completed in 1992 including a new engine and improved accommodation. A life-extension refit is under consideration.



CREOULA 6/2005, Portuguese Navy / 1153417

1 SAIL TRAINING YACHTS (AXS)

POLAR (ex-Anne Linde) A 5204

Displacement, tons: 70

Dimensions, feet (metres): 75 x 16 x 8.2 (22.9 x 4.9 x 2.5)

Radars: Navigator: Raytheon; I-band.

Comment: Sail number P-551 is displayed.



POLAR

6/2007, Portuguese Navy / 1166892

2 SAIL TRAINING YACHTS (AXS)

BELLATRIX UAM 813 CANOPUS UAM 814

Displacement, tons: 12 (Bellatrix); 10 (Canopus)

Dimensions, feet (metres): 47.4 x 14.4 x 8.9 (14.45 x 4.4 x 2.7) (Bellatrix)

47.6 x 13.9 x 6.9 (14.52 x 4.23 x 2.1) (Canopus)

Complement: 8

Radars: Furuno, I-band.

Comment: Both attached to the naval school at Lisbon.



BELLATRIX

6/2007, Portuguese Navy / 1166891

AUXILIARIES

Notes: (1) Two craft are employed on Pollution Control tasks. *Vazante* (UAM 687) is 14 tons and *Enchente* (UAM 688) is 65 tons. *Barrocas* (UAM 854) is an accommodation barge. *Marateca* (UAM 304) and *Meuro* (UAM 305) are fuel lighters. (2) Studies for the procurement of a new AOR, to enter service in about 2016, are in progress.

1 BUOY TENDER (ABU)

Name	No	Builders	Commissioned
GUIA	UAM 676	S Jacinto, Aveiro	30 Jan 1986

Displacement, tons: 70 full load

Dimensions, feet (metres): 72.2 x 25.9 x 7.2 (22 x 7.9 x 2.2)

Main machinery: 1 Deutz MWM SBA6M816 diesel; 465 hp(m) (342 kW) sustained;

1 Schottel Navigator prop

Speed, knots: 8.5 (3.5 on auxiliary engine)

Complement: 6

Comment: Belongs to the Lighthouse Service.



GUIA

6/2005, Portuguese Navy / 1153416

1 ROVER CLASS (REPLENISHMENT TANKER) (AORLH)

Name	No	Builders	Launched	Commissioned
BÉRRIO (ex-Blue Rover)	A 5210 (ex-A 270)	Swan Hunter	11 Nov 1969	15 July 1970

Displacement, tons: 4,700 light; 11,522 full load

Dimensions, feet (metres): 461 x 63 x 24 (140.6 x 19.2 x 7.3)

Main machinery: 2 SEMT-Pielstick 16 PA4 185 diesels; 15,360 hp(m) (11.46 MW); 1 shaft;

Kamewa cp prop, bow thruster

Speed, knots: 19

Range, n miles: 15,000 at 15 kt

Complement: 54 (7 officers)

Cargo capacity: 6,600 tons fuel

Guns: 2 Oerlikon 20 mm.

Countermeasures: Decoys: 2 Vickers Corvus launchers. 2 Plessey Shield launchers.

1 Graseby Type 182; towed torpedo decoy.

Radars: Navigation: Kelvin Hughes Type 1006; I-band.

Helicopters: Platform for 1 medium.

Comment: Transferred from UK and recommissioned 31 March 1993. Small fleet tanker designed to replenish oil and aviation fuel, fresh water, limited dry cargo and refrigerated stores under all conditions while under way. Full refit in 1990-91 gave a service life expectancy until 2005 and a further refit is to be undertaken to prolong life until about 2015. No hangar but helicopter landing platform is served by a stores lift, to enable stores to be transferred at sea by 'vertical lift'. Capable of HIFR. Can pump fuel at 600 m³/h. Others of the class in service in Indonesia and the UK.



BÉRRIO

4/2000, Maritime Photographic / 1105748

1 BUOY TENDER (ABU)

Name	No	Builders	Commissioned
SCHULTZ XAVIER	A 521	Alfete Naval Yard	14 July 1972

Displacement, tons: 900 full load

Dimensions, feet (metres): 184 x 33 x 12.5 (56 x 10 x 3.8)

Main machinery: 2 diesels; 2,400 hp(m) (1.76 MW); 2 shafts

Speed, knots: 14.5

Range, n miles: 3,000 at 12.5 kt

Complement: 54 (4 officers)

Comment: Used for servicing navigational aids and as an occasional tug. Expected to be decommissioned in 2013 and replaced by Viano do Castelo class.



SCHULTZ XAVIER

12/2006, Marco Ghigino / 1164951

8 CALMARIA CLASS (HARBOUR PATROL CRAFT) (YP)

CALMARIA UAM 642 MONÇÃO UAM 645 PREIA-MAR UAM 648
 CIRRO UAM 643 SUÃO UAM 646 BAIXA-MAR UAM 649
 VENDAVAL UAM 644 MACAREU UAM 647

Displacement, tons: 12 full load
 Dimensions, feet (metres): 39 x 12.5 x 2.3 (11.9 x 3.8 x 0.7)
 Main machinery: 2 Bazán MAN 2866 LXE diesels; 881 hp(m) (648 kW); 2 water-jets
 Speed, knots: 32
 Range, n miles: 275 at 20 kt
 Complement: 3
 Guns: 1—762 mm MG
 Radars: Surface search: Furuno 1830; I-band

Comment: Harbour patrol craft similar to Spanish Guardia Civil del Mar Saetta II craft. Ordered from Bazán, Cadiz on 8 January 1993. First pair completed 30 November 1993, third one on 18 January 1994. Remainder delivered between August and December 1994. GRP hulls.



BAIXA-MAR 5/2008, Marco Ghiglino / 1335414

55 MISCELLANEOUS SERVICE CRAFT (YAG)

UAM 101-102	UAM 612	UAM 636	UAM 669	UAM 852
UAM 122	UAM 618-619	UAM 639	UAM 673	UAM 901
UAM 203	UAM 623-624	UAM 640-641	UAM 675	UAM 907-908
UAM 304	UAM 626	UAM 650-651	UAM 684-696	UAM 913
UAM 601-602	UAM 629	UAM 659	UAM 810-812	UAM 918
UAM 605	UAM 631	UAM 662	UAM 830	
UAM 610	UAM 634	UAM 667	UAM 840	

Displacement, tons: 18 full load
 Dimensions, feet (metres): 47.8 x 14.1 x 2.8 (14.5 x 4.3 x 0.8)
 Main machinery: 2 diesels, 640 hp (478 kW); 2 waterjets
 Speed, knots: 27
 Range, n miles: 150 at 15 kt

Comment: Details are for UAM 601-602 commissioned in 2007. The remaining craft are personnel and other service craft.



UAM 696 4/2008, Marco Ghiglino / 1335413



UAM 852 3/2002, Diego Quevedo / 0534049

GOVERNMENT MARITIME FORCES

POLICE (GUARDIA NACIONAL REPUBLICANA)

12 CONAFI 55 CLASS

Displacement, tons: 18 full load
 Dimensions, feet (metres): 55.8 x 12.5 x 2.9 (17.0 x 3.8 x 0.9)
 Main machinery: 2 MTU 12V 183TE93 diesels; 2,400 hp(m) (1.8 MW); 2 waterjets
 Speed, knots: 48
 Range, n miles: 400 at 18 kt
 Complement: 5

Comment: Built at Conafi Shipyards with collaboration with Rodman and delivered between 2000 and 2002



CONAFI 55 10/2006, Adolfo Ortigueira Gil / 1040675

4 RODMAN 38 CLASS (PB)

Displacement, tons: 10 full load
 Dimensions, feet (metres): 36.1 x 12.8 x 2.3 (11.0 x 3.9 x 0.7)
 Main machinery: 2 diesels; 400 hp (300 kW); 2 waterjets
 Speed, knots: 28
 Range, n miles: 300 at 15 kt
 Complement: 4

Comment: GRP hull. Built by Rodman, Vigo in 1985-87



RODMAN 38 10/2006, Adolfo Ortigueira Gil / 1040675

Qatar



Country Overview

Formerly a British protectorate from 1916, the State of Qatar gained its independence in 1971. Situated on the eastern side of the Arabian Peninsula, it occupies the Qatar Peninsula which has a 304 n mile coastline with the Gulf. With an area of 4,416 square miles, it is bordered to the south by Saudi Arabia and the United Arab Emirates. The dispute with Bahrain over sovereignty of the Hawar islands was settled on 16 March 2001. The capital, largest city and principal port is Doha. Territorial seas (12 n miles) are claimed. An EEZ (200 n miles) has been claimed but the limits are not defined

Headquarters Appointments

Commander Naval Force:
 Commodore Mohammed Nasir Al-Muhannadi
 Commander Coast Guard:
 Colonel Ali al-Manna'i

Personnel

2009: 1,800 officers and men (including Marine Police)

Bases

Doha (main); Halul Island (secondary)

Coast Defence

Two truck-mounted batteries of Exocet MM 40 quad launchers

Prefix to Ships' Names

QENS (Qatar Emiri Navy)

PATROL FORCES

Notes: A programme for the replacement of some or all of the attack craft inventory was launched in October 2007

4 BARZAN (VITA) CLASS (PGGFM)

Name	No	Builders	Laid down	Launched	Commissioned
BARZAN	Q04	Vosper Thornycroft	Feb 1994	1 Apr 1995	9 May 1996
HUWAR	Q05	Vosper Thornycroft	Aug 1994	15 July 1995	10 June 1996
AL UDEID	Q06	Vosper Thornycroft	Mar 1995	21 Mar 1996	16 Dec 1996
AL DEEBEL	Q07	Vosper Thornycroft	Aug 1995	31 Aug 1996	3 July 1997

Displacement, tons: 376 full load
 Dimensions, feet (metres): 185.7 × 29.5 × 8.2
 (56.3 × 9 × 2.6)
 Main machinery: 4 MTU 20V 538 TB93 diesels; 18,740 hp (m) (13.8 MW) sustained; 4 shafts
 Speed, knots: 35
 Range, n miles: 1,800 at 12 kt
 Complement: 35 (7 officers)

Missiles: SSM: 8 Aerospatiale MM 40 Exocet (Block II) ●, inertial cruise; active radar homing to 70 km (40 n miles) at 0.9 Mach; warhead 165 kg; sea-skimmer.
 SAM: Matra Sadral sextuple launcher for Mistral ●, IR homing to 4 km (2.2 n miles); warhead 3 kg
 Guns: 1 OTO Melara 76 mm/62 Super Rapid ●, 120 rds/min to 16 km (8.7 n miles); weight of shell 6 kg
 1 Signaal Goalkeeper 30 mm ●, 7 barrels; 4,200 rds/min combined to 2 km. 2—12.7 mm MGs.
 Countermeasures: Decoys: CSEE Dagare Mk 2 ● for chaff and IR flares.
 ESM: Thomson-CSF DR 3000S ●, intercept
 ECM: Dassault Salamandre ARBB 33 ●, jammer.
 Combat data systems: Signaal SEWACO FD with Thomson-CSF TACTICOS; Link Y.
 Weapons control: Signaal STING optronic director. Signaal IRSCAN electro-optical tracker ●.
 Radars: Air/surface search: Thomson-CSF MRR ●, G-band. Navigation: Kelvin Hughes 1007 ●, I band.
 Fire control: Signaal STING ●, I-J band.

Programmes: Order announced on 4 June 1992 by Vosper Thornycroft. First steel cut 20 July 1993.

Structure: Vita design derivative based on the hull used for Oman and Kenya in the 1980s. Steel hull and aluminium superstructure. CSEE Sidewind EW management system is installed and a Racal Thorn data distribution system is used. Baffles have been added around the ECM aeriels to prevent mutual interference with other sensors. An advanced machinery control and surveillance system allows one-man operation of main propulsion, electrical generation and auxiliary systems from the bridge. The bridge staff are also able to monitor the state of all compartments for damage control purposes.

Operational: First pair arrived in the Gulf in August 1997, second pair in May 1998. All of the class carry 40 kt RIBs with twin 80 hp outboards.



BARZAN

(Scale 1 : 600), Ian Sturton / 0012934



AL DEEBEL

7/2001, Ships of the World / 0121395



AL DEEBEL

10/2000 / 0121394

3 DAMSAH (COMBATTANTE III M) CLASS (FAST ATTACK CRAFT—MISSILE) (PGGF)

Name	No	Builders	Launched	Commissioned
DAMSAH	Q 01	CMN, Cherbourg	17 June 1982	10 Nov 1982
AL GHARIYAH	Q 02	CMN, Cherbourg	23 Sep 1982	10 Feb 1983
RBIGAH	Q 03	CMN, Cherbourg	22 Dec 1982	11 May 1983

Displacement, tons: 345 standard; 395 full load

Dimensions, feet (metres): 183.7 × 26.9 × 7.2
(56 × 8.2 × 2.2)

Main machinery: 4 MTU 20V 538 TB93 diesels; 18,740 hp(m) (13.8 MW) sustained; 4 shafts

Speed, knots: 38.5 Range, n miles: 2,000 at 15 kt

Complement: 41 (6 officers)

Missiles: SSM. 8 Aerospatiale MM 40 Exocet; inertial cruise, active radar homing to 70 km (40 n miles) at 0.9 Mach; warhead 165 kg; sea-skimmer

Guns: 1 OTO Melara 3 in (76 mm)/62; 60 rds/min to 16 km (8.7 n miles); weight of shell 6 kg.

2 Broda 40 mm/70 (twin); 300 rds/min to 12.5 km (6.8 n miles); weight of shell 0.96 kg.

4 Oerlikon 30 mm/75 (2 twin); 650 rds/min to 10 km (5.5 n miles).

Countermeasures: Decoys: CSEE Dagaie trainable single launcher; 6 containers; IR flares and chaff; H/J-band.

ESM/ECM: Racal Cutlass/Cygnus.

Weapons control: Vega system. 2 CSEE Naja optical directors.

Radars: Surface search: Thomson-CSF Triton; G-band

Navigation: Racal Decca 1226; I-band

Fire control: Thomson-CSF Castor II; I/J-band; range 15 km (8 n miles) for 1 m² target.

Programmes: Ordered in 1980. All arrived at Doha July 1983. All refitted in 1996/98



AL GHARIYAH

10/2001 / 0121393



HUBALAH

7/2001, Ships of the World / 0121396

3 DAMEN POLYCAT 1450 CLASS (COASTAL PATROL CRAFT) (PB)

Q 31-36 series

Displacement, tons: 18 full load

Dimensions, feet (metres): 47.6 × 15.4 × 4.9 (14.5 × 4.7 × 2.1)

Main machinery: 2 Detroit 12V-71TA diesels; 840 hp (627 kW) sustained; 2 shafts

Speed, knots: 26

Complement: 11

Guns: 1 Oerlikon 20 mm

Radars: Navigation. Racal Decca; I-band

Comment: Three remain of six delivered February-May 1980.



Q 33

3/1980, Damen SY / 0081617

AUXILIARIES

Notes: There are a number of amphibious craft including an LCT *Rabha* of 160 ft (48.8 m) with a capacity for three tanks and 110 troops, acquired in 1986-87. Also four Rotork craft and 30 Sea Jeeps in 1985. It is not clear how many of the smaller craft are for civilian use.

POLICE

Notes: (1) Requirements have been reported for patrol craft, two of 24 m, two of 22 m and 19 of 12 m. Also for two hovercraft.

(2) Two Halmatic 18 m pilot boats (based on Arun class lifeboat hull) delivered in 2000.

4 CRESTITALIA MV-45 CLASS (PB)

RG 91-94

Displacement, tons: 17 full load

Dimensions, feet (metres): 47.6 × 12.5 × 2.6 (14.5 × 3.8 × 0.8)

Main machinery: 2 diesels; 1,270 hp(m) (933 kW); 2 shafts

Speed, knots: 32

Range, n miles: 275 at 29 kt

Complement: 6

Guns: 1 Oerlikon 20 mm. 2- 7.62 mm MGs.

Radars: Surface search. I-band.

Comment: Built by Crestitalia and delivered in mid-1989. GRP construction.

4 DV 15 FAST INTERCEPT CRAFT (HSIC)

Displacement, tons: 12 full load
Dimensions, feet (metres): 50.9 × 9.8 × 2.6 (15.5 × 3.0 × 0.8)
Main machinery: 2 diesels; 2 surface drives
Speed, knots: 55
Range, n miles: 400 at 30 kt
Complement: 4
Guns: 1—12.7 mm MG
Radars: Surface search: I-band.

Comment: Built by CMN Cherbourg and delivered in 2006 to replace P 1200 class. The option for a further two craft has not been taken up. Composite hull construction similar to those in Yemeni service. Roles include coastal protection and security of offshore oil and gas installations.



DV 15 class

2/2003, CMN / 0531701

3 HALMATIC M 160 CLASS (PB)

Displacement, tons: 20 full load
Dimensions, feet (metres): 62.5 × 15.4 × 4.6 (16 × 4.7 × 1.4)
Main machinery: 2 MTU diesels; 520 hp (im) (388 kW) sustained; 2 shafts
Speed, knots: 27
Range, n miles: 500 at 17 kt
Complement: 6
Guns: 1—7.62 mm MG
Radars: Surface search: Racal Decca; I-band.

Comment: Order confirmed on 11 October 1995. Delivered to Police in November 1996. Similar to Police craft obtained by Caribbean countries.



HALMATIC 739

3/2008*, Michael Nitz / 1353278

**Romania****Country Overview**

Situated in south-eastern Europe, the Republic of Romania has an area of 91,700 square miles and is bordered to the north by Ukraine and Moldova, to the west by Hungary and Serbia, and to the south by Bulgaria. The River Danube forms much of the southern border. Romania has a coastline of 121 n miles with the Black Sea on which Constanta, linked to the Danube port of Cernavoda by canal, is the principal seaport. Prominent river ports include Galati and Braila on the lower Danube, and Giurgiu, which has pipeline connections to the Ploesti oil fields. The capital and largest city is Bucharest. Territorial waters (12 n miles) are claimed. An EEZ (299 n miles) is claimed but the limits have not been defined.

Headquarters Appointments

Commander-in-Chief of the Navy:
Rear Admiral Dorin Dănilă

Personnel

- a) 2009: 8,215 Navy
b) Reserves: 500

Organisation

The Navy is composed of the Naval Forces Staff (Bucharest), the Naval Operational Command, Fleet Command, Naval Academy, Hydrographic Directorate, Naval Academy, Diving Centre, Electronic Warfare Unit, Logistic Base and one Naval Infantry Battalion

Bases

Black Sea-Mangalia (Training); Constanta (Naval Operational Command and Naval Logistic Base)
Danube-Brăila, Tulcea

Border Guard

Responsible for land and sea borders and has four brigades, two of which have sea forces based at Orsova and Constanta.

Strength of the Fleet

Type	Active (Reserve)
Frigates	3
Corvettes	4
Patrol craft	24
Minelayer/MCM Support	1
Minesweepers (Coastal and River)	4
Training Ships	2
Survey Ships	2

PENNANT LIST**Frigates**

111 Marasesti
221 Regele Ferdinand
222 Regina Maria

Corvettes

260 Admiral Petre Barbunescu
263 Vice Admiral Eugeniu Rosca
264 Contre Admiral Eustatiu Sebastian
265 Admiral Horia Macalariu

Patrol Forces

45 Mikhail Kogalniceanu
46 I C Bratianu

47 Lascar Catargiu
176 Rahova
177 Oponez
178 Smardan
179 Posada
180 Rovine
188 Zborul
189 Pescarusul
190 Lastunul

Mine Warfare Forces

24 Lieutenant Remus Lepri
25 Lieutenant Lupu Dunescu
29 Lieutenant Dimitrie Nicolescu
30 Sub Lieutenant Alexandru Axente
274 Vice Admiral Constantin Balescu

Survey Ships

75 Grigore Antipa
115 Emil Racovita

Training Ships

288 Mircea
521 Delfinul

Auxiliaries

281 Constanta
283 Midia
296 Electronica
298 Magnetica
500 Grozavu
501 Hercules
532 Tulcea

SUBMARINES

Notes: The Kilo-class submarine *Delfinul* 521 has not been to sea in recent years and there are no plans to refit her.

FRIGATES

2 BROADSWORD CLASS (TYPE 22) (FFHM)

Name	No	Builders	Laid down	Launched	Commissioned	Recommissioned
REGINA MARIA (ex-London)	222 (ex-F 95)	Yarrow Shipbuilders, Glasgow	7 Feb 1983	27 Oct 1984	5 June 1987	21 Apr 2005
REGELE FERDINAND (ex-Coventry)	221 (ex-F 98)	Swan Hunter Shipbuilders, Wallsend-on-Tyne	29 Mar 1984	8 Apr 1986	14 Oct 1988	9 Sep 2004

Displacement, tons: 4,100 standard, 4,800 full load
 Dimensions, feet (metres): 480.5 x 48.5 x 21
 (146.5 x 14.8 x 6.4)

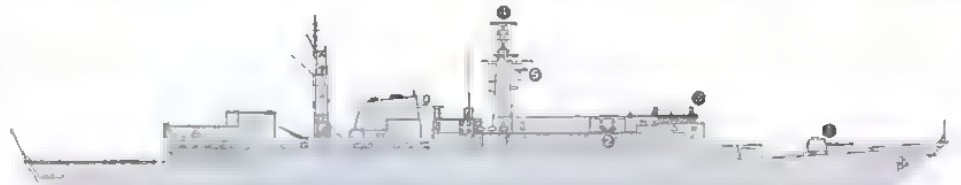
Main machinery: CODOG: 2 RR Olympus TM3B gas turbines; 50,000 hp (37.3 MW) sustained, 2 RR Tyne RM1C gas turbines; 9,900 hp (7.4 MW); 2 shafts; cp props
 Speed, knots: 30; 18 on Tynes
 Complement: 203

Guns: 1 OTO Melara 3 in (76 mm)/62 Super Rapid ●; 120 rds/min to 18 km (8.7 n miles); weight of shell 8 kg
 Torpedoes: 6 324 mm Plessey STWS Mk 2 (2 triple) tubes.
 Countermeasures: Decoys: 2 Terma 130 mm DL-12 12-barrelled chaff launchers ●
 Combat data systems: Ferranti CACS 1.
 Weapons control: Rademec 2500 optronic director ●. Nautis 3 fire-control system
 Radars: Air/surface search: Marconi Type 967 ●; D/E-band. Navigation: Kelvin-Hughes Type 1007 ●; I band.
 Sonars: Ferranti/Thomson Sintra Type 2050; hull-mounted search and attack.

Helicopters: Platform for 1 medium.

Programmes: Originally successors to the UK Leander class, these ships entered RN service in 1987 but were withdrawn, half-way through their ships' lives, as a result of the 1998 UK Defence Review. Sale agreement signed on 14 January 2003 included platform overhaul, installation of reconditioned engines and combat system modernisation. Training is also included in the package. Following trials and sea training, *Regele Ferdinand* arrived in Romania on 10 December 2004 and *Regina Maria* in 2005. A 15-year through-life support contract with BAE Systems was signed in October 2005.

Modernisation: BAE Systems was prime contractor and FSL sub-contractor for reactivation and modernisation.



REGELE FERDINAND

(Scale 1 : 1,200), Ian Sturton / 1044184



REGELE FERDINAND

11/2004, John Brodie / 1133559

The CACS command system was upgraded and 76 mm gun installed. A second-phase upgrade is to be undertaken in Romania although a firm timetable is yet to be announced. This is expected to include a towed-array sonar, air-defence and anti-ship weapons, an improved EW suite and small calibre guns.

Structure: Broadsword Batch 2 ships were stretched versions of Batch 1. The flight decks are capable of embarking medium helicopters.

Operational: Trials with a Puma helicopter were conducted in May 2008.



REGINA MARIA

6/2005, Maritime Photographic / 1133562



REGELE FERDINAND

11/2004, B Sullivan / 1133560

For details of the latest updates to *Jane's Fighting Ships* online and to discover the additional information available exclusively to online subscribers please visit
jfs.janes.com

1 MARASESTI CLASS (FFGH)

Name	No	Builders	Laid down	Launched	Commissioned
MARASESTI (ex-Muntenia)	111	Mangalia Shipyard	7 Aug 1979	4 June 1981	3 June 1985

Displacement, tons: 5,790 full load
Dimensions, feet (metres): 474.4 × 48.6 × 23
 (144.6 × 14.8 × 7)
Main machinery: 4 diesels, 32,000 hp(rn) (23.5 MW); 4 shafts
Speed, knots: 27
Complement: 270 (25 officers)

Missiles: SSM: 8 SS-N-2C Styx ●; active radar or IR homing to 83 km (45 n miles) at 0.9 Mach; warhead 513 kg.
Guns: 4 USSR 3 in (76 mm)/59 AK 726 (2 twin) ●; 90 rds/min to 16 km (8.5 n miles); weight of shell 5.9 kg.
 4–30 mm/65 ●; 6 barrels per mounting, 3,000 rds/min to 2 km.

Torpedoes: 6–21 in (533 mm) (2 triple) tubes ●. Russian 53–65; passive/wake homing to 25 km (13.5 n miles) at 50 kt; warhead 300 kg.

A/S mortars: 2 RBU 6000 ●; 12-tubed trainable, range 6,000 m; warhead 31 kg

Countermeasures: Decoys: 2 PK 16 chaff launchers.

ESM/ECM: 2 Watch Dog; intercept, Bell Clout and Bell Slam.

Radars: Air/surface search, Strut Curve ●, F-band.

Surface search: Plank Shave ●; E-band.

Fire control: Two Drum Tilt ●; H/I-band.

Hawk Screech ●; I-band.

Navigation: Nayada (MR 212); Rascal Decca; I-band.

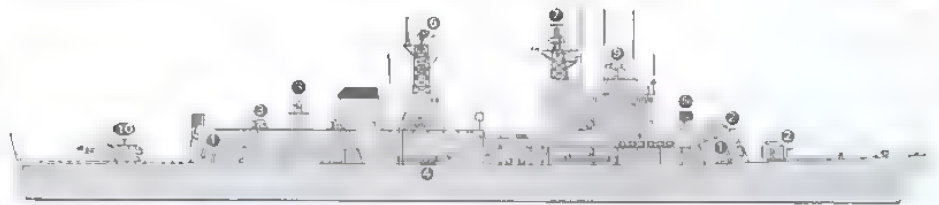
IFF: High Pole B

Sonars: Hull mounted; active search and attack; medium frequency.

Helicopters: 2 IAR-316 Alouette III ●.

Modernisation: Attempts have been made to modernise some of the electronic equipment. Also topweight problems have been addressed by reducing the height of the mast structures and lowering the Styx missile launchers by one deck. Two RBU 6000s have replaced the RBU 1200. Communications have been upgraded to enable NATO interoperability but there are no further modernisation plans.

Structure: A distinctive Romanian design. Originally thought to be powered by gas turbines but a diesel configuration including four shafts is now confirmed.



MARASESTI

(Scale 1 : 1,200), Ian Sturton / 1044186



MARASESTI

1/2001, van Ginderen Collection / 0106855

Operational: Deactivated in June 1988 due to manpower and fuel shortages but modernisation work was done from 1990 to 1992 and sea trials started in mid-1992. Carried out a major naval exercise in September 1993,

which included firing the Styx missile. Deployed to the Mediterranean in September 1994 for a short cruise, in 1995 on two occasions and again in March 1998. Reclassified as frigate in 2001. Based at Constanta



MARASESTI

6/2004, C D Yaxell / 0580801



MARASESTI

7/1995, Diego Quisvado / 0057162

CORVETTES

Notes. The multifunction corvette programme is for a class of four corvettes to replace the Tetal and Improved Tetal classes. The broad requirement is for a 2,000-ton ship that is fully compatible with NATO requirements. The ships, to be built in Romania, are likely to have ASW, ASuW and crisis-stabilisation roles. The procurement process is expected to start in 2009.

2 TETAL CLASS (FS)

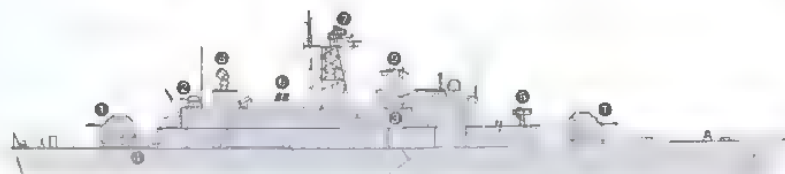
Name	No	Builders	Launched	Commissioned
ADMIRAL PETRE BARBUNEANU	260	Mangalia Shipyard	23 May 1981	4 Feb 1983
VICE ADMIRAL EUGENIU ROSCA	263	Mangalia Shipyard	11 July 1985	23 Apr 1987

Displacement, tons: 1,440 full load
Dimensions, feet (metres): 303.1 × 38.4 × 9.8
 (92.4 × 11.7 × 3)
Main machinery: 4 diesels, 13,000 hp(m) (9.6 MW); 4 shafts
Speed, knots: 24
Complement: 98

Guns: 4 USSR 3 in (76 mm)/59 AK 726 (2 twin) ●; 90 rds/min to 16 km (8.5 n miles); weight of shell 5.9 kg
 4 USSR 30 mm/65 (2 twin) ●; 500 rds/min to 4 km (2.2 n miles); weight of shell 0.54 kg.
 2—14.5 mm MGs ●

Torpedoes: 4—21 in (533 mm) (2 twin) tubes ●. Russian 53-65; passive/wake homing to 25 km (13.5 n miles) at 50 kt; warhead 300 kg

A/S mortars: 2 RBU 2500 16-tubed trainable ●; range 2,500 m; warhead 21 kg
Countermeasures: Decoys: 2 PK 16 chaff launchers ●
ESM: 2 Watch Dog; intercept.

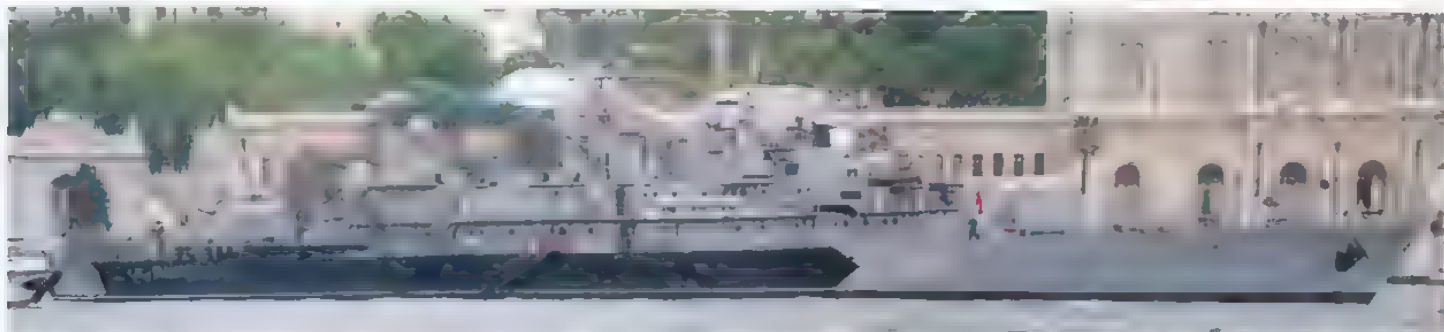


ADMIRAL PETRE BARBUNEANU

(Scale 1 : 900), Ian Sturton / 1167410

Radars: Air/surface search: Strut Curve ●; F-band.
 Fire control: Drum Tilt ●; H/I-band. Hawk Screech ●; F-band.
 Navigation: Nayada; I-band.
 IFF: High Pole.
Sonars: Hercules (MG 322); Hull-mounted; active search and attack, medium frequency.

Programmes: Building terminated in 1987 in favour of the improved design with a helicopter platform.
Structure: A modified Soviet Koni design.
Operational: Both based at Constanta. Two decommissioned in 2004.



ADMIRAL PETRE BARBUNEANU

5/2008, C D Yaylali / 1353292

2 IMPROVED TETAL CLASS (FSH)

Name	No	Builders	Launched	Commissioned
CONTRE ADMIRAL EUSTATIU SEBASTIAN	264	Mangalia Shipyard	12 Apr 1988	30 Dec 1989
ADMIRAL HORIA MACELARIU	265	Mangalia Shipyard	15 May 1994	29 Sep 1997

Displacement, tons: 1,500 full load
Dimensions, feet (metres): 303.1 × 38.4 × 11
 (92.4 × 11.7 × 3.1)

Main machinery: 4 diesels; 13,000 hp(m) (9.6 MW); 4 shafts
Speed, knots: 24
Complement: 95

Guns: 1 USSR 3 in (76 mm)/59 AK 176 ●; 120 rds/min to 16 km (8 n miles); weight of shell 5.9 kg
 2—30 mm/65 AK 630 ●; 6 barrels per mounting, 3,000 rds/min to 2 km.
 2—30 mm/85 AK 306 ●; 6 barrels per mounting, 3,000 rds/min to 2 km.

Torpedoes: 4—21 in (533 mm) (2 twin) tubes ●. Russian 53-65; passive/wake homing to 25 km (13.5 n miles) at 50 kt; warhead 300 kg.

A/S mortars: 2 RBU 6000 ●; 12-tubed trainable; range 6,000 m; warhead 31 kg.

Countermeasures: Decoys: 2 PK 16 chaff launchers ●.

ESM: 2 Watch Dog; intercept

Radars: Air/surface search: Strut Curve ●; F-band.

Fire control: Drum Tilt ●; H/I-band.

Navigation: Nayada; I-band

IFF: High Pole.

Sonars: Hull-mounted; active search and attack; medium frequency.

Helicopters: 1 IAR-316 Alouette III ●.

Programmes: Follow on to Tetal class. Second of class was delayed when work stopped for a time in 1993-94.

Structure: As well as improved armament and a helicopter deck, there are superstructure changes from the original Tetals, but the hull and propulsion machinery are the same.

Operational: Both based at Mangalia



ADMIRAL HORIA MACELARIU

(Scale 1 : 900), Ian Sturton / 1044187



CONTRE ADMIRAL EUSTATIU SEBASTIAN

4/2007, C D Yaylali / 1167803



ADMIRAL HORIA MACELARIU

11/2007, Selim San / 1353283

SHIPBORNE AIRCRAFT

Numbers/Type: 5 IAR-316B Alouette III.

Operational speed: 113 kt (210 km/h).

Service ceiling: 10,500 ft (3,200 m).

Range: 290 n miles (540 km).

Role/Weapon systems: ASW helicopter. Sensors: Nose-mounted search radar. Weapons: ASW; two lightweight torpedoes.

Numbers/Type: 3 IAR Brasov 330 Puma.

Operational speed: 139 kt (257 km/h).

Service ceiling: 15,750 ft (4,800 m).

Range: 297 n miles (550 km).

Role/Weapon systems: Eurocopter Puma built under license in Romania. Three aircraft procured by Romanian Navy in 2008. All upgraded to SOCAT configuration undertaken by IAR Brasov and Elbit Systems, Israel. The upgrade includes improved avionics. The helicopters are used in utility and SAR roles but could be upgraded with sensors and weapons in parallel with the Type 22 frigate modernisation programme.



IAR 330

8/2005, MOD Romania / 1169422

LAND-BASED MARITIME AIRCRAFT

Numbers/Type: 5 Mil Mi-14PL Haze A.

Operational speed: 124 kt (230 km/h).

Service ceiling: 15,000 ft (4,570 m).

Range: 432 n miles (800 km).

Role/Weapon systems: Medium-range ASW helicopter. Sensors: Short Horn search radar, dipping sonar, MAD, sonobuoys. Weapons: ASW; internally stored torpedoes, depth mines and bombs.



HAZE PL (Polish colours)

8/2000 / 0105235

PATROL FORCES

Notes: There is a total of about 20 river patrol boats. These include three 27 ft Boston Whalers presented by the US in March 1993 for Customs/Police patrols on the Danube in support of UN sanctions operations. There is also a hovercraft built at Mangalia in 1998

5 BRUTAR II CLASS (RIVER MONITORS) (PGR)

Name	No	Builders	Commissioned
RAHOVA	176	Mangalia Shipyard	14 Apr 1988
OPANEZ	177	Mangalia Shipyard	24 July 1990
SMARDAN	178	Mangalia Shipyard	24 July 1990
POSADA	179	Mangalia Shipyard	14 May 1992
ROVINE	180	Mangalia Shipyard	30 June 1993

Displacement, tons: 410 full load

Dimensions, feet (metres): 150 x 26.4 x 4.9 (45.7 x 8 x 1.5)

Main machinery: 2 diesels; 2,700 hp(m) (2 MW); 2 shafts

Speed, knots: 16

Guns: 1—100 mm (tank turret), 2—30 mm (twin), 10—14.5 mm (2 quad, 2 single) MGs.

2—122 mm BM-21 rocket launchers; 40-tubed trainable.

Radars: Navigation: I-band

Comment: Operational as patrol craft on the Danube. The first is a Brutar I. The next pair are Brutar IIs based at Tulcea and the last two are Brutar IIs based at Mangalia.



OPANEZ

10/2003, Freddy Phillips 0689804



ROVINE

8/2008, Lemachko Collection / 1353281

12 VD 141 CLASS (RIVER PATROL CRAFT) (PBR)

141-185 series

Displacement, tons: 97 full load

Dimensions, feet (metres): 109 x 15.7 x 2.8 (33.3 x 4.8 x 0.9)

Main machinery: 2 diesels, 870 hp(m) (640 kW); 2 shafts

Speed, knots: 13

Guns: 4—14.5 mm (2 twin) MGs.

Mines: 6

Radars: Navigation: Nayada; I-band.

Comment: Built in Romania at Dobreta Severin Shipyard 1976-84. Ex river minesweepers now employed as patrol craft on the Danube.



VD 159

8/2008, Lemachko Collection / 1353279

3 KOGALNICEANU CLASS (RIVER MONITORS) (PGR)

Name	No	Builders	Recommissioned
MIKHAIL KOGALNICEANU	45	Dobeta Santierul, Turnu Severin	19 Dec 1993
I C BRATIANU	46	Dobeta Santierul, Turnu Severin	28 Dec 1994
LASCAR CATARGIU	47	Dobeta Santierul, Turnu Severin	22 Nov 1996

Displacement, tons: 575 full load

Dimensions, feet (metres): 170.5 x 29.5 x 5.6 (52 x 9 x 1.7)

Main machinery: 2 24-H-165 RINS diesels, 4,400 hp(m) (3.3 MW); 2 shafts

Speed, knots: 18

Guns: 2—100 mm (tank turrets), 4—30 mm (2 twin), 4—14.5 mm (2 twin).

2—122 mm BM-21 rocket launchers

Radars: Navigation: I-band.

Comment: Based at Braila.



I C BRATIANU

8/1999, Romanian Navy / 0081622

1 NEUSTADT CLASS (PB)

GENERAL PARASCHIV VASILESCU (ex-Bayreuth) 10 (ex-BG 17)

Displacement, tons: 218 full load

Dimensions, feet (metres): 127.1 x 23 x 5 (38.5 x 7 x 2.2)

Main machinery: 2 MTU MD diesels; 8,000 hp(m) (4.41 MW); 1 MWM diesel; 685 hp(m)

(500 kW); 3 shafts

Speed, knots: 30

Range, n miles: 450 at 27 kt

Complement: 17

Guns: 2 762 mm MGs.

Radars: Surface search Selenia ARP 1645, I-band

Navigation: Racal Decca Bridgemaster MA 180/4, I-band.

Comment: Built in 1970 by Lürssen, Vegesack. Transferred from German Border Guard on 10 January 2004. Operated by the Romanian Border Guard and based in Constanta.

3 ZBORUL (TARANTUL I) CLASS (PROJECT 1241 RE) (FSG)

Name	No	Builders	Commissioned
ZBORUL	188	Petrovsky Shipyard	Dec 1990
PESCARUSUL	189	Petrovsky Shipyard	Feb 1992
LASTUNUL	190	Petrovsky Shipyard	Feb 1992

Displacement, tons: 385 standard; 455 full load
Dimensions, feet (metres): 184.1 x 37.7 x 8.2 (56.1 x 11.5 x 2.6)
Main machinery: COGAG; 2 Type DR 77 gas turbines; 16,016 hp(m) (11.77 MW) sustained; 2 Nikolayev Type DR 76 gas turbines with reversible gearboxes; 4,993 hp(m) (3.67 MW) sustained, 2 shafts
Speed, knots: 36
Range, n miles: 2,000 at 20 kt; 400 at 36 kt
Complement: 41 (5 officers)

Missiles: 4 SS-N-2C Styx (2 twin); active radar or IR homing to 83 km (45 n miles) at 0.9 Mach; warhead 513 kg
Guns: 1 USSR 3 in (76 mm)/59 AK 176; 120 rds/min to 15 km (8 n miles); weight of shell 5.9 kg
 2—30 mm/65 AK 630; 6 barrels per mounting, 3,000 rds/min to 2 km.
Countermeasures: 2 PK 16 chaff launchers.
ESM: 2 Watch Dog; intercept
Weapons control: hood Wink optronic director
Radars: Air/surface search: Plank Shave; E-band.
Fire control: Bass Tilt, H/I-band.
Navigation: Spin Trough; I-band.
IFF: Square Head. High Pole.

Comment: Built in 1985 and later transferred from the USSR. Export version similar to those built for Poland, India and Yemen. Based at Mangalia. *Pescarusul* carried out SS-N-2C firing on 28 May 2006.



LASTUNUL 6/1998, Valentino Cluru / 0052785

MINE WARFARE FORCES

Notes: The MCMV programme is for a class of four ships to replace the Corsar and Musca classes. The broad requirement is for a minehunter equipped with mine-detection sonar, unmanned vehicles for mine-detection and destruction and a decompression chamber for EOD teams. The procurement process is expected to start in 2009.

1 CORSAR CLASS (MINELAYER/MCM SUPPORT SHIP) (ML/MCS)

Name	No	Builders	Commissioned
VICE ADMIRAL CONSTANTIN BAILESCU	274	Mangalia Shipyard	16 Nov 1981

Displacement, tons: 1,450 full load
Dimensions, feet (metres): 259.1 x 34.8 x 11.8 (79 x 10.6 x 3.6)
Main machinery: 2 diesels; 6,400 hp(m) (4.7 MW); 2 shafts
Speed, knots: 19
Complement: 75
Guns: 1—57 mm/70, 4—30 mm/65 (2 twin) AK 230, 8—14.5 mm (2 quad) MGs.
A/S mortars: 2 RBU 1200 5-tubed fixed, range 1,200 m; warhead 34 kg.
Mines: 200.
Countermeasures: ESM. Watch Dog; intercept.
Radars: Air/surface search: Strut Curve; F-band.
Navigation: Don 2; I-band
Fire control: Muff Cob; G/H-band. Drum Tilt; H/I-band
Sonars: Tamir II; hull-mounted; active search; high frequency.

Comment: Has a large crane on the after deck. Similar to survey ship *Grigore Antipa*. Based at Constanta.



VICE ADMIRAL CONSTANTIN BAILESCU 6/1999, Romanian Navy / 0081677

4 MUSCA CLASS (MINESWEEPERS—COASTAL) (MSC)

Name	No	Builders	Commissioned
LIEUTENANT REMUS LEPRI	24	Mangalia Shipyard	23 Apr 1987
LIEUTENANT LUPU DUNESCU	25	Mangalia Shipyard	8 Jan 1989
LIEUTENANT DIMITRIE NICOLESCU	29	Mangalia Shipyard	7 Dec 1989
SUB LIEUTENANT ALEXANDRU AXENTE	30	Mangalia Shipyard	7 Dec 1989

Displacement, tons: 790 full load
Dimensions, feet (metres): 194.2 x 31.1 x 9.2 (59.2 x 9.5 x 2.8)
Main machinery: 2 diesels; 4,800 hp(m) (3.5 MW); 2 shafts
Speed, knots: 17
Complement: 60
Missiles: SAM: 2 quad SA-N-5 launchers.
Guns: 4—30 mm/65 (2 twin) AK 230
A/S mortars: 2 RBU 1200 5-tubed fixed; range 1,200 m; warhead 34 kg.
Radars: Surface search: Krivach; I-band
Fire control: Drum Tilt, H/I-band.
Navigation: Nayada; I-band.
Sonars: Hull-mounted; active search; high frequency

Comment: Reported as having a secondary mining capability but this is not confirmed. Based at Mangalia



SUB LIEUTENANT ALEXANDRU AXENTE 8/2004, 113357

SURVEY AND RESEARCH SHIPS

1 CORSAR CLASS (RESEARCH SHIP) (AGOR)

Name	No	Builders	Commissioned
GRIGORE ANTIPA	75	Mangalia Shipyard	25 May 1980

Displacement, tons: 1,450 full load
Dimensions, feet (metres): 259.1 x 34.8 x 11.8 (79 x 10.6 x 3.6)
Main machinery: 2 diesels; 6,400 hp(m) (4.7 MW); 2 shafts
Speed, knots: 19
Complement: 75
Radars: Navigation Nayada; I-band.

Comment: Large davits aft for launching manned submersible. Same hull as Corsar class. Used as a research ship and for diving support. Based at Constanta.



GRIGORE ANTIPA 5/1998, Diego Quevedo / 0052770

1 RESEARCH SHIP (AGS)

Name	No	Builders	Commissioned
EMIL RACOVITA	115	Drobeta Severin Shipyard	30 Oct 1977

Displacement, tons: 1,900 full load
Dimensions, feet (metres): 229.9 x 32.8 x 12.7 (70.1 x 10 x 3.9)
Main machinery: 1 diesel; 3,285 hp(m) (2.4 MW); 1 shaft
Speed, knots: 11
Complement: 80

Comment: Modernised in the mid-1980s. Similar design to *Grigore Antipa*. Used as a hydrographic ship



EMIL RACOVITA 2001, Romanian Navy / 0114548

TRAINING SHIPS

Notes: *Neptun* belongs to the Merchant Navy.

1 SAIL TRAINING SHIP (AXS)

Name	No	Builders	Launched	Commissioned
MIRCEA	288	Blohm + Voss, Hamburg	29 Sep 1938	29 Mar 1939

Displacement, tons: 1,604 full load
Dimensions, feet (metres): 206, 266.4 (with bowsprit) × 39.3 × 16.5 (62.8; 81.2 × 12 × 5.2)
Main machinery: 1 MaK 6M 451 auxiliary diesel; 1,000 hp(m) (735 kW); 1 shaft
Speed, knots: 8
Range, n miles: 5,000 at 8 kt
Complement: 83 (5 officers) plus 140 midshipmen
Radars: Navigation: Decca 202; I-band.

Comment: Refitted at Hamburg in 1966. Sail area, 5,739 m² (18,830 sq ft). A smaller version of US Coast Guard cutter *Eagle*, German *Gorch Fock* and Portuguese *Sagres*. Based at Constanta.



MIRCEA

7/2007, Giorgio Ghiglione / 1353280



RINDUNICA

1/1995 / 0081637

2 DEGAUSSING SHIPS (ADG/AGI)

Name	No	Builders	Commissioned
ELECTRONICA	296	Braila Shipyard	6 Aug 1973
MAGNETICA	298	Mangalia Shipyard	18 Dec 1989

Displacement, tons: 299 full load
Dimensions, feet (metres): 134 × 21.6 × 10.7 (40.8 × 6.6 × 3.2)
Main machinery: Diesel-electric; 1 diesel generator; 600 kW; 1 shaft
Speed, knots: 12.5
Complement: 18
Guns: 2—14.5 mm (twin) MGs. 2 12.7 mm MGs.

Comment: Built for degaussing ships up to 3,000 tons displacement. Electronica is used as an AGI. Based at Tulcea.

AUXILIARIES

2 CROITOR CLASS (LOGISTIC SUPPORT SHIPS) (AETLMH)

Name	No	Builders	Commissioned
CONSTANTA	281	Braila Shipyard	15 Sep 1980
MIDIA	283	Braila Shipyard	26 Feb 1982

Displacement, tons: 2,850 standard; 3,500 full load
Dimensions, feet (metres): 354.3 × 44.3 × 12.5 (108 × 13.5 × 3.8)
Main machinery: 2 diesels; 6,500 hp(m) (4.8 MW); 2 shafts
Speed, knots: 16
Missiles: SAM: 2 SA-N-5 Grail quad launchers; manual aiming; IR homing to 6 km (3.2 n miles) at 1.5 Mach; warhead 1.5 kg.
Guns: 2—57 mm/70 (twin). 4—30 mm/65 (2 twin). 8—14.5 mm (2 quad) MGs
A/S mortars: 2 RBU 1200 5-tubed fixed; range 1,200 m; warhead 34 kg.
Countermeasures: ESM: 2 Watch Dog; intercept
Radars: Air/surface search: Strut Curve; F-band.
Navigation: Krivach; I-band.
Fire control: Muff Cob; G/H-band. Drum Tilt, H/I-band.
Sonars: Tamir II; hull-mounted; active attack, high frequency.
Helicopters: 1 IAR-316 Alouette III type.

Comment: These ships are a scaled down version of Soviet Don class. Forward crane for ammunition replenishment. Some ASW escort capability. Can carry Styx missiles and torpedoes. Based at Constanta.



CONSTANTA

6/2001, Schaeffer/Marsan / 0533268

1 FLAG OFFICERS BARGE (AOTL)

RINDUNICA

Displacement, tons: 40 full load
Dimensions, feet (metres): 78.7 × 16.4 × 3.6 (24 × 5 × 1.1)
Main machinery: 2 diesels; 2,200 hp(m) (1.6 MW); 2 shafts
Speed, knots: 28
Complement: 6

Comment: Used as a barge by the Commander-in-Chief.



MAGNETICA

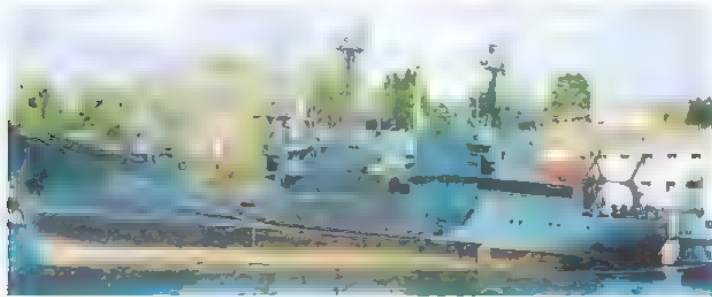
6/1999, Romanian Navy / 0081637

2 COASTAL TANKERS (AOTL)

530-531

Displacement, tons: 1,042 full load
Dimensions, feet (metres): 181.2 × 30.9 × 13.4 (55.2 × 9.4 × 4.1)
Main machinery: 2 diesels; 1,800 hp(m) (1.3 MW); 2 shafts
Speed, knots: 12.5
Cargo capacity: 500 tons oil
Guns: 1—37 mm, 2—12.7 mm MGs.

Comment: Built by Braia Shipyard and both commissioned 15 June 1971. Based at Constanta.



531

6/1989, Romanian Navy / 0081636

1 TANKER (AOT)

TULCEA 532

Displacement, tons: 2,170 full load
Dimensions, feet (metres): 250.4 × 41 × 16.4 (76.3 × 12.5 × 5)
Main machinery: 2 diesels; 4,800 hp(m) (3.5 MW); 2 shafts
Speed, knots: 16
Cargo capacity: 1,200 tons oil
Guns: 2—30 mm/65 (twin), 4—14.5 mm (2 twin) MGs

Comment: First one built by Tulcea Shipyard and commissioned 24 December 1992. Second of class reported in 1997 but not confirmed. Based at Constanta.



TULCEA

2001, Romanian Navy / 0114547

TUGS

Notes: There are also a number of harbour and river tugs, some of which are armed. These include two Roslavl (101 and 116) at Mangalia.



HARBOUR TUG 570

12/1994 / 0081638

2 OCEAN TUGS (ATA)

GROZAVU 500 HERCULES 501

Displacement, tons: 3,600 full load
Dimensions, feet (metres): 212.6 × 47.9 × 18 (64.8 × 14.6 × 5.5)
Main machinery: 2 diesels; 5,000 hp(m) (3.7 MW); 2 shafts
Speed, knots: 12
Guns: 2—30 mm (twin), 8—14.5 mm (2 quad) MGs.

Comment: First one built at Oltonitza Shipyard and commissioned 29 June 1993. Second of class completed in 1995. Based at Constanta.



GROZAVU
 2001, Romanian Navy
 0114543



Russian Federation

ROSIYSKIY VOENNOMORSKY FLOT

Country Overview

Formerly a constituent republic of the Soviet Union, the Russian Federation was established as an independent state in 1991. The largest country in the world with an area of 8,592,850 square miles, it is bordered to the south by North Korea, China, Mongolia, Kazakhstan, Azerbaijan and Georgia and to the west by Norway, Finland, Latvia, Estonia, Ukraine and Belarus, which with Lithuania separates the Kaliningrad oblast (formerly Königsberg) from the rest of Russia. It has a 20,331 n mile coastline with the Arctic and Pacific Oceans and the Caspian, Baltic and Black Seas. These three seas are inter-connected by an extensive inland waterway system whose main components are the Volga and Don rivers, the Volga-Don canal and the Volga-Baltic Waterway. A canal also links the system to the capital and largest city, Moscow. The Amur River is the most important navigable river in the far east region. Offshore, principal islands in the Arctic Ocean include the Franz Josef Land and Severnaya Zemlya archipelagos, Novaya Zemlya, Vaygach Island, the New Siberian Islands and Wrangel Island. In the Pacific lie the Kuril Islands, which extend from the Kamchatka Peninsula, and Sakhalin Island. Principal seaports include Novorossiysk (Black Sea), St Petersburg and Kaliningrad (Baltic), Nakhodka, Vostochnyy, Vladivostok, and Vanino (Pacific) and Murmansk and Archangel (Arctic). Major river ports include Rybinsk, Nizhniy Novgorod, Samara, Volgograd, Astrakhan and Rostov-on-Don. Territorial waters (12 n miles) are claimed. An EEZ (200 n miles), is also claimed and the limits have been partly defined by boundary agreements.

Headquarters Appointments

Commander-in-Chief:
Admiral Vladimir Vysotskiy
Chief of Naval Staff:
Admiral Mikhail Abramov
Deputy Commander-in-Chief:
Admiral Alexander Tatarinov

Senior Appointments

Commander, Northern Fleet:
Vice Admiral Nikolai Maksimov
Commander, Pacific Fleet:
Vice Admiral Konstantin Sidenko
Commander, Black Sea Fleet:
Vice Admiral Alexander Kletsov
Commander, Baltic Fleet:
Vice Admiral Viktor Mardusin
Commander, Caspian Flotilla:
Rear Admiral Viktor Kravchuk

Personnel

(a) 2009: 181 000 not including naval aviation and naval infantry. The approximate division is 50,000 in the

North, 41,000 in the Pacific, 36,000 in the Baltic, 23,000 in the Black Sea and 11,000 in the Caspian
(b) Approximately 30 per cent volunteers (officers and senior ratings) – remainder two years' national service (or three years if volunteered)

Associated Navies

The Soviet Union was dissolved in December 1991. In 1992 a Commonwealth of Independent States was formed from the Republics of the former Union, but without the Baltic States. In the Baltic the Russian flotilla had withdrawn from the former East German and Polish ports by 1993 and from the Baltic Republics by the end of 1994. The Caspian flotilla divided with some units going to Azerbaijan, Kazakhstan and Turkmenistan. In the Black Sea the division of the Fleet between Russia and Ukraine was finally implemented in 1997. Facilities are shared in some Crimean ports.

Main Bases

North: Severomorsk (HQ), Polyarny, Gremika, Zapadnaya Litsa, Gardzhievo, Vidyayev
Baltic: Kaliningrad (HQ), St Petersburg, Kronshadt, Baltiysk
Black Sea: Sevastopol (HQ) (Crimea), Tuapse, Novorossiysk, Feodosiya
Caspian: Astrakhan (HQ), Makhachkala
Pacific: Vladivostok (HQ), Sovetskaya Gavan, Magadan, Petropavlovsk, Komsomolsk, Rybachiy, Pavlosk, Razboynik, Strelok, Rakushka Bay. A new submarine base is to be built at Vilyuchinsk, near Petropavlovsk.

Operational

From 1991 a shortage of funds to pay for dockyard repairs, spare parts and fuel meant that many major surface warships were rarely at sea, and few operated away from their local exercise areas. Activity levels temporarily rose from 1996 but many ships, although technically in commission, remained in harbour. Activity reached a low point in 2002 but, in recent years, improvements in the budgetary situation and the publication of a new naval doctrine have led to a higher operational tempo. A busier pattern of exercises and operations was initiated in 2003 and activity levels were maintained during 2007.

Coast Defence

The Command of Naval Infantry and Coastal Artillery and Missiles includes a Division of Coastal Artillery and three Mechanised Infantry (Coastal Defence Troops) Brigades, an Artillery Self-Propelled Brigade, plus the units of Naval Infantry (five Brigades and one Division) and a number of minor units. The force of Coastal Artillery includes 19 Missile Battalions (SSC-1 Sepal SS-C-3 Styx) and 11 Gun

Battalions (130 mm and 152 mm). Many of these units are in reserve. The Naval Infantry were deployed in Chechnya in 2000.

Pennant Numbers

There have been no major changes to pennant numbers since 1993 except when ships transfer fleets.

Class and Weapon Systems Names

Most Russian ship class names differ from those allocated by NATO. In such cases the Russian name is placed in brackets after the NATO name. Project numbers are also placed in brackets. Weapon systems retain their NATO names with the Russian name, when known, placed in brackets. Some equipment now has three names – NATO, Russian Navy and Russian export.

Civilian Support Ships

Previously, civilian manned research ships and some icebreakers were effectively under naval control and were therefore included in the former Soviet/Russian section. These ships have been removed as all are now employed solely for commercial purposes.

Strength of the Fleet

Type	Active	Building
Submarines (SSBN)	15	2 (5)
Submarines (SSGN/SSN)	26	1
Submarines (SSK)	20	2
Auxiliary Submarines (SSA(N))	7	–
Aircraft Carriers (CV)	1	–
Battle Cruisers (CGN)	1	–
Cruisers (CG)	4	–
Destroyers (DDG)	17	–
Frigates (FFG)	7	8 (19)
Frigates (FF and FFL)	24	–
Corvettes	48	–
Patrol Forces	8	2 (2)
Minesweepers—Ocean	13	–
Minesweepers—Coastal	33	–
LSTs	18	1
Hovercraft (Amphib)	10	–
Replenishment Tankers	20	–
Hospital Ships	3	–

Notes:

There are large numbers of most classes 'in reserve', and flying an ensign so that skeleton crews may still be paid. The list above reflects only those units assessed as having some realistic operational capability or some prospect of returning to service after refit.

Fleet Disposition (1 January 2009)

Type	Northern	Baltic	Black Sea	Pacific	Caspian
SSBN	10	–	–	5	–
SSGN/SSN	16	–	–	9	–
SSK	7	3	1	9	–
SSA(N)	8	–	–	–	–
CV	1	–	–	–	–
CGN	1	–	–	–	–
CG	1	–	2	–	–
DDG	7	2	1	7	–
FFG	–	4	2	–	1
FF and FFL	9	–	6	9	–
Corvettes	4	19	9	14	2
LST	4	4	8	4	–
MCMV	12	10	9	8	3
AOR	7	4	3	7	–

Notes: MCMV are divided evenly between the four main Fleets plus a few in the Caspian Sea.

DELETIONS

Submarines

2006 1 Victor III (*Perm*)
2008 1 Delta III (*Borisoglebsk*)

Destroyers

2007 1 Udaloy (*Marshall Vasilievsky*), 1 Sovremenny (*Rastoropny*)

Frigates

2006 1 Krivak I (*Letuchy*)
2007 1 Krivak (*Zadorny*)

Corvettes

2006 1 Nanuchka (*Meteor*)
2008 2 Parchim (*Bashkortostan*, MPK 67)

Amphibious Forces

2008 *Mitrofan Maskalenko*

PENNANT LIST

Submarines

Ballistic Missile Submarines

Borey class

-	Yuri Dolgoruky
-	Alexander Nevsky (bldg)
-	Vladimir Monomach (bldg)

Typhoon class

806	Sevastopol (TK 20)
824	Dmitry Donskoy (TK 208)
828	Arkhangelsk (TK 17)

Delta IV class

805	Tula (K 114)
807	Ekaterinburg (K 84)
820	Briansk (K 117)
827	Verchotura (K 51)
839	Karelia (K 18)
849	Novomoskvoak (K 407)

Delta III class

862	Ryazan (K 44)
912	Zelenograd (K 506)
915	Podolsk (K 223)
938	Petrovaviosk-Kamchatsky (K 211)
983	Svyatoy Georgiy Pobedonosets (K 433)

Attack Submarines

Oscar II class

812	Voronezh (K 119)
816	Smolensk (K 410)
847	Orel (K 266)
902	Tomsk (K 150)
904	Cheliabinsk (K 442)
919	Krasnoyarsk (K 173)
920	Vilyachinsk (K 466)
947	Omsk (K 186)

Yasen class

-	Severodvinsk (K 329) (bldg)
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Akula I and II classes

-	Norpa (K 152)
835	Gopard (K 335)
853	Tigr (K 154)
867	Volk (K 461)
872	Leopard (K 328)
878	Pantera (K317)
890	Vepr (K 157)
951	Kuzbass (K 419)
970	Samara (K 295)
985	Kashalot (K 322)
987	Megaden (K 331)

Sierra I and II classes

602	Nizhny Novgorod (K 534)
648	Kostroma (K 276)
663	Pskov (K 336)

Victor III class

618	Obninsk (B 128)
654	Snezhnogorsk (B 388)
661	Tambov (B 448)
684	Danil Moskovskiy (B 414)

Auxiliary Submarines

656	Orenburg (BS 136)
AS 13	-
AS 15	-
AS 21	-
AS 23	-
AS 33	-
AS 35	-

Patrol Submarines

-	Kronshtadt (bldg)
-	Sevastopol (bldg)
-	B 394
-	B 445
405	Vologda (B 402)
409	Magneto-Gorsk (B 471)
425	Jaroslavl (B 808)
429	Lipetsk (B 177)
431	Vladikavkaz (B 459)
440	Novosibirsk (B 401)
468	Kaluga (B 800)
469	Vyborg (B 227)
477	Saint Petersburg
487	B 806
504	Chita (B 260)
507	Mogochey (B 345)
521	Krasnokamensk (B 190)
529	B 187
545	B 439
547	Ust-Kamshatsk (B 464)
549	Ust-Bolsheretsk (B 494)
554	Alrosa (B 871)

Aircraft Carriers

063	Admiral Kuznetsov
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Battle Cruisers

099	Pyotr Vailkiy
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Cruisers

011	Varyag
055	Marshal Ustinov
121	Moskva
707	Ochakov
713	Kerch

Destroyers

400	Vitse Admiral Kulakov
406	Gremyashchiy
434	Admiral Ushakov
543	Marshal Shaposhnikov
548	Admiral Panteloyev
564	Admiral Tributs
572	Admiral Vinogradov
605	Admiral Levchenko
610	Nastoychiy
619	Severomorsk
620	Bespokoiny
650	Admiral Chabenenko
678	Admiral Kharlamov
715	Bystry
754	Bezbozaznennyy
778	Burny
810	Smetlivy

Frigates

-	Admiral Gorshkov (bldg)
-	Soobrazitelny (bldg)
-	Boiky (bldg)
-	Sovershenny (bldg)
-	Stoiky (bldg)
-	Dagestan (bldg)
053	Povorino
054	Elsk
055	Kasimov
059	Akelsandrovets
060	Anodyr (BG)
064	Muramets
071	Suzdalets
079	Predanny (BG)
103	Kedrov (BG)
106	MPK 197
113	Menzhinsky (BG)
113	Yunga
129	MPK 139
138	Naryan-Mar
156	Orel (BG)
158	Dzerzhinsky (BG)
160	Vorovsky (BG)
164	Onega
170	Zorkiy (BG)
171	MPK 113
175	Pskov (BG)
178	Smelyy (BG)
190	Monchegorsk
196	Sneznogorsk
199	Brest
323	Motol
332	MPK 107
350	Sovetskaya Gavan
354	Stelyak
362	MPK 17
369	MPK 191
375	MPK 82
390	Korets
392	MPK 178
530	Steregushchiy (bldg)
691	Taterstan
702	Pyiky
712	Neustrashnyy
727	Yaroslav Mudryy (bldg)
731	Neukrotimyy
801	Ladny
808	Pytlivy

Training Ships

200	Perekop
210	Smolny

Corvettes

218	Aloksin
232	Kalmykia
243	MPK 227
245	MPK 105
304	MPK 192
308	Zelenodolsk
311	Kazanets
408	Moroz
418	Jney
423	Smerch
450	Razliv

Corvettes—continued

520	Rassvat
526	Nakat
535	Aysberg
540	Priboy
551	Liven
556	Geyzer
560	Zyb
570	Passat
615	Bora
618	Samum
617	Mirazh
620	Shtyl
705	Stupinets
825	Dmitrovgrad
874	Morshansk
954	Ivanovets

Mine Warfare Forces

402	Polyarny
418	Buevlyann
425	Kolomna
426	Mineralny Vodi
438	Leytenant Ilin
443	Kotelnich
454	Yelnya
466	Avangard
469	Yadryn
500	Yusup Akoev
501	German Ugryumov
505	Aleksey Labedev
522	Sergei Kolbasov
564	Magamed Gadgiev
718	MT 265
738	MT 264
770	Valentin Pikul
806	Motorist
811	V Gumavenko
831	Kommandor
855	Kontradmira Vlasov
901	A Zheleznyakov
908	Vitse Admiral Zakharin
909	Vitse Admiral Zhukov
911	Ivan Golubets
912	Turbinist
913	Kovrovets

Amphibious Forces

012	Olenegorskiy Gornik
018	Georgiy Pobedonosets
027	Kondopoga
031	Alexander Otrakovskiy
055	BDK-98
066	Osiyabya
077	Peresvet
081	Nikolay Vilkov
102	Kalningrad
110	Alexander Shabal'in
127	Minsk
130	Korolev
148	Orsk
150	Saratov
151	Azov
152	Nikolay Filchenkov
156	Yamal
158	Tsarsky Kunikov
770	Yevgeniy Kocheshkov
782	Mordoviya

Auxiliaries

204	Apsheron
506	Dauriya
600	Zvezdochka
MB 52	Sputnik
MB 165	Serdity
MB 169	Pochetnyy
MB 171	Loksa
MB 178	Saturn
SB 6	Ayanke
SB 6	Moshchny
SB 131	Nicolay Chiker
SB 135	Fotiy Krylov
SB 921	Paradoks
SB 922	Shakhter
SFP 177	Akademik Isanin
SFP 183	Akademir Seminikhin

Intelligence Collection Ships

-	Yuri Ivanov
GS 19	Zhigulevsk
GS 31	Tchusovoy
GS 39	Syzran
SSV 080	Pribaltika
SSV 169	Tavriya
SSV 175	Viktor Leonov
SSV 201	Priazov'e
SSV 208	Kurily
SSV 231	Vassily Tatischev
SSV 418	Ekvator
SSV 512	Kildin
SSV 520	Feodor Golovin
SSV 571	Belomore
SSV 824	Liman

SUBMARINES

Strategic Missile Submarines (SSBN)

3 TYPHOON (AKULA) CLASS (PROJECT 941/941U) (SSBN)

Name	No	Builders	Laid down	Launched	Commissioned
DMITRIY DONSKOY (TK 208)	824	Severodvinsk Shipyard	30 June 1976	23 Sep 1979	12 Dec 1981
ARKHANGELSK (TK 17)	828	Severodvinsk Shipyard	24 Feb 1985	Aug 1988	6 Nov 1987
SEVERSTAL (TK 20)	806	Severodvinsk Shipyard	6 Jan 1986	July 1988	4 Sep 1989

Displacement, tons: 18,500 surfaced; 26,500 dived
Dimensions, feet (metres): 562.7 oa; 541.3 wl x 80.7 x 42.7
 (171.5; 165 x 24.6 x 13)

Main machinery: Nuclear; 2 VM-5 PWR, 380 MW; 2 GT3A turbines; 81,600 hp(m) (60 MW); 2 emergency motors; 517 hp(m) (380 kW); 2 shafts, shrouded props; 2 thrusters (bow and stern); 2,860 hp(m) (1.5 MW)

Speed, knots: 25 dived; 12 surfaced

Complement: 176 (55 officers)

Missiles: SLBM: 20 Makeyev SS-N-20 (RSM 52/3M20) Sturgeon; three-stage solid fuel rocket; stellar inertial guidance to 8,300 km (4,500 n miles); warhead nuclear 10 MIRV each of 200 kT; CEP 500 m. 2 missiles can be fired in 15 seconds

SAM: SA-N-8 SAM capability when surfaced

A/S: Novator SS-N-15 Starfish; inertial flight to 45 km (24.3 n miles); warhead nuclear 200 kT or Type 40 torpedo

Torpedoes: 6–21 in (533 mm) tubes. Combination of torpedoes. The weapon load includes a total of 22 torpedoes and A/S missiles

Mines: Could be carried in lieu of torpedoes.

Countermeasures: Decoys: MG 34/44 tube launched decoys. ESM Rim Hat (Nekat M); radar warning. Park Lamp D/F.

Weapons control: 3R65 data control system.

Radars: Surface search: Snoop Pair (Albatros); I/J-band.

Sonars: Shark Gill; hull-mounted; passive/active search and attack; low/medium frequency.

Shark Rib flank array; passive; low frequency.

Mouse Roar; hull-mounted; active attack; high frequency.

Polamida towed array; passive search; very low frequency

Modernisation: First of class TK 208 started refit at Severodvinsk in 1994, was relaunched on 26 June 2002 and started sea trials in August 2004. It conducted the first submerged test launch of the Bulava missile on 21 December 2005 and is expected to remain in service as an operational unit, although it is unclear whether some or all missile tubes have been converted for Bulava firing. TK 20 may be converted to accommodate the Bulava missile in order to remain in service beyond 2010 but the future of TK 17 is unclear

Structure: This is the largest type of submarine ever built. Two separate 7.2 m diameter hulls covered by a single outer free-flood hull with anechoic Cluster Guard tiles plus separate 8 m diameter pressure-tight compartments in the fin and fore-ends. There is a

1.2 m separation between the outer and inner hulls along the sides. The unique features of Typhoon are her enormous size and the fact that the missile tubes are mounted forward of the fin. The positioning of the launch tubes mean a fully integrated weapons area in the bow section leaving space abaft the fin for the provision of two nuclear reactors, one in each hull. The fin configuration indicates a designed capability to break through ice cover up to 3 m thick; the retractable forward hydroplanes, the rounded hull and the shape of the fin are all related to under-ice operations. Diving depth, 1,000 ft (300 m).

Operational: Strategic targets are within range from anywhere in the world. Two VLF/ELF communication buoys are fitted. VLF navigation system for under-ice operations. Pert Spring SATCOM mast. Cod Eye radiometric sextant and Krommny 2 IFF. All based in the Northern Fleet at Zapadnaya Litsa. Of six boats completed, the second and third, TK 202 and TK 12 have been formally decommissioned while the fourth of class TK 13 is expected to follow TK 17 was damaged by fire during a missile loading accident in 1991 but was subsequently repaired. Old hulls are being disposed of under the Co-operative Threat Reduction Programme.



SEVERSTAL

1/1997 001639

6 DELTA IV (DELFIN) CLASS (PROJECT 667BDRM) (SSBN)

Name	No	Builders	Laid down	Launched	Commissioned
VERCHOTURE (K 51)	827	Severodvinsk Shipyard	23 Feb 1981	Jan 1984	29 Dec 1984
EKATERINBURG (K 84)	807	Severodvinsk Shipyard	Nov 1983	Dec 1984	Feb 1985
TULA (K 114)	805	Severodvinsk Shipyard	Dec 1985	Sep 1986	Jan 1987
BRIANSK (K 117)	820	Severodvinsk Shipyard	Sep 1986	Sep 1987	Mar 1988
KARELIA (K 18)	839	Severodvinsk Shipyard	Sep 1987	Nov 1988	Sep 1989
NOVOMOSKOVSK (K 407)	849	Severodvinsk Shipyard	Nov 1988	Oct 1989	1991

Displacement, tons: 10,800 surfaced; 13,500 dived
Dimensions, feet (metres): 544.6 oa; 518.4 wl x 39.4 x 28.5 (166; 158 x 12 x 8.7)
Main machinery: Nuclear; 2 VM-4 PWR, 180 MW; 2 GT3A-365 turbines; 37,400 hp(m) (275 MW); 2 emergency motors, 612 hp(m) (450 kW); 2 shafts
Speed, knots: 24 dived; 14 surfaced
Complement: 130 (40 officers)

Missiles: SLBM. 16 Makeyev SS-N-23 (R 29RM Sineva); 3-stage liquid fuel rocket; stellar inertial guidance to 8,300 km (4,500 n miles); warhead nuclear 4 10 MIRV each of 100 kT; CEP 500 m. Same diameter as SS-N 18 but longer
A/S: Novator SS-N-15 Starfish; inertial flight to 45 km (24.3 n miles); warhead nuclear 200 kT or Type 40 torpedo.
Torpedoes: 4-21 in (533 mm) tubes. Combination of 53 cm torpedoes. Total of 18 weapons
Countermeasures: ESM; Brick Pulp/Group; radar warning Park Lamp DJF

Raders: Surface search. Snoop Tray; I-band.
Sonars: Shark Gill; hull-mounted, passive/active search and attack; low/medium frequency.
 Shark Hide flank array; passive, low frequency
 Mouse Roar; hull-mounted; active attack; high frequency
 Pelamida towed array; passive search; very low frequency

Programmes: Construction first ordered 10 December 1975. This programme completed in late 1990 and included seven boats.

Modernisation: The Sineva missile is being progressively fitted throughout the class. A successful test firing from K 114 was conducted on 11 October 2008

Structure: A slim fitting is sited on the after fin which is reminiscent of a similar tube in one of the November class in the early 1980s. This is a dispenser for a sonar thin line towed array. The other distinguishing feature, apart from the size being greater than Delta III, is the pressure-tight fitting on the after end of the missile

tube housing, which may be a TV camera to monitor communications buoy and wire retrieval operations. This is not fitted in all of the class. Brick Spt optronic mast. Diving depth, 1,300 ft (400 m). The outer casing has a continuous acoustic coating and fewer free flood holes than the Delta III.

Operational: Two VLF/ELF communication buoys. Navigation systems include SATNAV, SINS, Cod Eye Pert Spring SATCOM. Missile launch is conducted at keel depth 55 m and at a speed of 6 kt

All operational units are part of the 12th Squadron based in the Northern Fleet at Saida Guba. Long refits have been completed as follows: K 51 (1999); K 84 (2002); K 114 (2005); K 117 (2007). The refit of K 18 was reported to have started in 2007 and was completed on 23 November 2008 when the boat was floated out. The refit of K 407 will complete the refit cycle. The class is likely to remain in service until about 2020. K 64 has been paid off, but there are reports that she may be undergoing conversion to an auxiliary submarine role.



DELTA IV

6/2003, Lemachko Collection / 1042305



KARELIA and VERCHOTURE

9/2000, Lemachko Collection / 0126226

5 DELTA III (KALMAR) CLASS (PROJECT 667BDR) (SSBN)

Name	No	Builders	Laid down	Launched	Commissioned
RYAZAN (K 44)	862	Severodvinsk Shipyard	May 1978	Sep 1978	Aug 1979
ZELENOGRAD (K 508)	912	Severodvinsk Shipyard	Sep 1978	Mar 1979	Nov 1979
PETROPAVLOSK KAMCHATSKY (K 211)	938	Severodvinsk Shipyard	Apr 1979	Dec 1979	Aug 1980
PODOLSK (K 223)	916	Severodvinsk Shipyard	Nov 1979	Apr 1980	25 Dec 1980
SYVATOY GIORGIY POBEDONOSETS (K 433)	993	Severodvinsk Shipyard	Apr 1980	Nov 1980	Aug 1981

Displacement, tons: 10,550 surfaced; 13,250 dived
Dimensions, feet (metres): 524.9 oa, 498.7 wl x 39.4 x 28.5 (160, 152 x 12 x 8.7)

Main machinery: Nuclear; 2 VM-4 PWR, 180 MW; 2 GT3A-635 turbines; 37,400 hp(m) (27.5 MW); 2 emergency motors, 612 hp(m) (450 kW); 2 shafts

Speed, knots: 24 dived; 14 surfaced

Complement: 130 (20 officers)

Missiles: SLBM: 16 Makeyev SS-N-18 (RSM 50) Stingray (Volna); 2-stage liquid fuel rocket with post boost vehicle (PBV); stellar inertial guidance, 3 variants:

Mod 1; range 6,500 km (3,500 n miles); warhead nuclear 3 MIRV each of 200 kT; CEP 900 m.

Mod 2; range 8,000 km (4,320 n miles); warhead nuclear 450 kT; CEP 900 m.

Mod 3; range 6,500 km (3,500 n miles); warhead nuclear 7 MIRV 100 kT; CEP 900 m.

Mods 1 and 3 were the first MIRV SLBMs in Soviet service.

Torpedoes: 4-21 in (533 mm) and 2-400 mm tubes. Combination of torpedoes Total of 16 weapons.

Countermeasures: ESM: Brick Pulp/Group; radar warning Park Lamp D/F

Radars: Surface search: Snoop Tray, I-band

Sonars: Shark Teeth; hull-mounted; passive/active search and attack, low/medium frequency.

Shark Hide flank array; passive; low frequency.

Mouse Roar; hull-mounted; active attack; high frequency.

Pelamida towed array; passive search; very low frequency

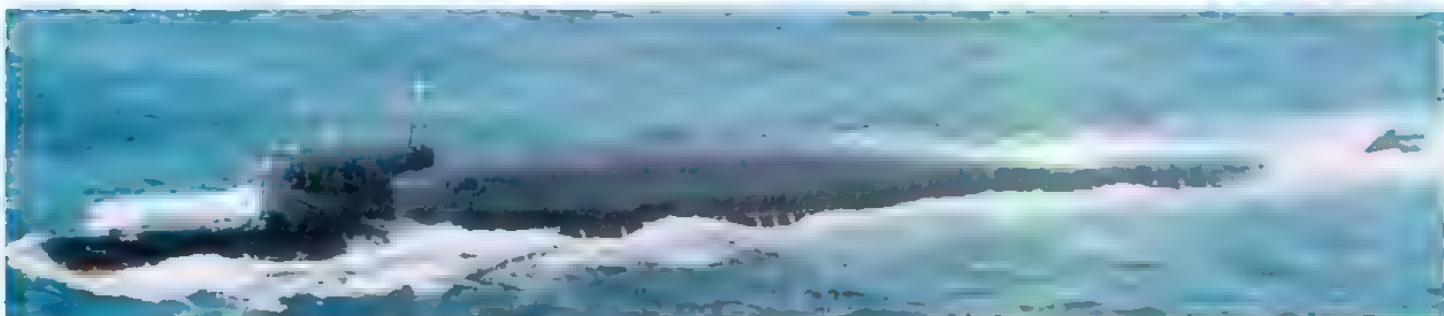
Modernisation: The dispenser tube on the after fin has been fitted to most of the class. It was planned to retrofit SS-N-23 but this was shelved

Structure: The missile casing is higher than in the decommissioned Delta I class to accommodate SS-N 18 missiles. The outer casing has a continuous 'acoustic' coating but is less streamlined and has more free flood holes than the Delta IV. Brick Spit optronic mast. Diving depth, 1,050 ft (320 m).

Operational: ELF/VLF communications with floating aerial and buoy; UHF and SHF aeriels. Navigation equipment includes Cod Eye radiometric sextant, SATNAV, SINS and Omega. Pert Spring SATCOM. Kremmny 2 IFF Of the 14 hulls completed, the first of class (K 441) paid off in 1996, three more in 1997 and another two by 1999. Four of these (K 449, K 455, K 487 and K 490) are laid up in fleet bases. The operational state of the remaining six has been variously reported but it must be assumed that they can still fire missiles. K 44 test-fired an SS-N-18 on 1 August 2008 and thereafter conducted an Arctic transit to join the Pacific Fleet in September 2008. It became part of the 16th squadron based in Rybachiy (Kamchatka) in the Pacific. The remaining Northern Fleet unit, K 804, was decommissioned in 2008. The last hull of the class K 129 converted to a DSRV carrier with missile tubes removed. It is expected that the whole class is to have been decommissioned by about 2013.

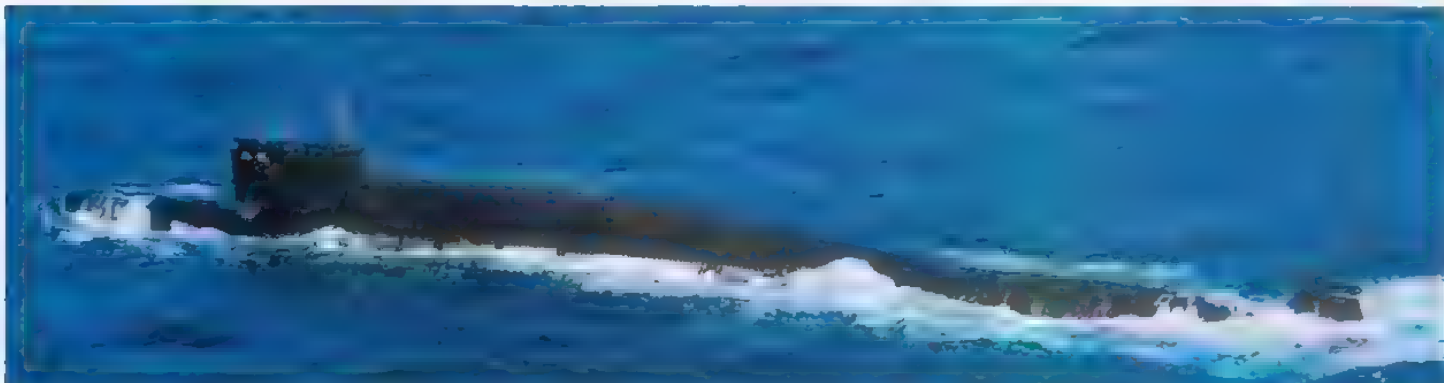


DELTA III
 1/2007, Ships of the World
 116/477



DELTA III

12/2005, Ships of the World / 1151151



DELTA III

1/2007, Ships of the World / 116/477

1 + 2 (5) BOREY CLASS (PROJECT 955/955A) (SSBN)

Name	No	Builders	Laid down	Launched	Commissioned
YURI DOLGORUKY	-	Sevmashpredpriyatiye, Severodvinsk	2 Nov 1996	15 Apr 2007	2009
ALEXANDER NEVSKY	-	Sevmashpredpriyatiye, Severodvinsk	19 Mar 2004	2009	2010
VLADIMIR MONOMACH	-	Sevmashpredpriyatiye, Severodvinsk	19 Mar 2008	2010	2011

Displacement, tons: 14,720 surfaced, 19,400 dived
Dimensions, feet (metres): 557.7 x 22.3 x 29.5
 (170.0 x 13.5 x 9.0)

Main machinery: Nuclear; 2 VM-5 PWR; 380 MW; 2 GT3A turbines; 60,000 hp(m) (44.8 MW); 2 emergency motors, 517 hp(m) (380 kW); 1 shaft, pump jet propulsor

Speed, knots: 25 dived; 15 surfaced
Complement: 107

Missiles: SLBM: 16 Bulava 30 (R-30); three-stage solid fuel rocket, inertial guidance with stellar and Glonass update to 8,300 km (4,500 n miles); warhead nuclear 6-10 MIRV each of 150 KT; CEP 250 m.

A/S SAM: To be announced.

SSM: Possible Klub-S (a possible cruise missile capability has also been reported).

Torpedoes: 6-21 in (533 mm) tubes. Combination of torpedoes, A/S missiles and surface-to-surface missiles

Mines: Could be carried in lieu of torpedoes.

Countermeasures: To be announced

Weapons control: To be announced

Radars: Surface search. To be announced.

Sonars: Integrated sonar suite likely to include flank array, towed array, conformal bow array and mine avoidance.

Programmes. The programme was initiated in 1982, but has been frustrated both by funding difficulties and by missile development problems. A first of class was laid down in November 1996, at which stage the plan was to field a new strategic missile SS-NX-28. This missile programme was cancelled in 1998 and construction of the boat was subsequently halted while development of a new missile, a navalised version of the SS-27 Topol-M (known as Bulava 30), was undertaken. A class of eight boats is expected.

Structure: In order to accommodate the smaller Bulava missile, the new submarine class incorporates significant

modifications of the original *Yuri Dolgoruky*. Reportedly, the first of class includes the bow and stern pressure sections and propulsion train of Akula II K 337 *Coguar* whose construction was halted. Similarly, the second of class *Alexander Nevsky* (Project 955A) is said to include sections of Akula I K 333 *Rhys*. These are the first Russian nuclear submarines to be equipped with a pump-jet propulsor. Diving depth 450 m.

Operational: A full test launch of the 'Bulava' missile was conducted on 27 September 2005 from the Typhoon class SSBN, *Dmitriy Donskoy* and the first submerged launch on 21 December 2005. Unsuccessful tests followed on 7 September, 25 October and 24 December 2006. A further successful test was achieved on 28 June 2007. Tests in 2008 were conducted on 18 September (partial success), 28 November (success) and 23 December (failure). *Yuri Dolgoruky* is expected to begin sea trials by mid-2009 and is to be based in the Northern Fleet.



YURI DOLGORUKY

4/2007 / 116/179



YURI DOLGORUKY

4/2007 / 11/0713

Attack Submarines (SSN/SSGN)

Notes: Attack submarines are coated with Cluster Guard anechoic tiles. All submarines are capable of laying mines from their torpedo tubes. All SSNs are fitted with non-acoustic environmental sensors for measuring discontinuities caused by the passage of a submarine in deep water.

0 + 1 YASEN CLASS (PROJECT 885) (SSN/SSGN)

Name	No	Builders	Laid down	Launched	Commissioned
SEVERODVINSK (K 329)	-	Severodvinsk Shipyard	21 Dec 1993	2006	2010

Displacement, tons: 5,900 surfaced; 8,600 dived
Dimensions, feet (metres): 364.2 x 39.4 x 27.6
 (111 x 12 x 8.4)

Main machinery: Nuclear; 1 PWR; 195 MW; 2 GT3A turbines; 43,000 hp(m) (31.6 MW); 1 shaft; pump-jet propulsor; 2 spinners

Speed, knots: 28 dived; 17 surfaced
Complement: 80 (30 officers)

Missiles: SLCM/SSM Novator Alfa SS-N-27
 8 VLS launchers in after casing. Total of 24 missiles.

A/S SS-N-15: Fired from torpedo tubes.

Torpedoes: 8-21 in (533 mm) tubes. Inclined outwards.

Total of about 30 weapons.

Countermeasures: ESM. Radar warning.

Radars: Surface search. I-band.

Sonars: Irtysh Amfora system includes bow-mounted spherical array; passive/active search and attack; low frequency.

Flank and towed arrays; passive; very low frequency.

Programmes: Malakhit design. Confirmed building in 1993. Reported plans were for seven of the class

to replace the Victor III class. While it was initially reported that these were to be multipurpose SSNs derived from the Akula II class, delays in the programme suggest that there has been considerable scope for re-design and/or technical upgrade. The building of a second of class has been reported but not confirmed.

Structure: Some of the details given are speculative. VLS launchers for SSMs, cantod torpedo tubes and spherical bow sonars are all new to Russian designs.



SEVERODVINSK

6/2006, A Sheldon-Duplatz / 1158520

8 OSCAR II (ANTYEV) (PROJECT 949B) (SSGN)

Name	No	Builders	Laid down	Launched	Commissioned
KRASNOYARSK (K 173)	919	Severodvinsk Shipyard	4 Aug 1983	Mar 1986	24 Feb 1987
VORONEZH (K 119)	812	Severodvinsk Shipyard	1984	1986	1988
SMOLENSK (K 410)	816	Severodvinsk Shipyard	1986	1988	1990
CHELIABINSK (K 442)	904	Severodvinsk Shipyard	1987	1989	29 Dec 1990
VILYACHINSK (K 456)	920	Severodvinsk Shipyard	1988	1990	1991
OREL (K 266) (ex-Severodvinsk)	847	Severodvinsk Shipyard	1989	22 May 1992	Dec 1992
OMSK (K 188)	947	Severodvinsk Shipyard	1990	8 May 1993	15 Dec 1993
TOMSK (K 150)	902	Severodvinsk Shipyard	1993	18 July 1996	28 Feb 1997

Displacement, tons. 13,900 surfaced; 18,300 dived
Dimensions, feet (metres): 505.2 x 59.7 x 29.5
 (154 x 18.2 x 9)

Main machinery: Nuclear; 2 VM-5 PWR, 380 MW; 2 GT3A turbines, 98,000 hp(m) (72 MW); 2 shafts, 2 spinners
Speed, knots: 28 dived; 15 surfaced
Complement: 107 (48 officers)

Missiles: SSM: 24 Chelomey SS-N-19 Shipwreck (Granit); inertial with command update guidance; active radar homing to 20-550 km (10.8-300 n miles) at 2.5 Mach, warhead 750 kg HE or 500 kT nuclear. Novator Alfa SS-N-27 may be carried in due course.

A/S: Novator SS-N-15 Starfish (Tsakra) fired from 53 cm tubes; inertial flight to 45 km (24.3 n miles); warhead nuclear 200 kT or Type 40 torpedo.

Novator SS-N-16 Stallion fired from 65 cm tubes; inertial flight to 100 km (54 n miles); payload nuclear 200 kT (Vodopad) or Type 40 torpedo (Veder)

Torpedoes. 4—21 in (533 mm) and 2—26 in (650 mm) tubes. Combination of 65 and 53 cm torpedoes. Total of 28 weapons including tube-launched A/S missiles.

Mines: 32 can be carried.

Countermeasures: ESM: Rim Hat; intercept.

Weapons control: Punch Bowl for third party targeting.

Radars: Surface search Snoop Pair or Snoop Half, I-band.

Sonars: Shark Gill; hull-mounted; passive/active search and attack; low/medium frequency.

Shark Rib flank array; passive; low frequency.

Mouse Roar; hull-mounted; active attack; high frequency.

Palamida towed array; passive search; very low frequency.

Programmes: Building of a class of 14 began in 1978. Two

Oscar Is and 11 Oscar IIs were completed. Work on the

12th Oscar II (K 139, *Belgorod*) was thought to have

stopped but it was announced by the Defence Minister

on 16 July 2004 that the boat would be completed.

Although a further announcement on 20 July 2006 said

that no further funding would be made available there

were reports that work had continued in 2007 but no

further reports in 2008.

Modernisation: Replacement of the SS-N-19 missiles is

reported to be under consideration.

Structure: SSM missile tubes are in banks of 12 either side and external to the 8.5 m diameter pressure hull; they are inclined at 40° with one hatch covering each pair, the whole resulting in the very large beam. The position of the missile tubes provides a large gap of some 4 m between the outer and inner hulls. Diving depth, 1,000 ft (300 m) although 2,000 ft (600 m) is claimed. There are 10 watertight compartments.

Operational: ELF/VLF communications buoy. All have a tube on the rudder fin as in Delta IV which is used for dispensing a thin line towed sonar array. Port Spring SATCOM. K 119, K 410 and K 266 are based at Litsa South in the Northern Fleet and K 442, K 186, K 150, K 173 and K 456 at Tarya Bay in the Pacific. In 1999 one Northern Fleet unit deployed for the first Russian SSGN patrol in the Mediterranean for 10 years. At the same time a Pacific Fleet unit sailed to the western seaboard of the United States. The two Oscar Is (K 206 and K 525) have been scrapped. K 148 and K 132 are laid up awaiting disposal and K 141 (*Kursk*) sunk as the result of an internal weapon explosion on 12 August 2000. The submarine was raised in late 2001 and broken up ashore.



OSCAR II

11/2001, *Ships of the World* / 0528392

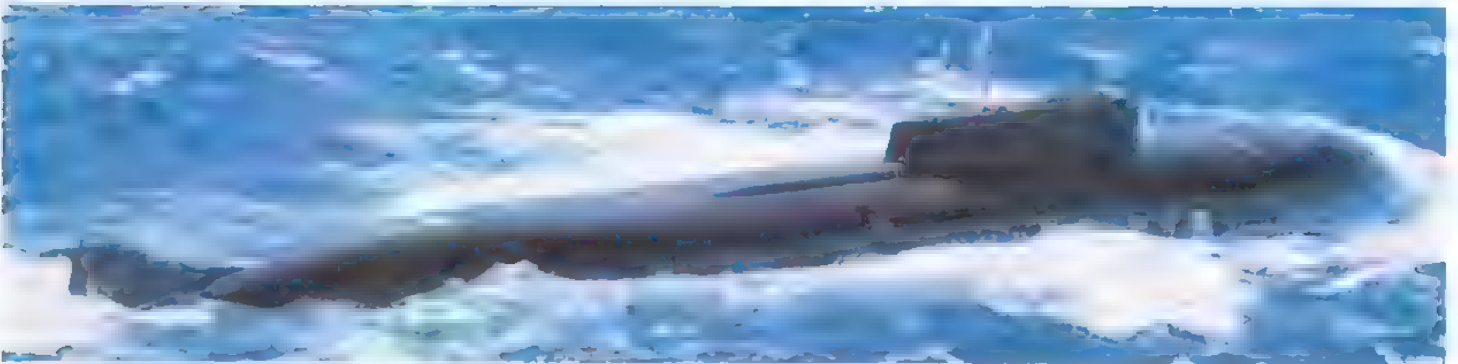
OREL

6/2005, *Lemachko Collection* / 1159844



TOMSK

6/2005, Lemachko Collection / 1159843



OSCAR II

11/2006, Ships of the World / 1159978



OREL

9/2001, Ships of the World / 0126366

11 AKULA (SCHUKA-B) CLASS (PROJECT 971/971U/09710) (SSN)

Name	No	Builders	Laid down	Launched	Commissioned
KASHALOT (K 322)	985	Komsomolsk Shipyard	1983	1985	1986
MAGADAN (K 331) (ex-Narwhal)	997	Komsomolsk Shipyard	1984	1986	1990
PANTERA (K 317)	878	Severodvinsk Shipyard	Nov 1986	May 1990	30 Dec 1990
VOLK (K 461)	867	Severodvinsk Shipyard	1986	11 June 1991	30 Dec 1991
KUZBASS (K 419) (ex-Morzh)	951	Komsomolsk Shipyard	1984	1989	1991
LEOPARD (K 328)	872	Severodvinsk Shipyard	Oct 1988	28 July 1992	Dec 1992
TIGR (K 154)	853	Severodvinsk Shipyard	1989	10 June 1993	Dec 1993
SAMARA (K 295) (ex-Drakon)	970	Komsomolsk Shipyard	1985	15 July 1994	29 July 1995
NERPA (K 152)	-	Komsomolsk Shipyard	1986	24 June 2006	2007
VEPR (II) (K 157)	890	Severodvinsk Shipyard	1991	10 Dec 1994	Dec 1995
GEPARD (II) (K 335)	835	Severodvinsk Shipyard	1991	18 Aug 1999	29 July 2001

Displacement, tons: 7,500 surfaced; 9,100 (9,500 Akula II) dived

Dimensions, feet (metres): 360.1 oa; 337.9 wl x 45.9 x 34.1 (110; 103 x 14 x 10.4)

Main machinery: Nuclear; 1 VM-5 PWR; 190 MW; 2 GT3A turbines; 47,600 hp(m) (35 MW); 2 emergency propulsion motors; 750 hp(m) (552 kW); 1 shaft; 2 spinnars; 1,006 hp(m) (740 kW)

Speed, knots: 28 dived; 10 surfaced

Complement: 82 (31 officers)

Missiles: SLCM/SSM: Reduga SS-N-21 Sampson (Granat) fired from 21 in (533 mm) tubes, land-attack, inertial/terrain-following to 3,000 km (1,620 n miles) at 0.7 Mach, warhead nuclear 200 kT, CEP 150 m. Flies at a height of about 200 m.

Novator Alfa SS-N-27 subsonic flight with supersonic boost for terminal flight; 180 km (97 nm); warhead 200 kg. May be fitted in due course.

SAM: SA-N-5/8 Strela portable launcher, 18 missiles

AS: Novator SS-N-15 Starfish (Tsakra) fired from 53 cm tubes; inertial flight to 45 km (24.3 n miles); warhead nuclear 200 kT or Type 40 torpedo.

Novator SS-N-16 Stallion fired from 650 mm tubes; inertial flight to 100 km (54 n miles); payload nuclear 200 kT (Vodopad) or Type 40 torpedo (Veder).

Torpedoes: 4-21 in (533 mm) and 4-25.6 in (650 mm) tubes. Combination of 53 and 65 cm torpedoes. Tube liners can be used to reduce the larger diameter tubes to 533 mm. Total of 40 weapons. In addition the Improved Akulas and Akula IIs have six additional 533 mm external tubes in the upper bow area.

Countermeasures: ESM: Rim Hat; intercept.

Radars: Surface search: Snoop Pair or Snoop Half with back-to-back aereals on same mast as ESM

Sonars: Shark Gill (Skat MGK 503), hull-mounted; passive/active search and attack; low/medium frequency Mouse Roar; hull-mounted; active attack; high frequency.

Skat 3 towed array; passive; very low frequency

Programmes: Malakhit design. From K 461 onwards, the Akula Is were 'improved'. K 157 was the first Akula II to complete and she was followed by K 835. The fate of a third Akula II (K 337 Cougar) has not been confirmed but it is believed that the bow and stern pressure sections have been incorporated in the new SSBN *Yuri Dolgoruky*. Akula I K 152 had been building for nearly 20 years at Komsomolsk before being launched in 2006. The submarine is to be leased for 10 years by the Indian Navy from 2009 following certification by the Russian Navy.

Structure: The very long fin is particularly notable. Has the same broad hull as Sierra and has reduced radiated noise levels by comparison with Victor III of which she is the traditional follow-on design. A number of prominent non-acoustic sensors appear on the fin leading-edge and on the forward casing in the later Akulas. The engineering standards around the bridge and casing are noticeably to a higher quality than other classes. The design has been incrementally improved with reduced noise levels, boundary layer suppression and active noise cancellation reported in the later units. The improved hulls have an additional six external torpedo tubes and the two Akula IIs have been lengthened by 3.7 m to incorporate further noise reduction developments. There are six watertight compartments. Operational diving depth, 1,476 ft (450 m).

Operational: Pert Spring SATCOM. K 461, K 328, K 154, K 335, K 157 and K 317 are based in the Northern Fleet at Saida Guba. K 331, K 419, K 295 and K 985 are based in the Pacific Fleet at Taryia Bay. These submarines are the core units of the Russian SSN force. *Vepr* visited Brest in September 2004, the first visit by a Russian nuclear submarine to a foreign port. K 317 *Pantera* had a serious fire in November 2006. K 152 began sea trials in October 2008. In an accident on 8 November 2008, 20 people were killed by the accidental activation of a fire-extinguishing system.



KUZBASS

6/2007, *Ships of the World* / 1305156

VEPR (Akula II)

9/2004, *B Prézelin* / 1042291

VEPR

9/2004, *B Prézelin* / 1042291



KUZBASS

6/2007, *Ships of the World* / 1305155

1 SIERRA I (BARRACUDA) CLASS (PROJECT 945) (SSN)

Name	No	Builders	Laid down	Launched	Commissioned
KOSTROMA (K 276) (ex-Krab)	648	Nizhny Novgorod/Severodvinsk Shipyard	8 May 1982	29 June 1983	21 Sep 1984

Displacement, tons: 7,200 surfaced; 8,100 dived

Dimensions, feet (metres): 351 x 41 x 28.9 (107 x 12.5 x 8.8)

Main machinery: Nuclear; 1 VM-6 PWR; 190 MW; 1 GT3A turbine; 47,500 hp(m) (70 MW); 2 emergency motors; 2,004 hp(m) (1.5 MW); 1 shaft; 2 spinners; 1,006 hp(m) (740 kW)

Speed, knots: 34 dived; 10 surfaced

Complement: 61 (31 officers)

Missiles: SLCM Raduga SS-N-21 Sampson (Grenat) fired from 21 in (533 mm) tubes; land attack; inertial/terrain-following to 3,000 km (1,820 n miles) at 0.7 Mach; warhead nuclear 200 kT. CEP 150 m. Probably flies at a height of about 200 m.

A/S: Novator SS-N-15 Starfish (Tsakra) fired from 53 cm tubes; inertial flight to 45 km (24.3 n miles); warhead nuclear 200 kT or Type 40 torpedo.

Novator SS-N-16 Station fired from 65 cm tubes; inertial flight to 100 km (54 n miles); payload nuclear 200 kT (Vodopad) or Type 40 torpedo (Veder).

Torpedoes: 4-25.6 in (650 mm) and 4-21 in (533 mm) tubes. Combination of 65 and 53 cm torpedoes. Total of 40 weapons.

Mines: 42 in lieu of torpedoes.

Countermeasures: ESM: Rim Hat/Bald Head; Intercept, Park Lamp D/F

Radars: Surface search. Snoop Pair with back-to-back ESM aerial

Sonars: Shark Gill; hull-mounted; passive/active search and attack, low/medium frequency

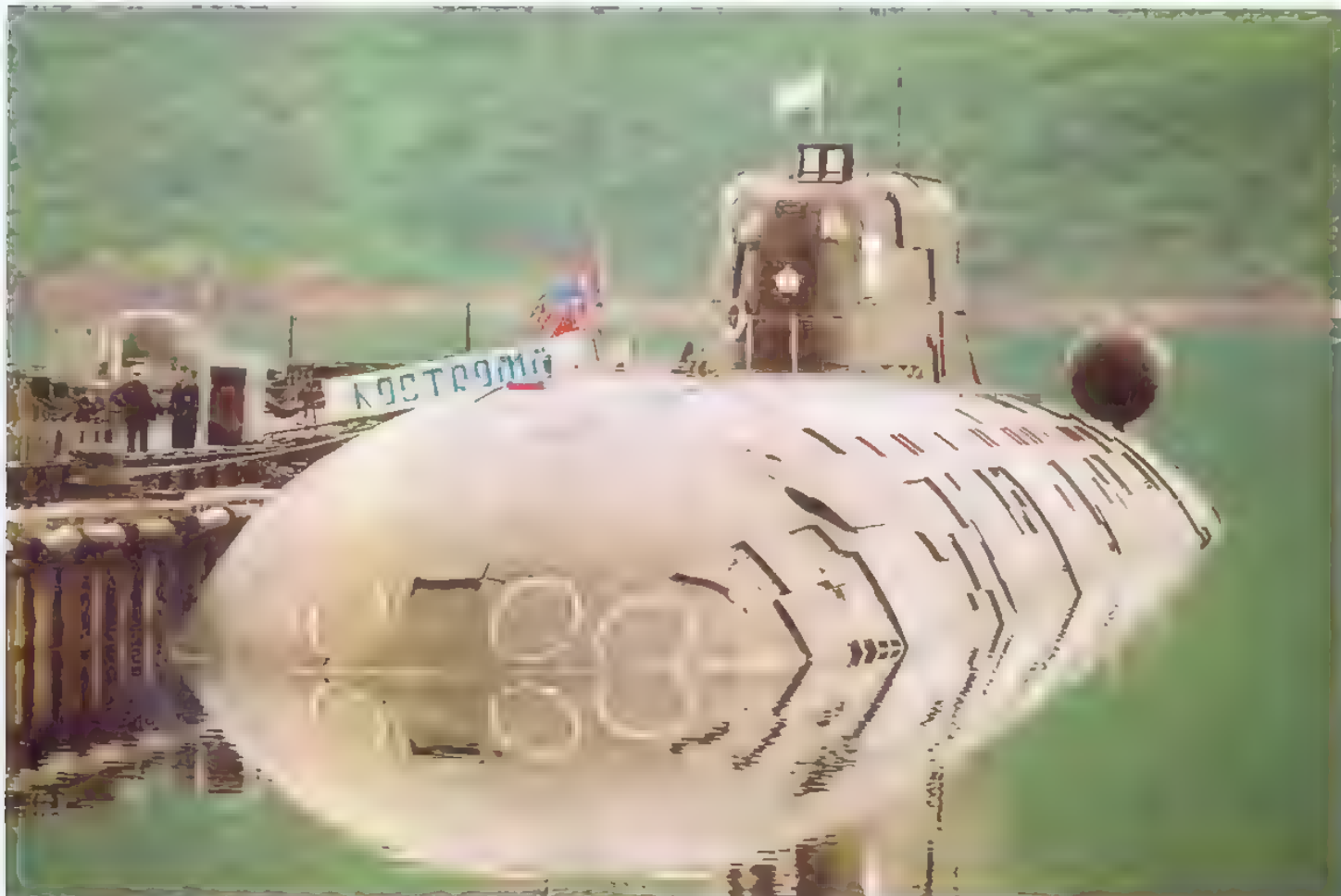
Shark Rib flank array; passive; low frequency. Mouse Roar; hull-mounted; active attack; high frequency

Skat 3 towed array; passive; very low frequency.

Programmes: Launched at Gorky (Nizhny Novgorod) and transferred by river/canal to be fitted out at Severodvinsk.

Structure: Based on design experience gained with deleted Alfa class, pressure hull constructed of titanium alloy, providing deep diving capability. Magnetic signature also reduced. Distance between hulls increases survivability and reduces radiated noise. There are six watertight compartments. The pod on the after fin is larger than that in 'Victor III'. Bulbous casing at the after end of the fin is for a towed communications buoy. Diving depth 2,460 ft (750 m).

Operational: Pert Spring SATCOM. Based in the Northern Fleet at Ara Guba. It is believed that K 276 was in a collision with USS *Baton Rouge* on 11 February 1992. A second of class K 239 *Karp* is laid up.



KOSTROMA

6/2002, *Lemachko Collection* / 0547070

2 SIERRA II (KONDOR) CLASS (PROJECT 945B) (SSN)

Name	No	Builders	Laid down	Launched	Commissioned
PSKOV (K 336) (ex-Okun)	663	Nizhny Novgorod	May 1990	June 1992	12 Aug 1993
NIZHNY NOVGOROD (K 534) (ex-Zubstka)	602	Nizhny Novgorod	June 1986	June 1988	28 Dec 1990

Displacement, tons: 7,600 surfaced, 9,100 dived
Dimensions, feet (metres): 364.2 × 46.6 × 28.9
 (111 × 14.2 × 8.8)

Main machinery: Nuclear; 1 VM-5 PWR; 190 MW; 1 GT3A turbine; 47,500 hp(m) (70 MW); 2 emergency motors; 2,004 hp(m) (1.5 MW); 1 shaft; 2 spinners; 1,006 hp(m) (740 kW)

Speed, knots: 32 dived; 10 surfaced
Complement: 61 (31 officers)

Missiles: SLCM: Raduga SS-N-21 Sampson (Granat) fired from 21 in (533 mm) tubes; land-attack; inertial/terrain-following to 3,000 km (1,620 n miles) at 0.7 Mach; warhead nuclear 200 kT, CEP 150 m. Flies at a height of about 200 m.
SAM: SA-N-5/8 Strela portable launcher; 12 missiles.

A/S: Novator SS-N-15 Starfish (Tsakra) fired from 53 cm tubes; inertial flight to 45 km (24.3 n miles); warhead nuclear 200 kT or Type 40 torpedo.

Novator SS-N-16 Stallion fired from 65 cm tubes; inertial flight to 100 km (54 n miles); payload nuclear 200 kT (Vodopad) or Type 40 torpedo (Veder).

Torpedoes: 4—25.6 in (650 mm) and 4—21 in (533 mm) tubes. Combination of 65 and 53 cm torpedoes. Total of 40 weapons.

Mines: 42 in lieu of torpedoes.

Countermeasures: ESM, Rim Hat; Intercept, Park Lamp D/F
Radars: Surface search: Snoop Pair with back-to-back ESM aerial.

Sonars: Shark Gill; hull-mounted; passive/active search and attack; low/medium frequency.
 Shark Rib flank array; passive; low frequency.

Mouse Roar; hull-mounted; active attack, high frequency
 Skat 3 towed array; passive; very low frequency

Programmes: A third of class K 536 Mars, was scrapped before completion in July 1992.

Structure: Titanium hull. The towed communications buoy has been recessed. A 10 point environmental sensor is fitted at the front end of the fin. The standoff distance between hulls is considerable and has obvious advantages for radiated noise reduction and damage resistance. Diving depth, 2,460 ft (750 m). Numbers and sizes of torpedo tubes are uncertain with different figures given by Russian sources. There are seven watertight compartments.

Operational: Based in the Northern Fleet, at Ara Guba
 K 534 completed a refit/refuel in May 2008



SIERRA II

8/1998 / 0050009



SIERRA II

6/1997 / 0019009



PSKOV (with KOSTROMA (Sierra I))

6/2002, Lemachko Collection / 0570328

4 VICTOR III (SCHUKA) CLASS (PROJECT 671 RTMK) (SSN)

Name	No	Builders	Laid down	Launched	Commissioned
SNEZHNOGORSK (B 388) (ex Petrozavodsk)	654	Admiralty, Leningrad	8 Sep 1987	3 June 1988	30 Nov 1988
OBNINSK (B 138)	618	Admiralty, Leningrad	7 Dec 1988	5 Aug 1989	10 May 1990
DANIL MOSKOVSKIY (B 414)	684	Admiralty, Leningrad	1 Dec 1988	31 Aug 1990	30 Dec 1990
TAMBOV (B 448)	661	Admiralty, Leningrad	31 Jan 1991	17 Oct 1991	24 Sep 1992

Displacement, tons: 4,850 surfaced, 6,300 dived

Dimensions, feet (metres): 351.1 × 34.8 × 24.3 (107 × 10.6 × 7.4)

Main machinery: Nuclear; 2VM-4 PWR; 150 MW; 2 turbines, 31,000 hp(m) (22.7 MW); 1 shaft; 2 spinners; 1,020 hp(m) (750 kW)

Speed, knots: 30 dived; 10 surfaced

Complement: 98 (17 officers)

Missiles: SLCM Raduga SS-N-21 Sampson (Granat) fired from 21 in (533 mm) tubes; land-attack; inertial/terrain-following to 3,000 km (1,820 n miles) at 0.7 Mach. CEP 150 m or Novator Alfa SS-N-27; to 180 km (97 n miles); warhead 200 kg.

A/S: Novator SS-N-15 Starfish (Tsakra) fired from 53 cm tubes; inertial flight to 45 km (24.3 n miles); Type 40 torpedo.

Novator SS-N-16 Stallion fired from 65 cm tubes; inertial flight to 100 km (54 n miles); payload nuclear 200 kT (Vodopad) or Type 40 torpedo (Veder).

Torpedoes: 4–21 in (533 mm) and 2–25.6 in (650 mm) tubes. Combination of 53 and 65 cm torpedoes. Can carry up to 24 weapons. Liners can be used to reduce 650 mm tubes to 533 mm

Mines: Can carry 36 in lieu of torpedoes.

Countermeasures: ESM Brick Group (Brick Spit and Brick Pulp); intercept. Park Lamp D/F.

Radars: Surface search SnoopTray 2; I-band.

Sonars: Shark Gill; hull-mounted; passive/active search and attack, low/medium frequency.

Shark Rib flank array; passive; low frequency

Moose Roar; hull-mounted; active attack; high frequency.

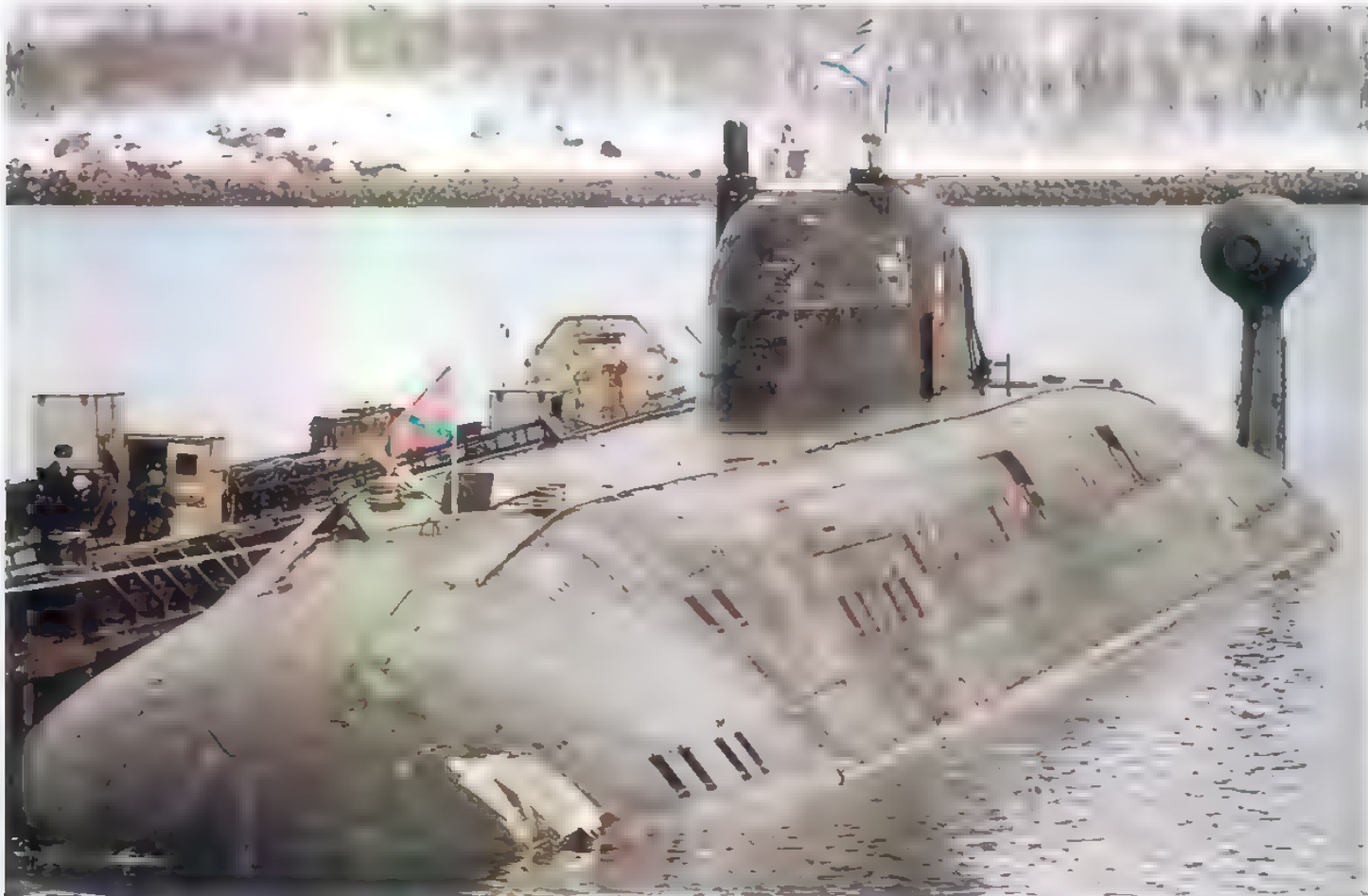
Scat 3 towed array; passive; very low frequency.

Programmes: The first of class was completed at Komsomolsk in 1978. With construction also being carried out at Admiralty Yard, Leningrad, there was a very rapid building programme up to the end of 1984. Construction then continued only at Leningrad and at

a rate of about one per year which terminated in 1991. The last of the class of 26 boats completed sea trials in October 1992. Of these, the first 21 hulls were designated Type 671RTM. The final five hulls were designated Type 671RTMK to reflect modifications to fire cruise missiles. The last four of these are in service.

Structure: The streamlined pod on the stern fin is a towed sonar array dispenser. Water environment sensors are mounted at the front of the fin and on the forward casing as in the Akula and Sierra classes. Diving depth, 1,300 ft (400 m).

Operational: VLF communications buoy VHF/UHF aeriels. Navigation equipment includes SINS and SATNAV. Pert Spring SATCOM. Kremmny 2 IFF. Much improved acoustic quietening puts the radiated noise levels at the upper limits of the USN Los Angeles class. All remaining operational units are based in the Northern Fleet at Ltse South or Are Guba although they rarely go to sea. Twenty two have paid off so far although up to nine of these are in reserve and laid up at anchorages in both Fleets.



VICTOR III

2000, Lemachko Collection / 0126230



DANIL MOSKOVSKY

7/2004 / 104231

Patrol Submarines (SSK)

Notes: (1) One remaining target submarine of the Bravo class (379) is used for alongside training and one remaining modified Romeo class submarine is used for trials. Both are based in the Black Sea.
 (2) Tango class B 380, previously reported as undergoing reactivation, has been decommissioned.

1 + 2 LADA CLASS (PROJECT 677) (SSK)

Name	No	Builders	Laid down	Launched	Commissioned
SAINT PETERSBURG	477	Admiralty, St Petersburg	26 Dec 1997	28 Oct 2004	2009
KRONSTADT	-	Admiralty, St Petersburg	28 July 2005	2009	2010
SEVASTOPOL	-	Admiralty, St Petersburg	10 Nov 2008	2010	2011

Displacement, tons: 1,765 surfaced; 2,650 dived
Dimensions, feet (metres): 219.2 x 23.6 x 14.4
 (66.8 x 7.2 x 4.4)
Main machinery: Diesel-electric; 2 diesel generators; 3,400 hp(m) (2.5 MW); 1 motor; 5,576 hp(m) (4.1 MW); 1 shaft
Speed, knots: 21 dived; 10 surfaced
Range, n miles: 6,000 at 7 kt snorting
Complement: 37

Missiles: SLCM: Novator Alfa Klub SS-N-27 (3M-54 anti-ship missiles); active radar homing to 180 km (97.2 n miles) at 0.7 Mach (cruise) and 2.5 Mach (attack); warhead 450 kg. Novator Klub SS-N-30 (3M14) land-attack guidance to 300 km (162 n miles); at 0.7 Mach; warhead 450 kg.
Torpedoes: 6-21 in (533 mm) tubes. 18 weapons.
Mines: In lieu of torpedoes.

Countmeasures: ESM. Intercept.
Radars: Surface search. I-band.
Sonars: Conformal bow and flank arrays, active/passive, medium frequency. Towed array (low frequency).

Programmes: The national variant of this submarine is known as the Lada class. Work began on the first of class in 1996 and construction started in St Petersburg in 1997. A second and third of class are also under construction. The export version of the submarine is known as the Amur class of which there are six designs based on different surface displacements (550, 750, 950, 1450, 1650 and 1850). The 'Amur 1650'



SAINT PETERSBURG

6/2005, A Sheldon-Duplaix / 1177919

probably has the most export potential and it was possibly in anticipation of an order from India and China that work began on such a submarine in 1997 at the same time as the similar Lada class. Work was temporarily suspended in 1998, and the hull may have been resumed in the Lada construction programme.

Structure: The first Russian single-hulled submarine, built to a Rubin design based on the 'Amur 1650'. A fuel cell

plug (for AIP) of about 12 m can be inserted to allow installation of AIP although this is unlikely in the near future. Diving depth 820 ft (250 m). Anon-hull penetrating optronic periscope supplied by Elektropribor, is fitted.

Operational: Sea trials of the first of class started on 29 November 2005 and a second round of trials in August 2006. Apparent delays in achieving operational status suggest there may be technical problems.



SAINT PETERSBURG

6/2005, A Sheldon-Duplaix / 1177920



SAINT PETERSBURG

6/2005, A Sheldon-Duplaix / 1177918

19 KILO CLASS (PROJECT 877K/877M/636) (SSK)

Name	No	Builders	Laid down	Launched	Commissioned
CHITA (B 260)	504	Komsomolsk Shipyard	Sep 1980	19 Aug 1981	Dec 1981
VYBORG (B 227)	469	Komsomolsk Shipyard	Sep 1981	Sep 1982	Dec 1982
VOLOGDA (B 402)	405	Nizhny Novgorod	Fab 1983	1984	27 Dec 1984
B 806	487	Nizhny Novgorod	—	—	1986
B 439	545	Komsomolsk Shipyard	1985	1985	1986
B 445	—	Komsomolsk Shipyard	1986	1987	Dec 1987
JAROSLAVL (B 808)	425	Nizhny Novgorod	—	—	1988
B 394	—	Komsomolsk Shipyard	—	—	Dec 1988
KALUGA (B 800)	468	Nizhny Novgorod	—	—	1989
UST-KAMSHATS (B 464)	547	Komsomolsk Shipyard	1988	1988	1989
NOVOSIBIRSK (B 401)	440*	Nizhny Novgorod	June 1988	Aug 1989	4 Jan 1990
MAGNETO-GORSK (B 471)	409	Nizhny Novgorod	—	—	1990
UST-BOLSHERETSK (B 494)	549	Komsomolsk Shipyard	1989	1990	1990
VLADIKAVKAZ (B 459, ex-B 434)	431	Nizhny Novgorod	—	—	1990
ALROSA (B 871)	554	Nizhny Novgorod	May 1988	Aug 1989	Dec 1990
LIPETSK (B 177)	429	Nizhny Novgorod	—	—	1991
B 187	529*	Komsomolsk Shipyard	1990	1990	1991
KRASNOKAMENSK (B 190)	521*	Komsomolsk Shipyard	8 May 1992	1993	1993
MOGOCHY (B 345)	507	Komsomolsk Shipyard	22 Apr 1993	1993	22 Jan 1994

Displacement, tons: 2,325 surfaced, 3,076 dived
Dimensions, feet (metres): 238.2; 242.1 (Project 636) × 32.5 × 21.7
 (72.6; 73.8 × 9.9 × 6.6)

Main machinery: Diesel-electric; Type 4-2DL-42M 2 diesels
 (Type 4-2AA-42M in Project 636); 3,650 hp(m) (2.68 MW);
 2 generators; 1 motor; 5,800 hp(m) (4.34 MW); 1 shaft,
 2 auxiliary MT-168 motors; 204 hp(m) (150 kW);
 1 economic speed motor; 130 hp(m) (95 kW)

Speed, knots: 17 dived; 10 surfaced; 9 snorting
Range, n miles: 6,000 at 7 kt snorting; 400 at 3 kt dived
Complement: 52 (13 officers)

Missiles: SSM Novator Alfa SS-N-27 may be fitted in due course

SAM: 6-8 SA-N-5/B; IR homing from 600 to 6,000 m at 1.65 Mach; warhead 2 kg; portable launcher stowed in a well in the fin between snort and W/T masts.

Torpedoes: 6-21 in (533 mm) tubes. 18 combinations of 53 cm torpedoes. USET-80 is wire-guided in the 4B version (from 2 tubes).

Mines: 24 in lieu of torpedoes.

Countermeasures: ESM. Squid Head or Brck Pulp; radar warning Quad Loop D/F.

Weapons control: MVU-110EM or MVU-119EM Murena torpedo fire-control system

Radars: Surface search: Snoop Tray (MRP-25); I-band.

Sonars: Shark Teeth/Shark Fin (MGK-400); hull-mounted, passive/active search and attack; medium frequency. Mouse Roar; hull-mounted; active attack; high frequency.

Programmes: Also known as the Vashavyanka class, first launched in 1979 at Komsomolsk and commissioned 12 September 1980. Subsequent construction also at Nizhny Novgorod. A total of 24 were built for Russia of which six were of the improved Project 636 variant.

Structure: Had a better hull form than the Tango class but was nevertheless considered fairly basic by comparison with contemporary western designs. Diving depth 790 ft (240 m) normal. Battery has a 9,700 kWh capacity. The basic 'Kilo' was the Project 877; 877K has an improved fire-control system and 877M includes wire-guided torpedoes from two tubes. Project 636 is an improved design with updated diesels, a propulsion motor rotating at half the speed (250 rpm), higher standards of noise reduction and an automated combat information system capable of providing simultaneous fire-control data on five targets. Pressure hull length is 170 ft (51.8 m) or 174 ft (53 m) for Project 636. Foreplanes on the hull are just forward of the fin. Project 636 can be identified by a vertical cut off to the after casing. B 871 has been fitted with a pump jet propulsor.

Operational: With a reserve of buoyancy of 32 per cent and a heavily compartmented pressure hull, this class is capable of being holed and still surviving. B 401, B 402, B 808, B 459, B 471, B 800 and B 177 are based in the Northern Fleet, B 260, B 445, B 494, B 190, B 345, B 187, B 464, B 439 and B 394 are based in the Pacific, B 806 and B 227 in the Baltic and B 871 in the Black Sea. Russian made batteries have been a source of problems in warm water operations.

Sales: Exports of Project 877 have been to Poland (one), Romania (one), India (ten), Algeria (two), Iran (three) and China (two). The only exports of Project 636 have been to China (two). A further eight were ordered by China in 2002. Export versions have the letter E after the project number.



ALROSA

4/2006, Lemachko Collection / 1159847



B 345

10/2006, Hachiro Naka / 1159885



TUR

8/2004, E & M Laurson / 1042296

Auxiliary Submarines (SSA(N))

Notes: (1) There are a number of Swimmer Delivery Vessels (SDV) in service including Siron (three-man) and Triton, Sever and Elbrus types.
 (2) A new auxiliary submarine (SSAN) was launched at Severodvinsk Shipyard on 6 August 2003. Nicknamed 'Losharik', she is likely to be used for scientific research and is reported to be similar to but not the same as the Uniform class. It is known both as Project 210 and as Project 10831. It has a pennant number of AS 12 and is reported to have become operational in 2007.
 (3) The Delta IV class K 64, which was decommissioned in about 2002, may be undergoing conversion to an auxiliary submarine role.

1 PROJECT 20120 EXPERIMENTAL SUBMARINE (SSA)

Name	No	Builders	Laid down	Launched	Commissioned
SAROV (B-90)	-	Nizhny Novgorod Shipyard/ Severodvinsk Shipyard	-	17 Dec 2007	7 Aug 2008

Displacement, tons: 4,000 approx
Dimensions, feet (metres): To be announced
Main machinery: Diesel-electric + nuclear
Speed, knots: To be announced
Complement: 52
Torpedoes: To be announced
Mines: To be announced
Countermeasures: ESM To be announced.
Radars: Surface search: To be announced
Sonars: To be announced.

Comment: It is reported that the design of the submarine was developed by Rubin in about 1989, that construction was initiated at Nizhny Novgorod and that, following transfer in about 2003, the boat was completed at the Sevmash Shipyard at Severodvinsk. It is thought to be equipped with a hybrid propulsion system which combines a diesel-electric plant with a small nuclear reactor. The function of the reactor is to keep a charge on the battery and thereby achieve an air-independent system with almost unlimited underwater endurance on relatively quiet

electric propulsion. While details of the submarine have not been confirmed, its length appears to be of the order of 100 m and there is evidence both of a raised area on the upper casing aft of the fin and also of bulges on the side of the forward casing. It is believed that the principal role of the submarine is to act as test bed for the development and testing of unmanned submersibles, weapons and underwater equipment. Operational experience of an auxiliary nuclear power plant was gained in the modified Juliett class (Project 651E) K-68 in the 1980s



SAROV

6/2008* / 1353370

3 PALTUS/X-RAY (PROJECT 1851) CLASS (SSAN/SSA)

AS 23 (X-Ray) AS 35 AS 21

Displacement, tons: 730 dived
Dimensions, feet (metres): 173.9 x 12.5 x 13.8
 (53 x 3.8 x 4.2)

Main machinery: Nuclear; 1 reactor; 10 MW; 1 shaft; ducted thrusters

Speed, knots: 6 dived
Complement: 14

Comment: Details given are for the two Paltus (Nelhma) class (A 21, AS 35). The first was launched at Sudomekh, St Petersburg in April 1991, a second of class in September 1994 and a third was started but not completed. This is a follow-on to the single 44 m 520 ton X-Ray (AS 23) class which was first seen in 1984 and after a long spell out of

service was back in operation in 1999. Paltus probably owes much to the USN NR 1. Paltus is associated with the Delta III Stretch SSAN which acts as a mother ship for special operations. Titanium hulled and very deep diving to 1,000 m (3,280 ft). Paltus based in the Northern Fleet at Olenya Guba, X-Ray at Yagri Island.



PALTUS (artist's impression)

1994 J506318

3 UNIFORM (KACHALOT) CLASS (PROJECT 1910) (SSAN)

No	Builders	Laid down	Launched	Commissioned
AS 13	Sudomekh, Leningrad	20 Oct 1977	25 Nov 1982	31 Dec 1986
AS 15	Sudomekh, Leningrad	23 Feb 1983	29 Apr 1988	30 Dec 1991
AS 33	Sudomekh, St Petersburg	16 July 1990	26 Aug 1995	Feb 1998

Displacement, tons: 1,340 surfaced; 1,580 dived
 Dimensions, feet (metres): 226.4 × 23.0 × 17.0
 (69.0 × 7.0 × 5.2)

Main machinery: Nuclear; 1 PWR; 15 MW; 2 turbines;
 10,000 hp(m) (7.35 MW); 1 shaft; 2 thrusters
 Speed, knots: 10 surfaced, 28 dived
 Complement: 36
 Radars: Navigation: Snoop Slab; I-band.

Comment: Research and development nuclear-powered submarines. Have single hulls and 'wheel' arches either side of the fin which house side thrusters. These are titanium hulled and very deep diving submarines (possibly down to 700 m (2,300 ft)), based in the Northern

Fleet at Olenya Guba, and are used mainly for ocean bed operations. Plans to build more of the class were thought to have been shelved. It is not clear whether an auxiliary submarine (AS 12) launched on 6 August 2003 is a fourth 'Uniform' or a different design.



UNIFORM

6/2004, Lemachko Collection / 1159818

1 DELTA III STRETCH (PROJECT 667 BDR) (SSAN)

Name	No	Builders	Laid down	Launched	Commissioned
ORIENBURG (BS 136 (ex-K 129))	656	Severodvinsk Shipyard	Feb 1979	Mar 1981	5 Nov 1981

Dimensions, feet (metres): 534.9 × 39.4 × 28.5
 (163 × 12 × 8.7)

Main machinery: Nuclear; 2 VM-4 PWR; 180 MW; 2 GT
 3A-635 turbines, 37,400 hp(m) (27.5 MW); 2 emergency
 motors; 612 hp(m) (450 kW); 2 shafts
 Speed, knots: 24 dived; 14 surfaced
 Complement: 130 (40 officers)

Torpedoes: 4—21 in (533 mm) and 2—400 mm tubes.
 Countermeasures: ESM, Brick Pulp/Group; radar warning.
 Radars: Surface search: Snoop Tray; I-band.
 Sonars: Shark Teeth; hull mounted, active/passive search;
 low/medium frequency
 Shark Hide; flank array; passive low frequency.
 Mouse Roar; hull mounted; active high frequency.

Comment: Originally launched in 1981, this former SSBN has been converted by replacing the central section with a 43 m plug, extending the overall hull length by 3 m. The submarine was reported to have returned to service in 2003 and has replaced the Yankee Stretch as the Paltus mother-ship. Based in the Northern Fleet



ORIENTBURG

3/2006, Lemachko Collection / 1167505

AIRCRAFT CARRIERS

Note: (1) Of the former aircraft carriers of the Kiev class, *Kiev* was sold to China for scrap in 2000; *Minsk* and *Novorossiysk* were sold to a South Korean Corporation in 1994. *Minsk* later became a tourist attraction in Shenzhen, China, while *Novorossiysk* was scrapped in India. *Admiral Gorshkov* (ex-Baku) has been sold to the Indian Navy and is undergoing refit and reactivation.
 (2) The requirement for a new class of four aircraft carriers was announced in mid-2005. This was re-stated by the Commander-in-Chief in 2008. While work has almost certainly begun on the project, funding could prove to be an obstacle.

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1 KUZNETSOV (OREL) CLASS (PROJECT 1143.5/6) (CVGM)

Name	No	Builders	Laid down	Launched	Commissioned
ADMIRAL KUZNETSOV (ex-Tbilisi, ex-Leonid Brezhnev)	063	Nikolayev South, Ukraine	1 Apr 1982	16 Dec 1985	25 Dec 1990

Displacement, tons: 45,900 standard, 58,500 full load
Dimensions, feet (metres): 999 oa; 918.6 wl x 229.7 oa; 121.4 wl x 34.4 (304.5, 280 x 70; 37 x 10.5)
Flight deck, feet (metres): 999 x 229.7 (304.5 x 70)
Main machinery: 8 boilers; 4 turbines, 200,000 hp(m) (147 MW); 4 shafts
Speed, knots: 30. **Range, n miles:** 3,850 at 29 kt; 8,500 at 18 kt
Complement: 1,980 (200 officers) plus 626 aircrew plus 40 Flag staff

Missiles. SSM. 12 Chelomey SS-N-19 Shipwreck (3M-45) launchers (flush mounted) ●; inertial guidance with command update; active radar homing to 20-550 km (10.8-300 n miles) at 2.5 Mach; warhead 500 kT nuclear or 750 kg HE.

SAM: 4 Altair SA-N-9 Gauntlet (Klinok) sextuple vertical launchers (192 missiles) ●; command guidance and active radar homing to 12 km (6.5 n miles) at 2 Mach; warhead 15 kg, 24 magazines; 192 missiles; 4 channels of fire.

SAM/Guns: 8 Altair CADS-N-1 (Kortik/Kashtan) ●, each has a twin 30 mm Gatling combined with 8 SA-N-11 (Grisson) and Hot Flash/Hot Spot fire-control radar/optronic director. Laser beam-riding guidance for missiles to 8 km (4.4 n miles); warhead 9 kg; 9,000 rds/min combined to 2 km (for guns).

Guns: 6-30 mm/65 ● AK 630, 6 barrels per mounting; 3,000 rds/min combined to 2 km. Probably controlled by Hot Flash/Hot Spot on CADS-N-1

A/S mortars: 2 RBU 12,000 ●; range 12,000 m; warhead 80 kg. UDAV-1M; torpedo countermeasure.

Countermeasures: Decoys: 10 PK 10 and 4 PK 2 chaff launchers. ESM/ECM: 8 Foot Ball. 4 Wine Flask (intercept). 4 Flat Track. 10 Ball Shield A and B.

Weapons control: 3 Tin Man optronic trackers. 2 Punch Bowl SATCOM datalink ● 2 Low Ball SATNAV ●. 2 Bell Crown and 2 Bell Push datalinks.

Radars: Air search: Sky Watch; four Planar phased arrays ●, 3D.

Air/surface search: Top Plate B ●; D/E-band.

Surface search: 2 Strut Pair ●; F-band

Navigation: 3 Palm Front; I-band.

Fire control: 4 Cross Sword (for SAM) ●, K-band, 8 Hot Flash; J-band

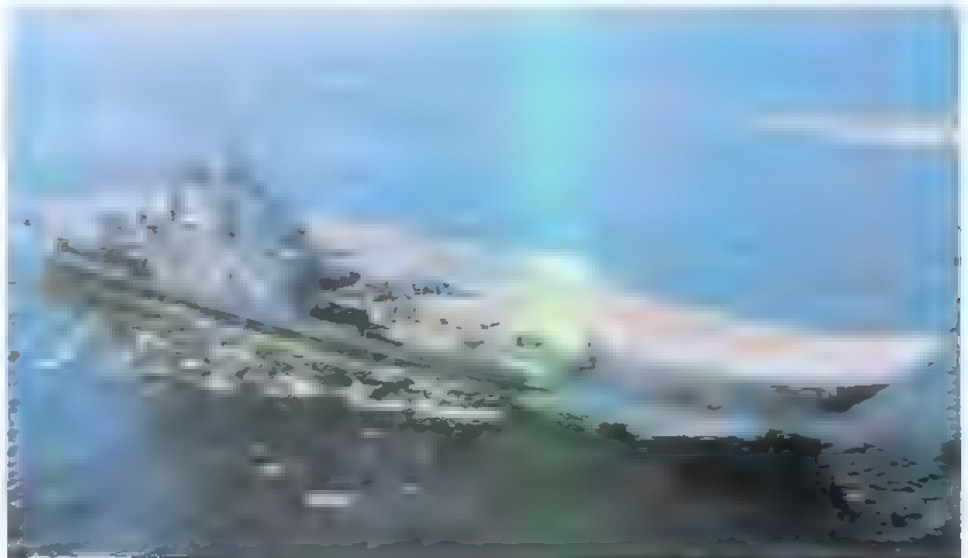
Aircraft control: 2 Fly Trap B; G/H-band.

Tacan: Cake Stand ●

IFF: 4 Watch Guard.

Sonars: Bull Horn and Horse Jaw, hull-mounted; active search and attack, medium/low frequency.

Fixed-wing aircraft: 18 Su-33 Flanker D; 4 Su-25 UTG Frogfoot.
Helicopters: 15 Ka-27 Helix. 2 Ka-31 RLD Helix AEW



ADMIRAL KUZNETSOV

10/2004, Ships of the World / 1042330

Programmes: This was a logical continuation of the deleted Kiev class. The full name of *Kuznetsov* is *Admiral Flota Sovetskogo Sojuza Kuznetsov*. The second of class, *Varyag*, was between 70 and 80 per cent complete by early 1993 at Nikolayev in the Ukraine. Building was then terminated after an unsuccessful attempt by the Navy to fund completion. Subsequently the ship was bought by Chinese interests and, having arrived at Dalian in March 2002 now appears to be undergoing re-activation by the PLA(N)

Structure: The hangar is 183 x 29.4 x 7.5 m and can hold up to 18 Flanker aircraft. There are two starboard side lifts, a ski jump of 14° and an angled deck of 7°. There are four arrestor wires. The SSM system is in the centre of the flight deck forward with flush deck covers. The ship has some 16.5 m of freeboard. There is no Bass Tilt radar and the ADG guns are controlled by Kashtan fire-control system. The ship suffers from severe water distillation problems.

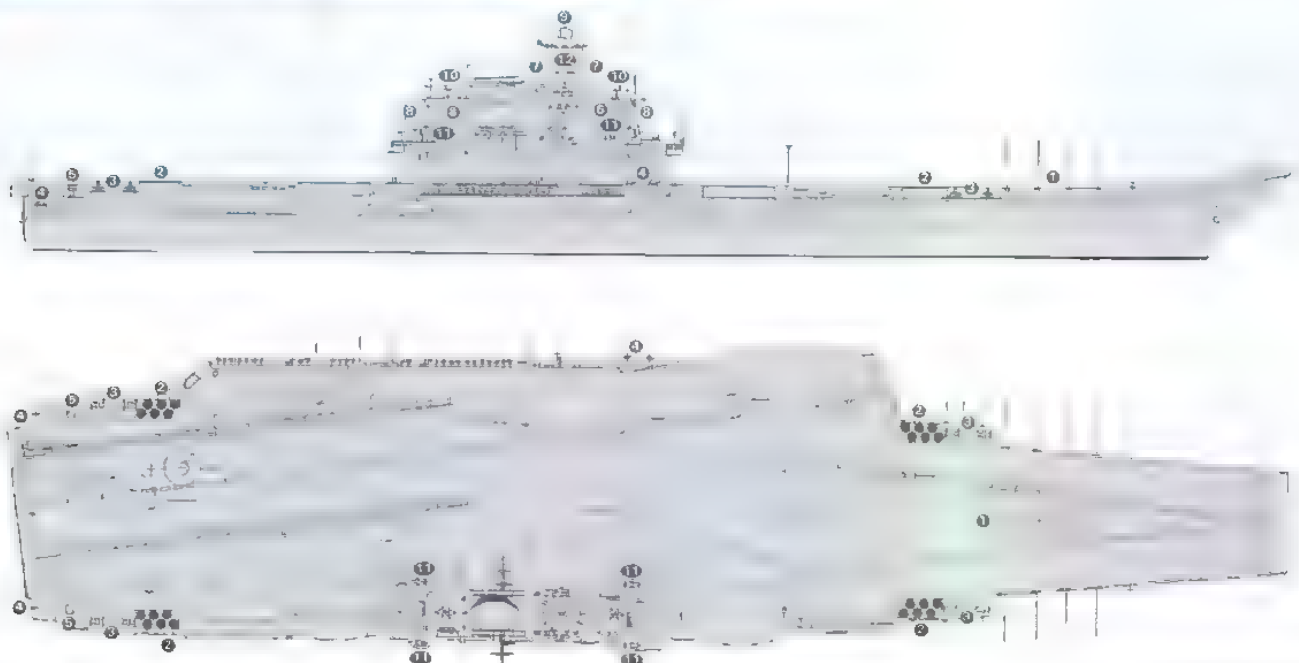
Operational: AEW, ASW and reconnaissance tasks undertaken by Helix helicopters. The aircraft complement listed is based on the number which might be embarked for normal operations but the Russians claim a top limit of 60. *Kuznetsov* conducted extensive flight operations throughout the second half of both 1993 and 1994, and was at sea again by September 1995 after a seven month refit. Deployed to the Mediterranean for 80 days in early 1996 before returning to the Northern Fleet. Refitted from mid-1996 to mid-1998. Sailed for a VIP demonstration in August 1998 and then continued trials and training in area. There were limited local exercises in 2000 but no activity in 2001 and 2002. The ship left the jetty for Navy Days in 2003. The ship participated in Northern Fleet exercises in the North Atlantic in August-September 2005 and again in October 2006. A three-month Atlantic/Mediterranean deployment began in December 2007 and was repeated in 2008/09.



ADMIRAL KUZNETSOV

1/2008, Ships of the World / 1306318

ADMIRAL KUZNETSOV
 1/2008, Ships of the World
 1306317



ADMIRAL KUZNETSOV

(Scale 1 : 1,800), Ian Sturton / 0506078

BATTLE CRUISERS

1 KIROV (ORLAN) CLASS (PROJECT 1144.1/1144.2) (CGHMN)

Name	No	Builders	Laid down	Launched	Commissioned
PYOTR VELIKIY (ex-Yuri Andropov)	099 (ex-183)	Baltic Yard 189, St Petersburg	11 Mar 1986	29 Apr 1989	9 Apr 1998

Displacement, tons: 19,000 standard; 24,300 full load
Dimensions, feet (metres): 826.8, 754.6 wl x 93.5 x 29.5 (252; 230 x 28.5 x 8.1)
Main machinery: CONAS; 2 KN-3 PWR; 300 MW; 2 oil-fired boilers; 2 GT3A-688 turbines; 140,000 hp(m) (102.9 MW); 2 shafts
Speed, knots: 30
Range, n miles: 14,000 at 30 kt
Complement: 726 (82 officers) plus 18 aircrew

Missiles: SSM: 20 Chelomey SS-N-19 Shipwreck (3M 45) [P-700 Granit] (improved SS-N-12 with lower flight profile) ●; inertial guidance with command update; active radar homing to 20-450 km (10.8-243 n miles) at 1.6 Mach, warhead 350 kT nuclear or 750 kg HE; no reloads.

SAM: 12 SA-N-6/SA-N-20 Grumble (Fort/Fort M) vertical launchers ●; 8 rounds per launcher; command guidance; semi-active radar homing to 100 km (54 n miles); warhead 90 kg (or nuclear?); 96 missiles.

2 SA-N-4 Gecko twin launchers ●; semi-active radar homing to 15 km (8 n miles) at 2.5 Mach; warhead 50 kg, altitude 9.1-3,048 m (30-10,000 ft); 40 missiles

2 SA-N-9 Gauntlet (Kinzhalt) octuple vertical launchers ●; command guidance, active radar homing to 12 km (6.5 n miles) at 2 Mach; warhead 15 kg; altitude 3.4-12,192 m (10-40,000 ft); 128 missiles, 4 channels of fire.

SAM/Guns: 6 CADS-N-1 (Kortik/Kashtan) ●; each has a twin 30 mm Gatling combined with 8 SA-N-11 (Grisson) and Hot Flash/Hot Spot fire-control radar/optronic director. Laser beam-riding guidance for missiles to 8 km (4.4 n miles); warhead 9 kg; 9,000 rds/min combined to 2 km (for guns).

A/S: Novator SS-N-15 (Starfish); inertial flight to 45 km (24.3 n miles); payload Type 40 torpedo or nuclear warhead; fired from fixed torpedo tubes behind shutters in the superstructure.

Guns: 2—130 mm/54 (twin) AK 130 ●; 70 rds/min to 22 km (12 n miles); weight of shell 33.4 kg.

Torpedoes: 10—21 in (533 mm) (2 quin) tubes. Combination of 53 cm torpedoes. Mounted in the hull adjacent the RBU 1000s on both quarters. Fixed tubes behind shutters can fire either SS-N-15 or Type 40 torpedoes.

A/S mortars: 1 RBU 12,000 ●; 10 tubes per launcher; range 12,000 m; warhead 80 kg.

2 RBU 1000 6-tubed aft ●; range 1,000 m; warhead 55 kg. UDAV-1M; torpedo countermeasures.

Countermeasures: Decoys: 2 twin PK 2 150 mm chaff launchers. Towed torpedo decoy.

ESM/ECM: 8 Foot Bell, 4 Wine Flask (intercept), 8 Bell Bash, 4 Bell Nip, Half Cup (laser intercept).

Combat data systems: Lesorub-44.

Weapons control: 4 Tin Man optronic trackers ●, 2 Punch Bowl C SATCOM ●, 4 Low Ball SATNAV, 2 Bell Crown and 2 Bel Push datalinks

Radars: Air search: Top Pair (Top Sail + Big Net) ●, 3D; C/D-band; range 366 km (200 n miles) for bomber, 183 km (100 n miles) for 2 m² target.

Air/surface search: Top Plate ●, 3D, D/E-band.

Nav gation: 3 Palm Front, I-band.

Fire control: Cross Sword ●, K-band (for SA-N-9), Top Dome for SA-N-6 ●; Tomb Stone J-band (for Fort M) ●, 2 Pop Group, F/H/I-band (for SA-N-4) ●, Kite Screech ●, H/K-band (for main guns), 6 Hot Flash for CADS-N-1; I/J-band.

Aircraft control: Flyscreen B; I-band

IFF: Salt Pot A and B

Tacan: 2 Round House B ●

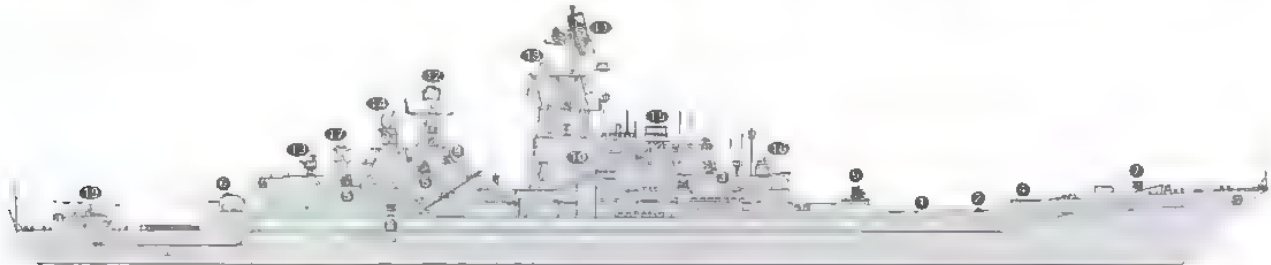
Sonars: Horse Jaw (Polinom); hull-mounted, active search and attack; low/medium frequency, Horse Tail; VDS; active search; medium frequency. Depth to 150-200 m (492.1-656.2 ft) depending on speed.

Helicopters: 3 Ka-27 Helix ●

Programmes: Design work started in 1968. Type name is *atomny raketny kreyser* meaning nuclear-powered missile cruiser. A fifth of class was scrapped before being launched in 1989.

Structure: The Kirov class were the first Russian surface warships with nuclear propulsion. In addition to the nuclear plant a unique maritime combination with an auxiliary oil-fuelled system has been installed. This provides a superheat capability, boosting the normal steam output by some 50 per cent. The SS-N-19 tubes are set at an angle of about 45°. CADS-N-1 with a central fire-control radar on six mountings, each of which has two cannon and eight missile launchers. Two are mounted either side of the SS-N-19 forward and four on the after superstructure. Same A/S system as the frigate *Neustrashimy* with fixed torpedo tubes in ports behind shutters in the superstructure for firing SS-N-15 or Type 45 torpedoes. There are reported to be about 500 SAM of different types. *Velikiy*, the only operational ship, has a Tomb Stone fire-control radar instead of a forward Top Dome for SA-N-20 which is a maritime variant of SA-10C.

Operational: Based in the Northern Fleet. Over-the-horizon targeting for SS-N-19 provided by Punch Bowl SATCOM or helicopter. The first ship of the class of four, *Admiral Ushakov*, was formally decommissioned in 2004 and is to be scrapped. The second ship, *Admiral Lazarev* has also been decommissioned. And is also likely to be scrapped. Plans to refit the third ship, *Admiral Nakhimov*, laid up since 1999, appear to have been revived but funding continues to be problematical. The scope of the work is substantial and includes nuclear refuelling and replacement of the SS-N-19 missile system. The refit is likely to take up to four years to complete. *Pyotr Velikiy* conducted an extensive deployment in 2008-09. Visits were undertaken in the Mediterranean, Caribbean and South Africa. Exercises included INDRA-2009 with the Indian Navy.



PYOTR VELIKIY

(Scale 1 : 1,500), Ian Sturton / 0528401



PYOTR VELIKIY

11/2008*, A Sheldon-Duplaix / 1163321



PYOTR VELIKIY

11/2008*, A Sheldon-Duplaix / 1163321

CRUISERS

3 SLAVA (ATLANT) CLASS (PROJECT 1164) (CGHM)

Name	No	Builders	Laid down	Launched	Commissioned
MOSKVA (ex-Slava)	121	Nikolayev North (61 Kommuna), Ukraine	5 Nov 1976	27 July 1979	30 Dec 1982
MARSHAL USTINOV	055	Nikolayev North (61 Kommuna), Ukraine	5 Oct 1978	25 Feb 1982	15 Sep 1986
VARYAG (ex-Chervona Ukraine)	011	Nikolayev North (61 Kommuna), Ukraine	31 July 1979	28 Aug 1983	26 Dec 1989

Displacement, tons: 9,380 standard; 11,490 full load
Dimensions, feet (metres): 611.5 × 68.2 × 27.6
 (186.4 × 20.8 × 8.4)
Main machinery: COGAG; 4 gas-turbines; 88,000 hp(m)
 (64 68 MW); 2 M-70 gas-turbines; 20,000 hp(m) (14.7 MW);
 2 shafts
Speed, knots: 32
Range, n miles: 2,200 at 30 kt; 7,500 at 15 kt
Complement: 476 (62 officers)

Missiles: SSM: 16 Chelomey SS-N-12 (8 twin Sandbox (Bazalt) launchers ●, inertial guidance with command update; active radar homing to 560 km (300 n miles) at 1.7 Mach; warhead nuclear 350 kT or HE 1,000 kg.
 SAM: 8 SA-N-6 Grumble (Fort) vertical launchers ●, 8 rounds per launcher; command guidance; semi-active radar homing to 100 km (54 n miles); warhead 90 kg (or nuclear?); altitude 27,432 m (90,000 ft). 64 missiles.
 2 SA-N-4 Gecko twin retractable launchers ●, semi-active radar homing to 15 km (8 n miles) at 2.5 Mach; warhead 50 kg; altitude 9.1-3,048 m (30-10,000 ft); 40 missiles
Guns: 2—130 mm/54 (twin) AK 130 ●, 70 rds/min to 22 km (12 n miles); weight of shell 33.4 kg
 6—30 mm/65 AK 650; ● 6 barrels per mounting; 3,000 rds/min to 2 km
Torpedoes: 10—21 in (533 mm) (2 quin) tubes ●. Combination of 53 cm torpedoes
A/S mortars: 2 RBU 6000 12-tubed trainable ●, range 6,000 m; warhead 31 kg.
Countermeasures: Decoys: 2 PK 2 chaff launchers.
 ESM/ECM: 8 Side Globe (jammers), 4 Rum Tub (intercept).
Weapons control: 2 Tee Plinth and 3 Tilt Pot optronic directors, 2 Punch Bowl satellite data receiving/targeting systems, 2 Bell Crown and 2 Bell Push datalinks.
Radars: Air search: Top Pair (Top Sail + Big Net) ●, 3D; C/D-band; range 366 km (200 n miles) for bomber, 183 km (100 n miles) for 2 m² target.
 Air/surface search: Top Steer ● or Top Plate (Varyag); 3D; D/E-band
 Navigation: 3 Palm Frond; I-band.
 Fire control: Front Door ●, F-band (for SS-N-12), Top Dome ●, J-band (for SA-N-6), 2 Pop Group ●, F/H/I-band



VARYAG

10/2008*, Mick Prendergast / 1353324

(for SA-N-4), 3 Bass Tilt ●, H/I-band (for Gatlings), Kite Screech ●, H/I/K-band (for 130 mm)
 FF: Salt Pot A and B, 2 Long Head
Sonars: Bull Horn and Steer Hide (Platina); hull-mounted; active search and attack; low/medium frequency.

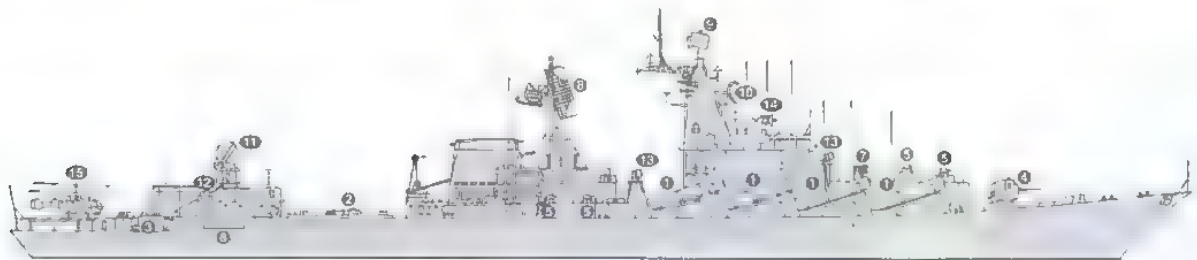
Helicopters: 1 Ka-27 Helix ●.

Programmes: Built at the same yard as the Kara class. This is a smaller edition of the dual-purpose surface warfare/ASW Kirov, designed as a conventionally powered back-up for that class. The fourth of class, originally being completed for Ukraine, was transferred to Russia in July 1995 but returned to Ukraine in February 1999 for completion. However, work was not finished due to lack of funds. Re-sale back to Russia is unlikely. A fifth of class was started but cancelled in October 1990.

Structure: The notable gap abaft the twin funnels (SA-N-6 area) is traversed by a large crane which stows between

the funnels. The hangar is recessed below the flight deck with an inclined ramp. The torpedo tubes are behind shutters in the hull below the Top Dome radar director aft. Air conditioned citadels for NBCD. There is a bridge periscope.

Operational: The SA-N-6 system effectiveness is diminished by having only one radar director. Over-the-horizon targeting for SS-N-12 provided by helicopter or Punch Bowl SATCOM. Moskva is based in the Black Sea Fleet at Sevastopol and conducted an Indian Ocean deployment in 2003. Her nine-year refit was beset by payment problems. Some funds were provided by the city of Moscow. Marshal Ustinov deployed to the Northern Fleet in March 1987 and completed refit at St Petersburg in May 1995 where she remained until January 1998, when she transferred back to the Northern Fleet and is based at Severomorsk and is active. Varyag transferred to Petropavlovsk in the Pacific in October 1990.



VARYAG

(Scale 1 : 1,200), Ian Sturton / 0050017



VARYAG

12/2005, Ships of the World / 1151150



MOSKVA

10/2008*, Laursen/Jarnasen / 1353373

1 KARA (BERKOT-B) CLASS (PROJECT 1134B) (CGHM)

Name	No	Builders	Laid down	Launched	Commissioned
KERCH	713 (ex-711)	Nikolayev North (61 Kommuna), Ukraine	30 Apr 1971	21 July 1972	25 Dec 1974

Displacement, tons: 7,650 standard; 9,900 full load
Dimensions, feet (metres): 568 × 61 × 22
 (173.2 × 18.6 × 6.7)
Main machinery: COGAG; 4 gas turbines; 108,800 hp(m)
 (80 MW); 2 gas turbines; 13,600 hp(m) (10 MW); 2 shafts
Speed, knots: 32
Range, n miles: 9,000 at 15 kt cruising turbines; 3,000 at 32 kt
Complement: 390 (49 officers)

Missiles: SAM: 2 SA-N-3 Goblit twin launchers ●; semi-active radar homing to 55 km (30 n miles) at 2.5 Mach, warhead 80 kg; altitude 91.4-22,860 m (300-75,000 ft); 72 missiles.
 2 SA-N-4 Gecko twin launchers (twin either side of mast) ●; semi-active radar homing to 15 km (8 n miles) at 2.5 Mach, warhead 50 kg; altitude 9.1-3,048 m (30-10,000 ft); 40 missiles
 A/S: 2 Raduga SS-N-14 Silex (Rastrub) quad launchers ●; command guidance to 55 km (30 n miles) at 0.95 Mach; payload nuclear 5 kT or Type 40 torpedo or E53-72 torpedo. SSM version; range 35 km (19 n miles); warhead 500 kg.
Guns: 4 × 3 in (76 mm)/59 AK 726 (2 twin) ●; 90 rds/min to 16 km (8.5 n miles); weight of shell 5.9 kg.
 4 × 30 mm/65 ●; 6 barrels per mounting; 3,000 rds/min combined to 2 km.
Torpedoes: 10–21 in (533 mm) (2 quin) tubes ●. Combination of 53 cm torpedoes.
A/S mortars: 2 RBU 6000 12-tubed trainable ●; range 6,000 m; warhead 31 kg.
 2 RBU 1000 6-tubed (aft) ●; range 1,000 m; warhead 55 kg; torpedo countermeasures
Countermeasures: Decoys: 2 PK 2 chaff launchers. 1 BAT-1 torpedo decoy.
ESM/ECM: 8 Side Globe (ammers), 2 Bell Stem. 2 Bell Clout, 4 Hum Tub (Intercept) (fitted on mainmast).
Weapons control: 4 Tilt Pot optronic directors. Bell Crown, Bike Pump and Hat Box datalinks.
Radars: Air search: Flat Screen (may have been removed) ●; E/F-band
 Air/surface search: Head Net C ●; 3D; E-band; range 128 km (70 n miles).
Navigation: 2 Don Kay; I-band. Don 2 or Palm Frond, I-band
Fire control: 2 Head Light B/C ●; F/G/H-band (for SA-N-3 and SS-N-14). 2 Pop Group ●; F/H/I-band (for SA-N-4). 2 Owl Screech ●; G-band (for 76 mm). 2 Bass Tilt ●; H/I-band (for 30 mm)
Tacan: Fly Screen A or Fly Spike.
IFF: High Pole A. High Pole B.



KERCH

(Scale 1 : 1,500), Ian Sturton / J081651



KERCH

10/2008*, Laursen/Jarnesen / 1353325

Sonars: Bull Nose (Titan 2-MG 332), hull-mounted; active search and attack, low/medium frequency.
 Mare Tail; VDS (Vege-M 325) ●; active search; medium frequency.

Helicopters: 1 Ka-27 Helix ●.

Programmes: Type name is *bolshoy protivolodochny korabl*, meaning large anti-submarine ship.

Modernisation: The Flat Screen air search radar, replaced Top Sa1

Structure: The helicopter is raised to flight deck level by a lift. In addition to the 8 tubes for the SS-N-14 A/S system and the pair of twin launchers for SA-N-3 system with Goblit missiles, Kara class mounts the SA-N-4 system in

2 silos, either side of the mast. The SA-N-3 system has only 2 loading doors per launcher and a larger launching arm.

Operational: Two of the class started refits in July 1987 and have been scrapped by the Ukraine. One more was scrapped in the Pacific in 1996. *Petropavlovsk* is laid up in the Pacific and is unlikely to go to sea again. In the Black Sea, there have been several reports of work being done on *Ochakov*, but these have not been confirmed. Formally, she remains in service. *Azov* was cannibalised for spares in 1998. *Kerch* is based in the Black Sea at Sevastopol and completed a refit in 2005

DESTROYERS

Notes: There have been reports of a programme to replace the ageing Udaloy and Sovremenny class inventories. Project 21956 is reportedly for a 9,000-ton ship but the status of the project has not been confirmed.

1 KASHIN (PROJECT 61) CLASS (DDGM)

Name	No	Builders	Laid down	Launched	Commissioned
SMETLIVY	810	Nikolayev North, Ukraine	15 July 1965	26 Aug 1967	25 Sep 1969

Displacement, tons: 4,010 standard; 4,750 full load
Dimensions, feet (metres): 472.4 × 51.8 × 15.4
 (144 × 15.8 × 4.7)
Main machinery: COGAG; 4 DE 59 gas turbines; 72,000 hp(m)
 (52.9 MW); 2 shafts
Speed, knots: 32. Range, n miles: 4,000 at 18 kt; 1,520 at 32 kt
Complement: 280 (25 officers)

Missiles: SSM: 8 Zvezde SS-N-25 (KH 35 Uran) (2 quad) ●.
 SAM: 2 SA-N-1 Goa twin launchers ●; command guidance to 31.5 km (17 n miles) at 2 Mach; warhead 72 kg; altitude 91.4-22,860 m (300-75,000 ft); 32 missiles.
Guns: 2–3 in (76 mm)/59 AK 726 (1 or 2 twin) ●; 90 rds/min to 16 km (8.5 n miles); weight of shell 5.9 kg
Torpedoes: 5–21 in (533 mm) (quin) tubes ●. Combination of 53 cm torpedoes.
A/S mortars: 2 RBU 6000 12-tubed trainable ●; range 6,000 m; warhead 31 kg; 120 rockets.
Countermeasures: Decoys. PK 16 chaff launchers (modified) 2 towed torpedo decoys.
ESM/ECM: 2 Bell Shroud. 2 Watch Dog.
Weapons control: 3 Tec Plinth and 4 Tilt Pot optronic directors.
Radars: Air/surface search: Head Net C ●; 3D; E-band.
 Big Net ●; C-band.



SMETLIVY

(Scale 1 : 1,200), Ian Sturton / 0126351

Navigation: 2 Don 2/Don Kay/Palm Frond, I-band.

Fire control: 2 Peel Group ●; H/I-band (for SA-N-1). 1 Owl Screech ●; G-band (for guns).
 IFF: High Pole B.

Sonars: Bull Nose (MGK 336) or Wolf Paw; hull-mounted; active search and attack, medium frequency.
 Vege; VDS; active search; medium frequency.

Programmes: The first class of warships in the world to rely entirely on gas-turbine propulsion. Type name is *bolshoy protivolodochny korabl*, meaning large anti-submarine ship.

Modernisation: Modernised with a VDS a/L, vice the after gun, and fitted for SS-N-25 in place of the RBU 1000 launchers

Operational: Based in the Black Sea. Refitted from 1990 to 1996 but back in service in 1997. Deployed to the Indian Ocean in 2003 and remains active.

Sales: Additional ships of a modified design built for India. First transferred September 1980, the second in June 1982, the third in 1983, the fourth in August 1986 and the fifth and last in January 1988.

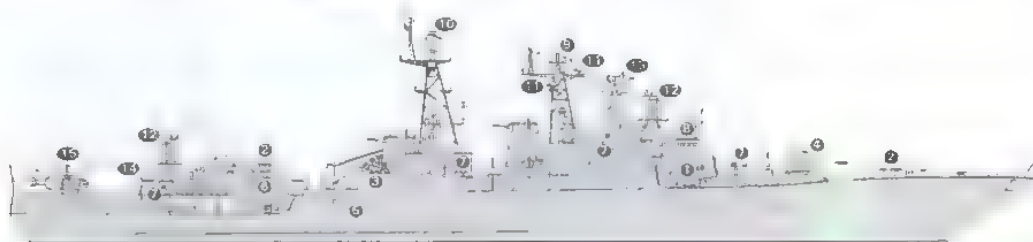


SMETLIVY

10/2008*, Laursen/Jarnesen / 1353325

1 UDALOY II (FREGAT) CLASS (PROJECT 1155.1) (DDGHM)

Name	No	Builders	Laid down	Launched	Commissioned
ADMIRAL CHABANENKO	650 (ex-437)	Yantar, Kaliningrad 820	15 Sep 1988	14 Dec 1992	20 Feb 1999
Displacement, tons: 7,700 standard, 8,900 full load Dimensions, feet (metres): 536.4 × 63.3 × 24.6 (163.5 × 19.3 × 7.5)		A/S. Novator SS-N-15 (Starfish); inertial flight to 45 km (24.3 n miles); payload Type 40 torpedo or nuclear, fired from torpedo tubes.		Sonars: Horse Jaw (Polinom); hull-mounted; active search and attack; medium/low frequency. Horse Tail, VDS; active search; medium frequency.	
Main machinery: COGAG; 2 gas turbines; 48,600 hp(m) (35.72 MW); 2 gas turbines; 24,200 hp(m) (17.79 MW); 2 shafts		Guns: 2 – 130 mm/54 (twin) AK 130 ●; 70 rds/min to 22 km (12 n miles); weight of shell 33.4 kg.		Helicopters: 2 Ka-27 Helix A ●	
Speed, knots: 28 Range, n miles: 4,000 at 18 kt Complement: 249 (29 officers)		Torpedoes: 8 – 21 in (533 mm) (2 quad tubes) ● Combination of 53 cm torpedoes. The tubes are protected by flaps in the superstructure.		Programmes: A single ship follow-on class from the Udaloy. NATO designator Balcom 12. At least two more were projected with names <i>Admiral Basisty</i> and <i>Admiral Kucherov</i> ; <i>Basisty</i> was scrapped in March 1994, and <i>Kucherov</i> was never started.	
Missiles: SSM: 8 Raduga SS-N-22 Sunburn (3M 82 Moskit) (2 quad) ●; active/passive radar homing to 160 km (87 n miles) at 2.5 Mach (4.5 for attack); warhead nuclear or HE 300 kg; sea-skimmer.		A/S mortars: 2 RBU 6000 ●. 12-tubed trainable, range 6,000 m; warhead 31 kg.		Structure: Similar size to the Udaloy and has the same propulsion machinery. Improved combination of weapon systems owing something to both the <i>Sovremenny</i> and the <i>Neustrashimy</i> classes. The distribution of SA-N-9 launchers may be the same as Udaloy class. The torpedo tubes are protected by a hinged flap in the superstructure.	
SAM: 8 SA-N-9 Gauntlet (Klinok) vertical launchers ●; command guidance; active radar homing to 12 km (6.5 n miles) at 2 Mach; warhead 15 kg 64 missiles; 4 channels of fire.		Countermeasures: 8 PK 10 and 2 PK 2 chaff launchers ● ESM/ECM. 2 Wine Glass (intercept). 2 Bell Shroud. 2 Bell Squat. 4 Half Cup laser warner. 2 Shot Dome.		Operational: Sea trials started on 14 September 1995 from Baltiysk. Deployed to the Northern Fleet in March 1999 when the pennant number changed. Based at Severomorsk. Deployed with <i>Pyotr Velikiy</i> in 2008–09.	
SAM/Guns: 2 CADS-N-1 (Kashtan) ●; each with twin 30 mm Gatling; combined with 8 SA-N-11 (Grisson) and Hot Flash/Hot Spot fire-control radar/optronic director. Laser beam guidance for missiles to 8 km (4.4 n miles); warhead 9 kg, 9,000 rds/min combined to 1.5 km for guns.		Weapons control: M 145 radar and optronic system. 2 Bell Crown datalink. Band Stand ● datalink for SS-N-22. 2 Light Buib, 2 Round House and 1 Bell Nest datalinks.			
		Radars: Air search. Strut Pair II ●; F-band. Top Plate ●; 3D; D/E-band.			
		Surface search: 3 Palm Frond ●; I-band.			
		Fire control: 2 Cross Swords ●; K-band (for SA-N-9). Kite Screech ●; H/U/K-band (for 100 mm gun).			
		Band Stand (Mineral ME) ●; D-band (for SS-N-22).			
		CCA. Fly Screen B ●			
		IFF: Salt Pot B and C.			



ADMIRAL CHABANENKO

(Scale 1 : 1,200), Ian Sturton / 0569979



ADMIRAL CHABANENKO

9/2006. B Sullivan / 1164817



ADMIRAL CHABANENKO

8/2002 / 0528328

8 UDALOY (FREGAT) CLASS (PROJECT 1155) (DDGHM)

Name	No	Builders	Laid down	Launched	Commissioned
VITSE ADMIRAL KULAKOV	400	Zhdanov Yard, Leningrad 190	4 Nov 1977	16 May 1980	10 Jan 1982
ADMIRAL TRIBUTS	564	Zhdanov Yard, Leningrad 190	19 Apr 1980	26 Mar 1983	30 Dec 1985
MARSHAL SHAPOSHNIKOV	543	Yantar, Kaliningrad 820	25 May 1983	27 Dec 1984	30 Dec 1985
SEVEROMORSK (ex-Simferopol, ex-Marshal Budienny)	619	Yantar, Kaliningrad 820	12 June 1984	24 Dec 1985	30 Dec 1987
ADMIRAL LEVCHENKO (ex-Kharbarovsk)	605	Zhdanov Yard, Leningrad 190	27 Jan 1982	21 Feb 1985	30 Sep 1988
ADMIRAL VINOGRADOV	572	Yantar, Kaliningrad 820	5 Feb 1986	4 June 1987	30 Dec 1988
ADMIRAL KHARLAMOV	678	Yantar, Kaliningrad 820	7 Aug 1986	29 June 1988	30 Dec 1989
ADMIRAL PANTELEYEV	548	Yantar, Kaliningrad 820	28 Jan 1988	7 Feb 1990	19 Dec 1991

Displacement, tons: 6,700 standard; 8,500 full load
Dimensions, feet (metres) 536.4 x 63.3 x 24.6
 (163.5 x 19.3 x 7.5)
Flight deck, feet (metres) 65.6 x 59 (20 x 18)
Main machinery: COGAG; 2 gas turbines; 55,500 hp(m)
 (40.8 MW); 2 gas turbines; 13,600 hp(m) (10 MW);
 2 shafts
Speed, knots: 29
Range, n miles: 2,600 at 30 kt; 7,700 at 18 kt
Complement: 249 (29 officers)

Missiles: SAM. 8 SA-N-9 Gauntlet (Klinok) vertical launchers; command guidance; active radar homing to 12 km (6.5 n miles) at 2 Mach; warhead 15 kg, altitude 3.4-12,192 m (10-40,000 ft); 64 missiles; four channels of fire.
 The launchers are set into the ships' structures with 6 ft diameter cover plates-4 on the forecabin, 2 between the torpedo tubes and 2 at the forward end of the after deckhouse between the RBUs.

A/S: 2 Raduga SS-N-14 Silex (Rastrub) quad launchers; command guidance to 55 km (30 n miles) at 0.95 Mach; payload nuclear 5 kT or Type 40 torpedo or Type E53-72 torpedo. SSM version; range 35 km (19 n miles); warhead 500 kg

Guns: 2-3.9 in (100 mm)/70; 60 rds/min to 21.5 km (11.5 n miles); weight of shell 15.6 kg.
 4-30 mm/65 AK 630; 6 barrels per mounting;
 3,000 rds/min combined to 2 km.

Torpedoes: 8-21 in (533 mm) (2 quad) tubes. Combination of 53 cm torpedoes.
A/S mortars: 2 RBU 6000 12-tube trainable; range 6,000 m; warhead 31 kg.

Mines: Rails for 26 mines
Countermeasures: Decoys: 2 PK-2 and 8 PK-10 chaff launchers, US Masker type noise reduction.
ESM/ECM: 2 Foot Ball B (Levchenko onwards); 2 Wine Glass (intercept). 6 Half Cup laser warner (Levchenko onwards). 2 Bell Squat (jammers)



SEVEROMORSK

(Scale 1 : 1,200), Ian Sturton / 05060/9

Weapons control: MP 145 radar and optronic system. 2 Bell Crown and Round House C datalink.
Radars: Air search: Strut Pair; F-band. Top Plate; 3D; D/E-band.
Surface search: 3 Palm Front; I-band.
Fire control: 2 Eye Bowl; F-band (for SS-N-14). 2 Cross Sword; K-band (for SA-N-9). Kite Screech; H/I/K-band (for 100 mm guns). 2 Bass Tilt; H/I/K-band (for 30 mm guns).
IFF: Salt Pot A and B. Box Bar A and B.
Tacan: 2 Round House.
CCA: Fly Screen B (by starboard hangar); 2 Fly Spike B.
Sonars: Horse Jaw (Polinom), hull-mounted; active search and attack; low/medium frequency.
 Mouse Tail, VDS; active search; medium frequency

Helicopters: 2 Ka-27 Helix A

Programmes: Design approved in October 1972. Successor to Kresta II class but based on Krivak class. Type name is *bolshoy protivovodachny korabl* meaning large anti-submarine ship. Programme stopped at 12 in favour of Udaloy II class (Type 1155.1).

Structure: The two hangars are set side by side with inclined elevating ramps to the flight deck. Has pre-wetting NBCD equipment and replenishment at sea gear. Active stabilisers are fitted. The chaff launchers are on both sides of the foremast and inboard of the torpedo tubes. Cage Flask aerials are mounted on the mainmast spur and on the mast on top of the hangar. There are indications of a nuclear release mechanism, or interlock, on the lower tubes of the SS-N-14 launchers.

Operational: These general purpose ships have good sea-keeping and endurance and are the backbone of the fleet. Based as follows. Northern Fleet- Severomorsk, Kulakov, Kharlamov and Levchenko; Pacific Fleet- Shaposhnikov, Panteleyev, Vinogradov and Tributs. Vinogradov was in collision in April 2000 but was quickly repaired. Severomorsk deployed to St Petersburg for refit in June 1998 completing in late 2000, and Levchenko followed in November 1999 completing in 2001. The fourth of class, Zakharov was scrapped after a fire in March 1992. Tributs was in reserve in 1994 and had a machinery space fire in September 1995, was back in service in mid-1999. Udaloy and Spiridonov have been laid up or scrapped. Kulakov is expected to return to service in 2009 following a refit. Vasilevsky was decommissioned in 2007



MARSHAL SHAPOSHNIKOV

6/2006, Ships of the World / 115991



ADMIRAL LEVCHENKO

6/2005, Jurg Kursener / 1151395



ADMIRAL PANTELEYEV

10/2008, Guy Toremans / 1353328

7 SOVREMENNY (SARYCH) CLASS (PROJECT 956/956A) (DDGHM)

Name	No	Builders	Laid down	Launched	Commissioned
BURNY	778	Zhdanov Yard, Leningrad (190)	4 Nov 1983	30 Dec 1986	30 Sep 1988
GREMYASHCHIY (ex-Bezuderzhny)	408	Zhdanov Yard, Leningrad (190)	23 Nov 1984	30 May 1987	30 Dec 1988
SYSTRY	715	Zhdanov Yard, Leningrad (190)	29 Oct 1985	28 Nov 1987	30 Sep 1989
BEZBOYAZNENNY	754	Zhdanov Yard, Leningrad (190)	8 Jan 1987	18 Feb 1989	28 Nov 1990
BESPOKOINY	620	Zhdanov Yard, Leningrad (190)	18 Apr 1987	22 Feb 1992	29 Dec 1993
NASTOYCHIVY (ex-Moskovski Komsomolets)	610	Zhdanov Yard, Leningrad (190)	7 Apr 1988	15 Feb 1992	27 Mar 1993
ADMIRAL USHAKOV (ex-Besstrashny)	434	Zhdanov Yard, Leningrad (190)	16 Apr 1988	31 Dec 1992	17 Apr 1994

Displacement, tons: 6,500 standard; 7,940 full load
 Dimensions, feet (metres): 511.8 x 56.8 x 21.3
 (156 x 17.3 x 6.5)
 Main machinery: 4 KVN boilers; 2 GTZA-674 turbines, 99,500 hp/m (73.13 MW); sustained; 2 shafts; bow thruster
 Speed, knots: 32
 Range, n miles: 2,400 at 32 kt; 6,500 at 20 kt; 4,000 at 14 kt
 Complement: 296 (25 officers) plus 60 spare

Missiles: SSM, 8 Raduga SS-N-22 Sunburn (3M-80 Zubr) (2 quad) launchers, active/passive radar homing to 110 km (60 n miles) at 5 (4.5 for attack) Mach, warhead nuclear 200kT or HE 300 kg; sea-skimmer. From *Bespokoiny* onwards the launchers are longer and fire a modified missile (3M 82 Moskit) with a range of 160 km (87 n miles)
 SAM: 2 SA-N-7 Gadfly 3S 90 (Uragan), command/semi-active radar and IR homing to 25 km (13.5 n miles) at 3 Mach; warhead 70 kg, altitude 15-14,020 m (50-46,000 ft); 44 missiles. Multiple channels of fire. From *Bespokoiny* onwards the same launcher is used for the SA-N-7b Grizzly.
 Guns: 4—130 mm/54 (2 twin) AK 130, 70 rds/min to 22 km (12 n miles); weight of shell 33.4 kg
 4—30 mm/65 AK 630, 6 barrels per mounting; 3,000 rds/min combined to 2 km.
 Torpedoes: 4 21 in (533 mm)/(2 twin) tubes, combination of 53 cm torpedoes.
 A/S mortars: 2 RBU 1000 (Smerch 3) 6-barrelled, range 1,000 m; warhead 100 kg; 120 rockets carried. Torpedo countermeasure.
 Mines: Mino rails for up to 22.
 Countermeasures: Decoys: 8 PK 10 and 2 PK 2 chaff launchers.
 ESM/ECM: 4 Foot Ball (some variations including 2 Bell Shroud and 2 Bell Squat), 6 Half Cup laser warner.
 Combat data systems: Sapfir-U.
 Weapons control: 1 Squeeze Box optronic director and laser rangefinder, Band Stand datalink for SS-N-22 Bell Nest, 2 Light Bulb and 2 Tee Pump datalinks.



NASTOYCHIVY

7/2008, Per Körnefeldt / 1353329

Radars: Air search: Top Plate (MR-750 Fregat), 3D; D/E-band. Surface search: 3 Palm Front (MR 212/201), I-band
 Fire control: 6 Front Dome, G-band (for SA-N-7/17), Kite Screech (MR-184), H/I/K-band (for 130 mm guns).
 2 Bass Tilt, H/I-band (for 30 mm guns).
 Band Stand (Mineral ME), D-band (for SS-N-22)
 IFF: Salt Pot A and B, High Pole A and B, Long Head.
 Tacan: 2 Light Bulb.
 Sonars: Bull Horn (MGK-335 Platina) and Whale Tongue; hull-mounted; active search and attack; medium frequency.

Helicopters: 1 Kamov Ka-27 Helix

Programmes: Type name is *eskadrenny minonosets* meaning destroyer. From *Bespokoiny* onwards the class is known as 956A. Total of 17 built for Russia, two (hulls 18 and 19) for China, and one more (*Bulny*) which is unlikely to be completed unless for export.

Structure: Telescopic hanger. The fully automatic 130 mm gun was first seen in 1976. Chaff launchers are fitted on

both sides of the foremast and either side of the after SAM launcher. A longer range version of SS-N-22 has been introduced in the Type 956A. This has slightly longer launch tubes. Also the SAM system has been improved to take the SA-N-17. There are also some variations in the EW fit.

Operational: A specialist surface warfare ship complementing the ASW-capable *Udaloy* class. Based as follows: Northern Fleet—*Admiral Ushakov*, *Gremyashchly*, Pacific Fleet—*Burny*, *Bozboyznenny* and *Bystry*, Baltic Fleet—*Nastoychivy* and *Bespokoiny*. So far 11 others have paid off or are non-operational. *Bystry* completed refit in 2002 and *Bezboyznenny* in 2004. 434 renamed *Admiral Ushakov* in 2004. Steam-plant reliability has been a class problem.

Sales: Hulls 18 and 19 which were near completion in 1996, were sold to China and sailed in December 1999 and December 2000 respectively, from the Baltic to the South China Sea. A contract for the procurement of two new ships was signed by the Chinese government on 3 January 2002.



BYSTRY

(Scale 1 : 1,200), Ian Sturton / 1151086



BURNY

10/2005, Ships of the World / 1151154

FRIGATES

0 + 1 GROM CLASS (PROJECT 1244.1) (FFG)

Name	No	Builders	Laid down	Launched	Commissioned
BORODINO (ex-Novik)	—	Yantar, Kaliningrad	26 July 1997	2001	2009

Displacement, tons: 3,600 full load
 Dimensions, feet (metres): 400.3 x 49.2 x 31.2 (sonar)
 (122.0 x 15.0 x 9.5)
 Main machinery: CODAG; 2 gas turbines; 2 diesels; 2 shafts
 Speed, knots: 30

Missiles: SSM: Space for eight or 16 Zvezda SS-N-25 (KH 35 Uran) (2 quad); active radar homing to 130 km (70.2 n miles) at 0.9 Mach; warhead 145 kg, sea skimmer
 SAM: Space for VLS system
 Guns: 1—3 in (76 mm)/59 AK 176
 2—30 mm AK 630
 Radars: Air/surface search, Top Plate (Fregate M), 3D, D/E-band.
 Surface search: Cross Dome, E/F-band
 Fire control: Bass Tilt; H/I-band
 Sonars: Hull mounted and VDS.
 Helicopters: 1 Ka-29 Helix.



NOVIK

(Scale 1 : 1,200), Ian Sturton / 0019031

Programmes: Designed by Almaz. Considerable publicity when keel laid down in 1997 but the project stalled due to budget cuts. However, building was reported to have been restarted in 2003 and it is speculated that the ship was being modified to act as an unarmed

training ship in 2004. Building progress is very slow.
 Structure: Most details are speculative and are based on the original published export design.
 Operational: Likely to be based in the Baltic Fleet.

4 KRIVAK (PROJECT 1135/1135M/1135MP) CLASS (FFM)

Name	No	Type	Builders	Laid down	Launched	Commissioned
NEUKROTIMY	731	II	Yantar, Kaliningrad	22 Jan 1976	27 June 1977	30 Dec 1977
PYLKY	702	I Mod	Zhdanov, Leningrad	16 May 1977	20 Aug 1978	28 Dec 1978
LADNY	801	I	Kamish-Burun, Kerch	25 May 1979	7 May 1980	29 Dec 1980
PYTLIVY	808	II	Yantar, Kaliningrad	27 June 1979	16 Apr 1981	30 Nov 1981

Displacement, tons: 3,100 standard, 3,650 full load
Dimensions, feet (metres): 405.2 x 46.9 x 24 (sonar)
 (123.5 x 14.3 x 7.3)
Main machinery: COGAG, 2 M8K gas-turbines, 55,500 hp(m)
 (40.8 MW); 2 M 62 gas-turbines; 13,600 hp(m) (10 MW);
 2 shafts
Speed, knots: 32. **Range, n miles:** 4,000 at 14 kt; 1,600 at 30 kt
Complement: 194 (18 officers)

Missiles: SSM, 8 Zvezda SS-N-25 (KH 35 Uran) (2 quad) (Krivak I after modernisation), fitted for but not with.
SAM: 2 SA-N-4 Gecko (Zif 122) twin launchers (Osa-M semi-active radar homing to 15 km (8 n miles) at 2.5 Mach; warhead 50 kg, altitude 9.1-3,048 m (30-10,000 ft); 40 missiles.
A/S: Raduga SS-N-14 Silex quad launcher (command guidance to 85 km (30 n miles) at 0.95 Mach; payload nuclear 5 kT or Type 40 torpedo or Type E53 72 torpedo. SSM version, range 35 km (19 n miles); warhead 500 kg.
Guns: 4-3 in (76 mm) 59 AK 726 (2 twin) (Krivak I) 90 rds/min to 16 km (8.5 n miles); weight of shell 5.9 kg 2-3.9 in (100 mm) 70 AK 100 (Krivak II) 60 rds/min to 21.5 km (11.5 n miles); weight of shell 15.8 kg
Torpedoes: 8 -21 in (533 mm) (2 quad) tubes. Combination of 53 cm torpedoes.
A/S mortars: 2 RBU 6000 12-tubed trainable (not in modernised Krivak I); range 6,000 m; warhead 3t kg.
Mines: Capacity for 16.
Countermeasures: Decoys: 4 PK 16 or 10 PK 10 chaff launchers. Towed torpedo decoy.
ESM/ECM: 2 Bell Shroud. 2 Bell Squat. Half Cup laser warning (In some).
Radars: Air search: Head Net C (3D, E-band; or Half Plate (Krivak I mod))
Surface search: Don Key or Palm Frond or Don 2 or Spin Trough (I-band).

KRIVAK I (mod)



(Scale 1 : 1,200), Ian Sturton / 0508284

KRIVAK II



(Scale 1 : 1,200), Ian Sturton / 0508284

Firecontrol: 2 Eye Bowl (F-band (for SS-N-14), 2 Pop Group (F/H/I-band (for SA-N-4), Owl Screech (Krivak I), G-band, Kite Screech (Krivak II), H/K band, Plank Shave (Harpun B) (for SS-N-25) not fitted
IFF: High Pole B.
Sonars: Bull Nose (MGK 335S or MG-332), hull-mounted; active search and attack; medium frequency. Mura Tail (MGK-345) or Stear Hide (some Krivak I's after modernisation); VDS (MG 325) (active search; medium frequency.

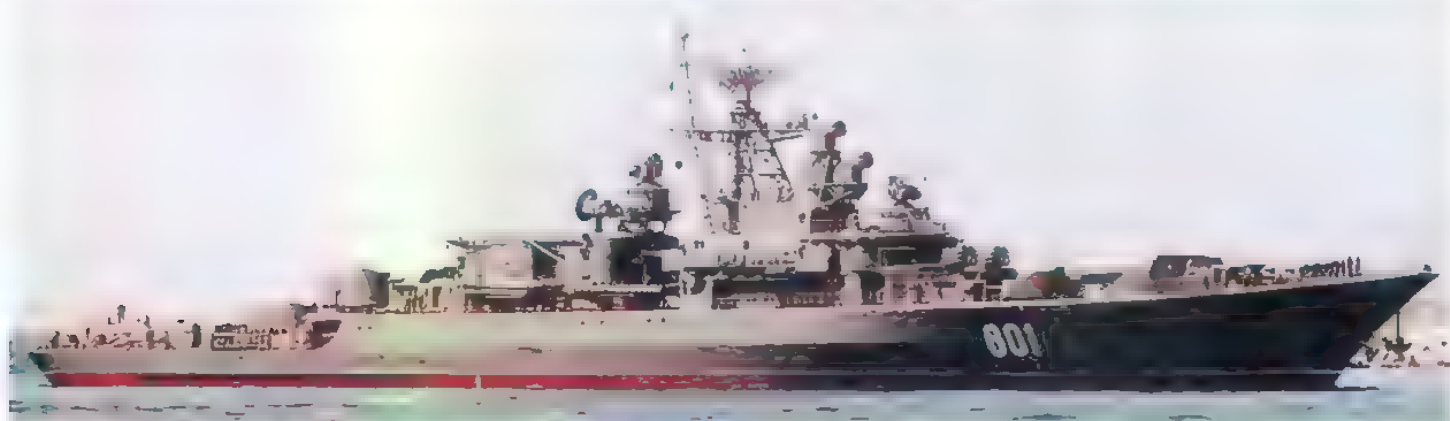
Programmes: Type name was originally *bolshoy protivolodochny korabl*, meaning large anti-submarine ship. Changed in 1977-78 to *storozhevoy korabl* meaning

escort ship. The naval Krivaks I and II are known as the Burevestnik class and the border guard ships Krivak III (listed separately) as Neray class.
Modernisation: Top Plate radar has replaced Head Net in some and a more modern VDS is also fitted. SS-N-25 launchers are fitted in *Pytky*. This programme has stopped and missiles are not embarked. The launchers replaced the RBU mountings.
Structure: The modified Krivak I class has a larger bow. Krivak II class has Y-gun mounted higher than in Krivak I and the break to the quarterdeck further aft apart from other variations noted above.
Operational: Black Sea: *Ladny, Pytlivy*. Baltic: *Pytky, Neukrotimyy*



PYTLIVY (II)

6/2006, Marco Ghigino / 1164810



LADNY (I)

7/2000, Hartmut Ehlers / 0105545



LADNY (I)

10/2007, Rafael Cabrera / 1170210

2 NEUSTRASHIMY (JASTREB) CLASS (PROJECT 1154) (FFHM)

Name	No	Builders	Laid down	Launched	Commissioned
NEUSTRASHIMY	712	Yantar, Kaliningrad	27 Mar 1987	25 May 1988	24 Jan 1993
YAROSLAV MUDRYY	727	Yantar, Kaliningrad	27 May 1988	1991	2009

Displacement, tons: 3,450 standard; 4,250 full load
Dimensions, feet (metres): 425.3 oa; 403.5 wl x 50.9 x 15.7 (129.6; 123 x 15.5 x 4.8)
Main machinery: COGAG; 2 gas turbines; 48,600 hp (m) (35.72 MW); 2 gas turbines; 24,200 hp (m) (17.79 MW); 2 shafts
Speed, knots: 30. **Range, n miles:** 4,500 at 16 kt
Complement: 210 (35 officers)

Missiles: SSM: Fitted for but not with 16 SS-N-25 (4 quad); SS-CX-5 Sapless (possibly a version of SS-N-22 (MoskitM)) may be carried (see *Torpedoes*).

SAM: 4 SA-N-9 Gauntlet (Klinok) octuple vertical launchers; command guidance; active radar homing to 12 km (6.5 n miles) at 2 Mach; warhead 15 kg. 32 missiles.

SAM/Guns: 2 CADS-N-1 (Koruk/Kashan) (3M87); each has a twin 30 mm Gatling combined with 8 SA-N-11 (Grison) and Hot Flash/Hot Spot fire-control radar/optronic director. Laser beam guidance for missiles to 8 km (4.4 n miles); warhead 9 kg; 9,000 rds/min (combined) to 1.5 km (for guns).

A/S: SS-N-15/16; inertial flight to 120 km (65 n miles); payload Type 40 torpedo or nuclear warhead; fired from torpedo tubes.

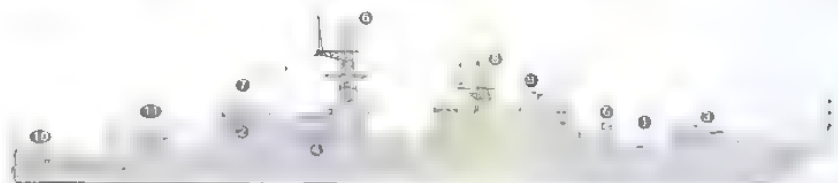
Guns: 1-3.9 in (100 mm) 59 A 190E; 80 rds/min to 21.5 km (11.5 n miles); weight of shell 15.6 kg.

Torpedoes: 6-21 in (533 mm) tubes combined with A/S launcher; can fire SS-N-15/16 missiles with Type 40 anti-submarine torpedoes or 53 cm torpedoes.

A/S mortars: 1 RBU 12,000; 10-tubed trainable; range 12,000 m; warhead 80 kg.

Mines: 2 rails

Countermeasures: Decoys: 8 PK 10 and 2 PK 16 chaff launchers.



NEUSTRASHIMY

(Scale 1 : 1,200, Ian Sturton / Osprey)

ESM/ECM: Intercept and jammers. 2 Foot Ball; 2 Half Hat; 4 Half Cup laser intercept.

Weapons control: 2 Bell Crown datalink.

Radars: Air search: Top Plate; 3D; D/E-band.

Air/surface search: Cross Dome; E/F-band.

Navigation: 2 Palm Frond; I-band.

Fire control: Cross Sword (for SAM), K-band. Kite Screech B (for SSM and guns); I-band.

IFF: 2 Salt Pot; 4 Box Bar.

Sonars: Ox Yoke and Whale Tongue; hull-mounted; active search and attack; medium frequency Ox Tail; VDS or towed sonar array.

Helicopters: 1 Ka-27 Helix.

Programmes: At least four of the class were planned. The first of the class started sea trials in the Baltic in December 1990. Second of class (*Yaroslav Mudryy*) was launched in May 1991, but in October 1988 the shipyard stated that the hull would be sold for scrap. However, after several years' inaction, work recommenced in 2002 and it was confirmed in 2005 that the ship is to

be completed. Sea trials began on 28 February 2009. The export version of the ship is known as 'Korsar'. The third ship (*Tuman*) was launched in July 1993 with only the hull completed and work stopped in December 1997 without any work being done. She is unlikely to be completed.

Structure: Slightly larger than the Krivak and has a helicopter which is a standard part of the armament of modern Western frigates. There are two horizontal launchers at main deck level on each side of the ship, angled at 18° from forward. These double up for A/S missiles of the SS-N-15/16 type using a 'plunge-fly-plunge' launch and flight and normal torpedoes. Similar launchers are behind shutters in the last three of the Kirov class. The helicopter deck extends across the full width of the ship. The after funnel is unusually flush decked but both funnels have been slightly extended after initial sea trials. Attempts have been made to incorporate stealth features. Main propulsion is the same as the Udaloy II class. Reported as having a basic computerised combat data system.

Operational: Based in the Baltic at Baltiysk.



NEUSTRASHIMY

6/2008*, Michael Nitz 1353330



NEUSTRASHIMY

11/2008*, US Navy 1453331



YAROSLAV MUDRYY

2/2009*, 1353675

1 + 1 GEPARD (PROJECT 11661) CLASS (FFGM)

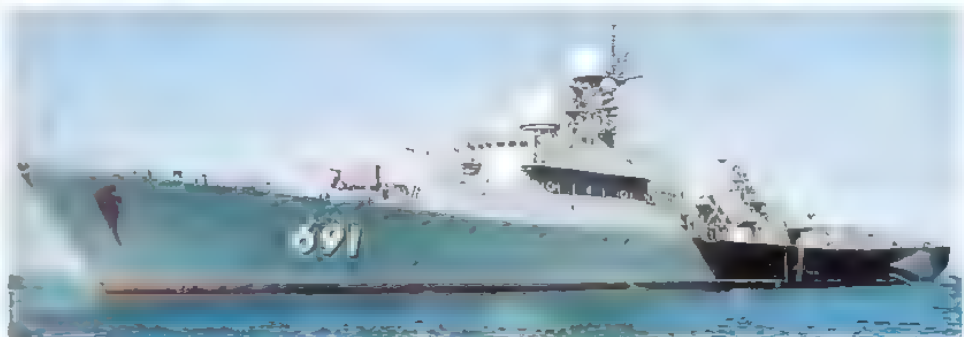
Name	No	Builders	Laid down	Launched	Commissioned
TATARSTAN (ex-Albatros)	691	Zelenodolsk, Kazan, Tartarstan	15 Sep 1992	July 1993	12 July 2002
DAGESTAN (ex-Burevestnik)		Zelenodolsk, Kazan, Tartarstan	1994	2009	2010

Displacement, tons: 1,560 standard; 1,930 full load
Dimensions, feet (metres): 335.3 x 43.0 x 17.4
 (102.2 x 13.1 x 5.3)
Main machinery: CODOG; 2 gas turbines; 30 850 hp(m)
 (23.0 MW); 1 Type 61D diesel; 7,375 hp(m) (5.5 MW);
 2 shafts; cp props
Speed, knots: 28 (18 on diesels)
Range, n miles: 5,000 at 10 kt
Complement: 103 (accommodation for 131)

Missiles: SSM 8 Zvezda SS-N-25 (KH 35 Uran) (2 quad) ●;
 IR or radar homing to 130 km (70.2 n miles) at 0.9 Mach;
 warhead 145 kg; sea-skimmer.
SAM: 1 SA-N-4 Gecko twin launcher ●; semi-active radar
 homing to 15 km (8 n miles) at 2.5 Mach; warhead 50 kg,
 20 weapons.
Guns: 1-3 in (76 mm)/59 AK-176 ●; 120 rds/min to 15 km
 (8 n miles); weight of shell 5.9 kg
 2-30 mm/65 AK-630 ●; 6 barrels per mounting,
 3,000 rds/min combined to 2 km.
Torpedoes: 4-21 in (533 mm) (2 twin) tubes ● (probably
 not fitted)
A/S mortars: 1 RBU 6000 12-tubed trainable ● (probably
 not fitted)
Mines: 2 rails. 48 mines.
Countermeasures: Decoys: 4 PK 16 chaff launchers.
 ESM/ECM: 2 Bell Shroud. 2 Bell Squat. Intercept and
 jammers.
Weapons control: 2 Light Bulb datalink. Hood Wink and
 Odd Box optronic systems. Band Stand ● datalink.
Radars: Air/surface search: Cross Dome ●; E/F-band
 Fire control: Bass Tilt ●; H/I-band (for guns); Pop Group ●;
 F/H/I-band (for SAM). Garpun-B (for SSM); I/J-band
 Band Stand (Mineral MC) ●; D-band (for SS-N-25)
 Navigation: Nayada; I-band.
 IFF: 2 Square Head. 1 Salt Pot B.
Sonars: Ox Yoke; hull-mounted; active search and attack;
 medium frequency (probably not fitted).
 Ox Tail (probably not fitted); VDS; active search and
 attack; medium frequency.



TATARSTAN (Scale 1 : 900), Ian Sturton / 1042094



TATARSTAN 6/2005, Lemachko Collection / 1154546

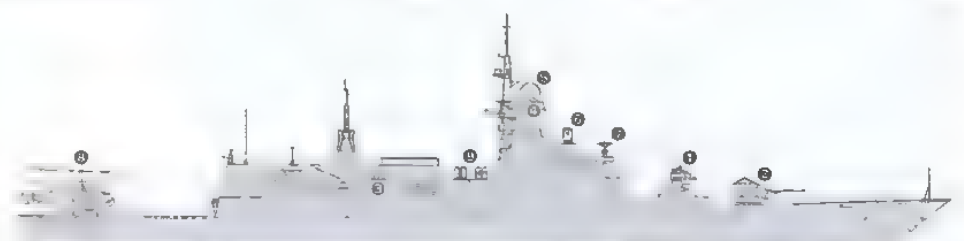
Programmes: Intended as a successor to the Korv class, the Gepard family of ships, of which there were some five variants, was developed with export in mind. The first of class *Yastreb* was laid down in 1988 but was later broken up in 1992. The second and third of class were to have been exported abroad but, following the completion of *Tatarstan* for the Russian Navy, a second ship *Dagestan* (ex-*Burevestnik*) is expected to follow in 2010
Operational: Flagship of the Caspian Flotilla, the newly commissioned *Tatarstan* took part in the large Caspian naval exercise in August 2002

1 + 4 (2) STEREGUSHCHIY CLASS (PROJECT 20380) (FFGHM)

Name	No	Builders	Laid down	Launched	Commissioned
STEREGUSHCHIY	530	Severnaya, St Petersburg	21 Dec 2001	16 May 2006	14 Nov 2007
SOOBRAZITELNY	-	Severnaya, St Petersburg	20 May 2003	2008	2010
BOIKY	-	Severnaya, St Petersburg	27 July 2005	2009	2010
SOVERSHENNY	-	Komsomolsk Shipyard	30 June 2006	2010	2011
STOIKY	-	Severnaya, St Petersburg	10 Nov 2006	2010	2011

Displacement, tons: 2,200 full load
Dimensions, feet (metres): 342.8 x 36.4 x 12.1
 (104.5 x 11.1 x 3.7)
Main machinery: CODAD; 4 16 D 49 diesels; 24,000 hp
 (17.9 MW); 2 shafts
Speed, knots: 26
Range, n miles: 3,500 at 14 kt
Complement: 100

Missiles: 1 CADS-N-1 (Kashtan) ●; twin 30 mm Gatling
 combined with 8 SA-N-11 (Grison) (9M311) and Hot
 Flash/Hot Spot fire-control radar/optronic director.
 Laser beam guidance for missiles to 8 km (4.4 n miles);
 warhead 9 kg; 9,000 rds/min combined to 15 km for
 guns.
 SA-N 10 (Igla).
Guns: 1-100 mm A-190 ●; 60 rds/min to 21.5 km
 (11.6 n miles) weight of shell 15.6 kg. 2-30 mm/65
 AK 630 ●; 6 barrels per mounting; 3,000 rds/min to 2 km.
 2-14.5 mm MGs.
Torpedoes: 8 Paket 324 mm (2 quad) tubes. MTT anti-
 torpedo; active/passive homing to 5 km (2.7 n miles);
 warhead 70 kg.
Countermeasures: Decoys: 4 PK 10 launchers.
 ESM/ECM. Pribor TK-25.
Combat data systems: MARS Sigma.
Weapons control: 2 MTK-201 optronic directors ●.
Radars: Air/surface search: Furko-E; 3D ●; E/F-band
 Surface search: Grant Monument; I-band.
 Fire control: Rateg 5P-10E Puma ●; I-band (for 100 mm
 gun)
 Navigation: I-band ●
Sonars: Zarya; bow-mounted. Vinyetka low frequency
 active/passive towed array.



STEREGUSHCHIY (Scale 1 : 900), Ian Sturton / 1170229



STEREGUSHCHIY 6/2007, Ships of the World / 1305154

Helicopters: 1 Ka-27 Helix ●
Programmes: Multipurpose frigate designed to replace the
 Grisha class. The first batch being built at St Petersburg
 consists of four ships. A second building line has been
 started at Komsomolsk where orders for at least a further
 two ships are expected. There is an export version
 known as Project 20382 Tigr.
Structure: Steel hull. Composite superstructure. Bulbous
 bow. Nine watertight sub-divisions. Combined bridge
 and command centre. Space and weight provision for
 eight SS-N-25 missiles ●
Operational: *Steregushchiy* started sea trials in November
 2006.



STEREGUSHCHIY
 5/2007, Ships of the World
 116/143

24 GRISHA (ALBATROS) (PROJECT 1124/1124M/1124K/1124EM) CLASS (FFLM)

North

ONEGA (ex-MPK 7) 164
 MONCHEGORSK (ex-MPK 14) 190
 SNEZNOGORSK (ex-MPK 59) 196
 MPK 113 171
 NARYAN-MAR (ex-MPK 130) 138
 MPK 139 129
 BREST (ex-MPK 194) 199
 MPK 197 106
 YUNGA (ex-MPK 203) 113

Pacific

MPK 17 362
 METEL (ex-MPK 64) 323
 MPK 82 375
 MPK 107 332
 SOVETSKAYA GAVANI (ex-Leninskaya Kuznitsa, ex-MPK 125) 350
 MPK 178 (III) 392
 MPK 191 (III) 369
 STELYAK (ex-MPK 221) 354
 KORETS (ex-MPK 222) 390

Black Sea

ALEKSANDROVETS (ex-MPK 49 (III)) 059
 SUZDALETS (ex-MPK 118) 071
 MUROMETS (ex-MPK 134) 064
 KASIMOV (ex-MPK 199) 055
 POVORINO (ex-MPK 207) 053
 EISK (ex-MPK 217) 054

Displacement, tons: 950 standard; 1,200 full load

Dimensions, feet (metres): 233.6 x 32.2 x 12.1
 (712 x 9.8 x 3.7)

Main machinery: CODAG; 1 gas-turbine; 15,000 hp(m)

(11 MW); 2 diesels; 16,000 hp(m) (11.8 MW); 3 shafts

Speed, knots: 30

Range, n miles: 2,500 at 14 kt; 1,750 at 20 kt diesels, 950 at 27 kt

Complement: 70 (5 officers) (Grisha III); 60 (Grisha I)

Missiles: SAM: SA-N-4 Gecko twin launcher ●; semi-active radar homing to 15 km (8 n miles) at 2.5 Mach; warhead 50 kg; altitude 9.1-3,048 m (30-10,000 ft); 20 missiles (see Structure for SA-N-9).

Guns: 2-57 mm/80 (twin) ●; 120 rds/min to 6 km (3.3 n miles); weight of shell 2.8 kg.

1-3 in (76 mm)/59 AK 176 (Grisha V) ●; 120 rds/min to 15 km (8 n miles); weight of shell 5.9 kg.

1-30 mm/65 (Grisha III and V classes) ●; 6 barrels; 3,000 rds/min combined to 2 km

Torpedoes: 4-21 in (533 mm) (2 twin tubes) ●. Combination of 53 cm torpedoes.

A/S mortars: 2 RBU 6000 12-tubed trainable ●; range 6,000 m; warhead 31 kg. (Only 1 in Grisha Vs.)

Depth charges: 2 racks (12)

Mines: Capacity for 18 in lieu of depth charges

Countermeasures: Decoys: 4 PK 10 or 2 PK 16 chaff launchers

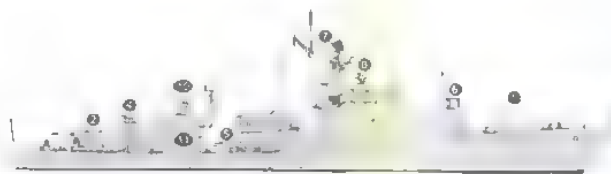
ESM: 2 Watch Dog.

Radars: Air/surface search: Strut Curve (Strut Pair in early Grisha Vs) ●; F-band; range 110 km (60 n miles) for 2 m² target.

Half Plate Bravo (in later Grisha Vs); E/F-band.

Navigation: Don 2; I-band.

GRISHA III



(Scale 1 : 900), Ian Sturton / 0506081

GRISHA V



(Scale 1 : 900), Ian Sturton / 0506082

Fire control: Pop Group ●; F/HI-band (for SA-N-4) Bass Tilt (Grisha III and V) ●; HI-band (for 57/76 mm and 30 mm).

IFF: High Pole A or B. Square Head. Salt Pot.

Sonars: Bull Nose; hull-mounted, active search and attack; high/medium frequency.

Elk Tail; VDS ●, active search; high frequency. Similar to

Hormona helicopter dipping sonar

Programmes: Grisha III 1973-85 (three remaining); Grisha V 1982 1996 onwards (22 remaining). All were built at Kiev, Kharbarovsk and Zelenodolsk. Type name is *maly protivolochny korabl* meaning small anti-submarine ship.

Structure: Grisha III class has Muff Cob radar removed, Bass Tilt and 30 mm ADG (fitted aft), and Rad-haz screen removed from abaft funnel as a result of removal of Muff Cob. Grisha V is similar to Grisha III with the after twin 57 mm mounting replaced by a single Tarantul type 76 mm gun.

Operational: Nine Grisha Vs are stationed in the Northern Fleet, two Grisha III and seven Vs in the Pacific and one III and five Vs in the Black Sea. The modified Grisha III, known as Grisha IV, has been decommissioned.

Sales: Two Grisha III to Lithuania in November 1992. One Grisha V in 1994 and four Grisha II in 1996 to Ukraine.



MPK 191 (III)

12/2005, Ships of the World / 115114/



KASIMOV

5/2008, C D Yaylali / 1363337



SUZDALETS

5/2006, Lemachko Collection / 1154860

0 + 1 (19) ADMIRAL GORSHKOV (PROJECT 22350) CLASS (FFGH)

Name	No	Builders	Laid down	Launched	Commissioned
ADMIRAL GORSHKOV	—	Severnaya Verf, St Petersburg	1 Feb 2006	2011	2013

Displacement, tons: 4,500
Dimensions, feet (metres): 433 x 52.5 x 7
 (132 x 16 x 7)
Main machinery: To be announced
Speed, knots: To be announced
Range, n miles: To be announced
Complement: To be announced

Missiles: SSM: 8 SS-N-26 (Oniks) (3M55); inertial guidance and active/passive radar homing to 300 km (162 n miles) at 2.6 Mach; sea skimmer in terminal phase; warhead 250 kg; VLS silo.
SAM: SA-N-7 Gadfly (Uragan); command/semi-active radar and IR homing to 25 km (13.5 n miles) at 3 Mach; warhead 70 kg; VLS silo.
 1 CADS-N-1 (Kashtan), has 30 mm Gatling combined with 8 SA-N-11 (Grasson) and Hot Flash/Hot Spot radar/optronic director; laser beam for guidance for missiles to 8 km (4.4 n miles); warhead 9 kg, 9,000 rds/min to 1.5 km for guns.
A/S: Medvedka 2 (SS-N-29); inertial flight to 25 km (13.5 n miles); payload Type 40 torpedo.
Guns: 1—130 mm A 192.
Torpedoes: To be announced.
Countermeasures: To be announced



ADMIRAL GORSHKOV

(Scale 1 : 1,200), Ian Sturton / 1159411

Combat data systems: To be announced.
Weapons control: To be announced
Radars: Air search: To be announced.
 Surface search: To be announced.
Fire control: To be announced
Navigation: To be announced
Sonars: To be announced.
Helicopters: 1 Ka-32

Programmes: Severnaya Verf shipyard contracted on 21 October 2005 to build the lead Project 22350 frigate. Up to 20 ships of the class may be procured. Designed by the Severnoye Design Bureau, it is the first new class of major surface combatants to be procured in 15 years. The ship may be equipped with Brahmos rather than SS-N-26 missiles.
Structure: Slightly longer and wider than the Talwar class from which the design is reported to be developed.
Operational: The first ship is likely to be based in the Baltic.

CORVETTES

7 PARCHIM II CLASS (PROJECT 1331) (FFLM)

ZELENODOLSK (ex-MPK 99) 308
 MPK 105 245
 MPK 192 304

KAZANETS (ex-MPK 206) 311
 ALEKSIN (ex-MPK 224) 218
 MPK 227 243

KALMYKIA (ex-MPK 229) 232

Displacement, tons: 769 standard, 960 full load
Dimensions, feet (metres): 246.7 x 32.2 x 14.4
 (75.2 x 9.8 x 4.4)
Main machinery: 3 Type M 504A diesels; 10,812 hp(m)
 (795 MW) sustained; 3 shafts
Speed, knots: 26 **Range, n miles:** 2,500 at 12 kt
Complement: 70 (8 officers)

Missiles: SAM: 2 SA-N-5 Grail quad launchers, manual aiming; IR homing to 6 km (3.2 n miles) at 1.5 Mach; altitude to 2,500 m (8,000 ft); warhead 1.5 kg.
Guns: 1—3 in (76 mm)/59 AK 176, 120 rds/min to 15 km (8 n miles); weight of shell 5.9 kg
 1—30 mm/65 AK 630, 6 barrels; 3,000 rds/min combined to 2 km.
Torpedoes: 4—21 in (533 mm) (2 twin) tubes, combination of 53 cm torpedoes.
A/S mortars: 2 RBU 6000 12-tubed trainable, range 6,000 m; warhead 31 kg 96 weapons
Depth charges: 2 racks.
Mines: Rails fitted
Countermeasures: Decoys: 2 PK 16 chaff launchers.
 ESM 2 Watch Dog, intercept.
Weapons control: Hood Wink and Odd Box optronic systems.
Radars: Air/surface search: Cross Dome, E/F-band.
 Navigation: TSR 333 or Nayala or Kivach III; I-band



PARCHIM II

(Scale 1 : 600), Ian Sturton / 05062114

Fire control: Bass Tilt, H/I-band.
 IFF: High Pole A.
Sonars: Bull Horn, hull-mounted, active search and attack; medium frequency.
 Lamb Tail; helicopter type VDS; high frequency.
Programmes: Built in the GDR at Peenewerft, Wolgast for the USSR. First one commissioned 19 December 1986 and the last on 6 April 1990.

Structure: Similar design to the ex-GDR Parchim I class now serving with the Indonesian Navy but some armament differences
Operational: All operate in the Baltic and are based at Baltiysk or Kronstadt. All of the class refitted at Rostock in 1994–95. *Bashkortostan* (MPK 228) damaged by fire in 1999 and again in 2008. She is unlikely to be repaired.



ALEKSIN

7/2008, Hartmut Ehlers / 1353298

2 DERGACH (SIVUCH) (PROJECT 1239) CLASS (PGGJM)

Name	No	Builders	Launched	Commissioned
BORA (ex-MRK 27)	815	Zelenodolsk, Kazan	1987	20 May 1997
SAMUM (ex-MRK 17)	616 (ex-575, ex-890)	Zelenodolsk, Kazan	1982	31 Dec 1995

Displacement, tons: 1,050 full load
Dimensions, feet (metres): 211.6 × 55.8 × 12.5
(64.5 × 17 × 3.8)

Main machinery: CODOG; 2 gas turbines; 55,216 hp(m)
(40.6 MW); 2 diesels; 10,064 hp(m) (7.4 MW);
2 hydroprops; 2 auxiliary diesels, 2 props on retractable
pods

Speed, knots: 53 foil, 12 hullborne
Range, n miles: 600 at 50 kt; 2,500 at 12 kt
Complement: 67 (8 officers)

Missiles: SSM: 8 SS-N-22 (2 quad) Sunburn (3M-82 Moskit)
launchers ●; active radar homing to 160 km (87 n miles)
at 2.5 Mach; warhead nuclear or 200 kT or HE 300 kg,
sea-skimmer

SAM: SA-N-4 Gecko twin launcher ●; semi-active radar
homing to 16 km (8 n miles) at 2.5 Mach; warhead 50 kg;
20 missiles

Guns: 1–3 in (76 mm)/59 AK 176 ●; 120 rds/min to 15 km
(8 n miles); weight of shell 5.9 kg.
2–30 mm/65 AK 630 ●; 6 barrels per mounting; 3,000
rds/min combined to 2 km.

Countermeasures: Decoys: 2 PK 16 and 2 PK 10 chaff
launchers.

ESM/ECM: 2 Foot Ball A, 2 Half Hats.

Weapons control: 2 Light Bulb datalink ●, Bend Stand ●
datalink for SS-N-22, Bell Nest.

Radars: Air/surface search: Cross Dome ●; E/F-band.

Fire control: Base Tilt ●; H/I-band (for guns)

Pop Group ●; F/H/I-band (for SAM).

Band Stand (Mineral MEI) ●; D-band (for SS-N-22).

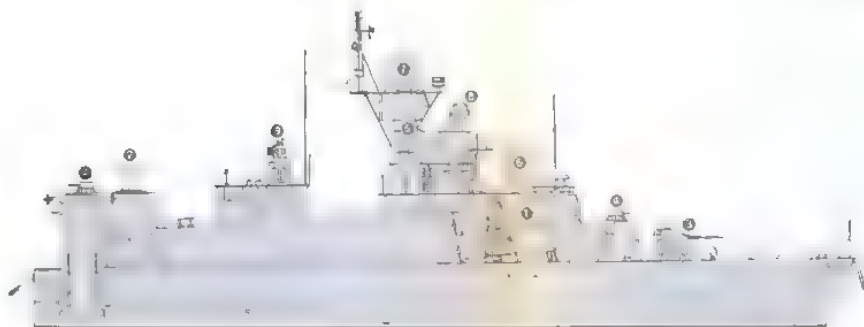
Navigation: SRN-207, I-band.

IFF: Square Head, Salt Pot.

Programmes: Almaz design approved 24 December
1980. Classified as a PGGA (Guided Missile Patrol
Air Cushion Vessels). Both did trials from 1989
(Bora) and 1993 (Samum) before being accepted into
service

Structure: Twin-hulled surface effect design. The auxiliary
diesels are for slow speed operations.

Operational: The design was unreliable but efforts were
made in 1996/97 to restore both to an operational
state. SS-N-22 missiles were test-fired in April 2003.
Both ships have camouflaged hulls and are based at
Sevastopol.



BORA

(Scale 1 : 600), Ian Sturton / 0506085

BORA
10/2008*, Laursen/Jarnesen
1353333

SAMUM

8/2003, Lemachko Collection / 0590532

25 TARANTUL (MOLNYA) (PROJECT 1241.1/1241.1M/1241.1MP/1242.1) CLASS (FSGM)

Baltic
 R 47 819
DIMITROVGRAD (ex-R 291) 826
 R 125 (II) 833
 R 257 852
 R 187 855
 R 2 870
MORSHANSK (ex-R 293) 874
 R 5 992

Pacific
 R 29 (II) 916
 R 20 921
 R 14 924
 R 18 937
 R 11 940
 R 24 946
 R 297 954
 R 298 971
 R 19 978
 R 79 (II) 995

Black Sea
 R 109 952
 R 239 953
IVANOVETS (ex-R 334) 954
 R 60 955
 R 71 (II) 962

Caspian
MAK 160 (II) (ex-R 160) 054
STUPINETZ (II) (ex-R 101) 705

Displacement, tons: 385 standard; 455 full load
Dimensions, feet (metres): 184.1 x 37.7 x 8.2
 (56.1 x 11.5 x 2.5)

Main machinery: COGAG; 2 Nikolayev Type DR 77 gas turbines; 16,016 hp(m) (11.77 MW) sustained; 2 Nikolayev Type DR 76 gas turbines with reversible gearboxes; 4,993 hp(m) (3.67 MW) sustained; 2 shafts or CODOG with 2 CM 504 diesels; 8,000 hp(m) (5.88 MW), replacing second pair of gas-turbines in Tarantul I/Is

Speed, knots: 36. **Range, n miles:** 400 at 36 kt; 1,650 at 14 kt
Complement: 34 (5 officers)

Missiles: SSM: 4 Raduga SS-N-2D Styx (2 twin) launchers (Tarantul II); active radar or IR homing to 83 km (45 n miles) at 0.9 Mach; warhead 513 kg; sea skimmer at end of run.

4 Raduga SS-N-22 Sunburn (3M-82 Moskit) (2 twin) launchers (Tarantul III); active radar homing to 160 km (87 n miles) at 2.5 Mach, warhead nuclear 200 kT or HE 300 kg; sea-skimmer. Modified version in Type 1242.1

SAM SA-N-5 Grail quad launcher; manual aiming; IR homing to 6 km (3.2 n miles) at 1.5 Mach; altitude to 2,600 m (8,000 ft); warhead 1.5 kg.

Guns: 1-3 in (76 mm)/59 AK 176; 120 rds/min to 15 km (8 n miles); weight of shell 5.9 kg
 2-30 mm/65; 6 barrels per mounting; 3,000 rds/min to 2 km.

Countermeasures: Decoys: 2 PK 16 or 4 PK 10 (Tarantul III) chaff launchers.

ESM: 2 Foot Bail, 2 Half Hat (in some).

Weapons control: Hood Wink optronic director. Light Bulb datalink. Band Stand, datalink for SSM, Bell Nest

Raders: Air/surface search: Plank Shave or Positiv E (Tarantul 874); I-band.

Navigation: Kivach III, I-band.

Fire control: Bass Tilt; H/I-band

Band Stand (Mineral ME); D-band (for SS-N-22

IFF: Square Head, High Pole B.

Sonars: Foal Tail; VDS; active search; high frequency

Programmes: Tarantul II were built at Kolpino, Petrovsky, Leningrad and in the Pacific in 1980-86. Production of Tarantul IIs then continued until 1995. One more was launched in September 1997 at Rybinsk, and a Tarantul III at Kolpino completed in December 1999 for the Baltic Fleet. Type name is *raketny kuter* meaning missile cutter.

Modernisation: Tarantul III 874 served as a trials platform for a modified version of SS-N-22 with a longer range; the missile is distinguished by end caps on the launcher doors. Tarantul II 962 served as a trials platform for the CADS-N-1 point defence system in the Black Sea



MORSHANSK

7/2008*, Per Körnelfeldt / 1353334



IVANOVETS

10/2008*, Laursen/Jarnesen / 1353335

Structure: Basically same hull as Pauk class, without extension for sonar. The single Type 1242.1 has a Positiv E radar

Sales: Tarantul I class-one to Poland 28 December 1983, second in April 1984, third in March 1988 and fourth in January 1989. One to India in April 1987, second in January

1988, third in December 1988, fourth in November 1989 and fifth in January 1990. Two to Yemen in November 1990 and January 1991. One to Romania in December 1990, two more in February 1992. One Tarantul II to Bulgaria in March 1990. Two Tarantul Is to Vietnam in 1996 and two more in 1999.



R 71

6/2005, Lemachko Collection / 1159875

14 NANUCHKA CLASS (PROJECT 1234.1/1234.7) (FSG)

North

RASSVET 520
PRIBOY 540
AYSBERG 535
NAKAT (IV) 526

Baltic

LIVEN 551
GEYZER 555
ZYB 560
PASSAT 570

Pacific

MOROZ 400
RAZLIV 450
SMERCH 423
INEJ 418

Black Sea

SHTYL 620
MIRAZH 617

Displacement, tons: 660 full load

Dimensions, feet (metres): 194.5 x 38.7 x 8.5
(59.3 x 11.8 x 2.6)

Main machinery: 6 M 504 diesels; 26,112 hp(m) (19.2 MW);
3 shafts

Speed, knots: 33

Range, n miles: 2,500 at 12 kt; 900 at 31 kt

Complement: 42 (7 officers)

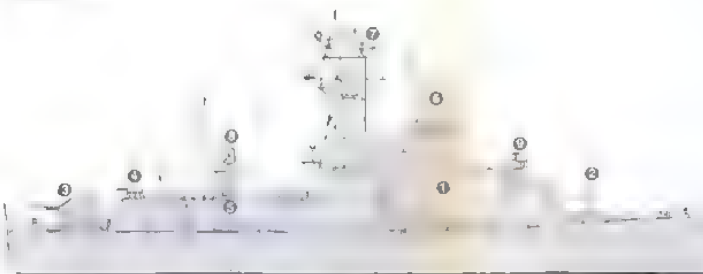
Missiles: SSM 6 Chelomey SS-N-9 Siren (Malakhit) (2 triple) launchers ●; command guidance and IR and active radar homing to 110 km (60 n miles) at 0.9 Mach; warhead nuclear 250 kT or HE 500 kg. Nanuchka IV has 2 sextuple launchers for trials of SS-NX-26, radar homing to 300 km (161.9 n miles) at Mach 2-3.5.

SAM: SA-N-4 Gecko twin launcher ●; semi-active radar homing to 15 km (8 n miles) at 2.5 Mach; warhead 50 kg; altitude 9.1-3,048 m (30-10,000 ft); 20 missiles. Some anti-surface capability.

Guns: 1 -3 in (76 mm)/59 AK 176 ●; 120 rds/min to 15 km (8 n miles); weight of shell 5.9 kg.
1-30 mm/65 ●; 6 barrels, 3,000 rds/min combined to 2 km.

Countermeasures: Decoys: 4 PK 10 chaff launchers ●

ESM: Foot Ball and Half Hat A and B. 4 Half Cup laser warners.



NANUCHKA III

(Scale 1 : 600), Ian Sturton / 0108567

Weapons control: 2 Bell Nest or Light Bulb (datalinks)

Band Stand ● datalink for SS-N-9.

Radars: Air/surface search: Peel Pair ●; I-band or Plank Shave; E/F-band

Fire control: BassTilt ●; H/I-band Pop Group ●; F/HI-band (for SA-N-4).

Band Stand (Mineral ME) ●; D-band (for SS-N-9).

Navigation: Nayada; I-band

IFF: High Pole. Square Head Spar Stump. Salt Pot A and B

Programmes: Built from 1969 onwards at Petrovsky, Leningrad and in the Pacific. The Nanuchka III were first seen in 1978. The Nanuchka IV (Nakat) was completed in 1987 as a trials ship. Type name is *maly raketny korabl* meaning small missile ship

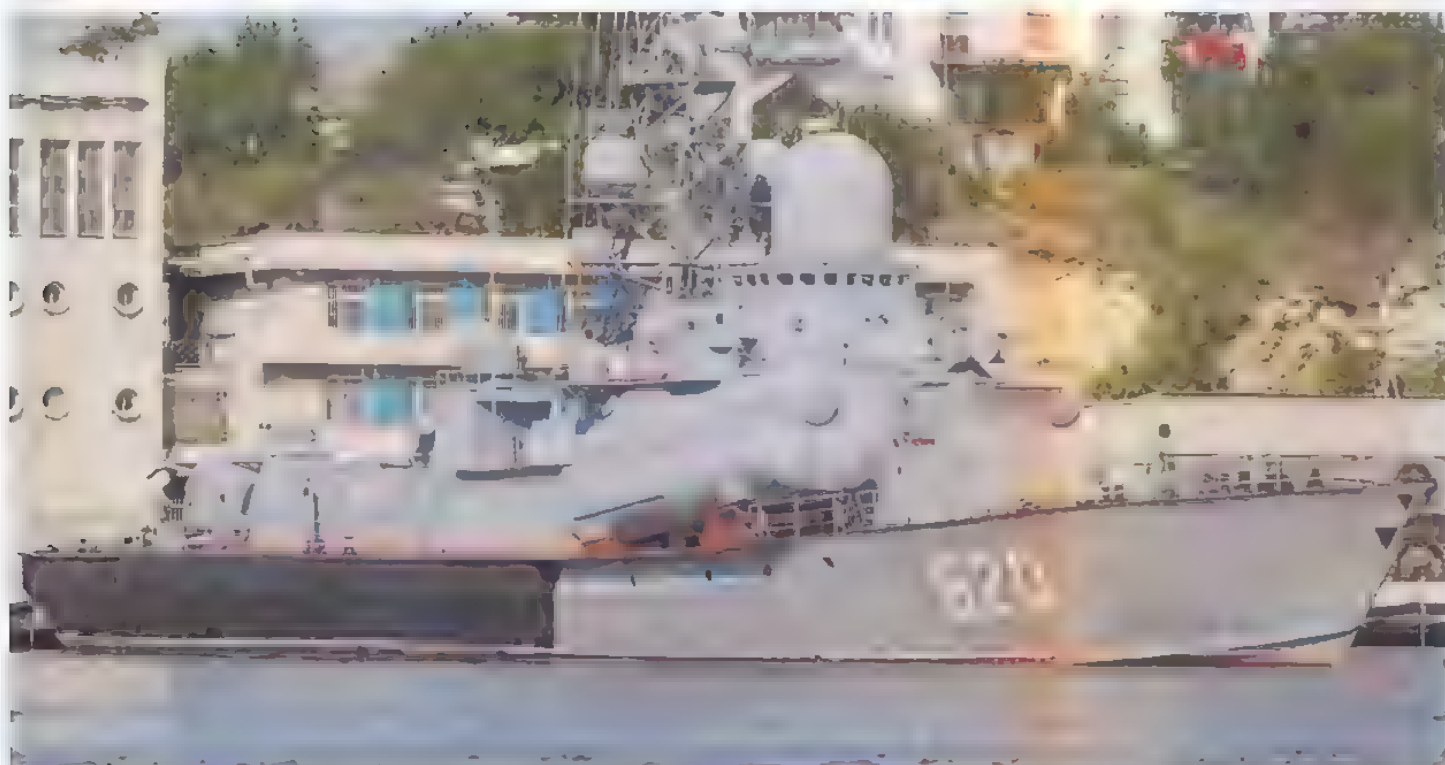
Structure: The Nanuchka IV is similar in detail to Nanuchka III except that she is the trials vehicle for SS-NX-26

Operational: Intended for deployment in coastal waters although formerly deployed in the Mediterranean (in groups of two or three), North Sea and Pacific.



PASSAT

6/2008, Frank Findler / 1353797



SHTYL

10/2008, Laursen/Jarnasen / 1353936

SHIPBORNE AIRCRAFT

Notes: (1) A smaller variant of the Kamov Ka 60 is reported to have been offered to the Russian Navy. The Ka-40 anti-submarine helicopter has been under development as a potential replacement for the Ka-27 since 1990. There have been no recent developments. (2) Haze B helicopters have all been placed in reserve as have all Ka-25 Hormones. A few of the latter remain active and probably have a training role.

Numbers/Type: 17/2 Sukhoi Su-33 Flanker D/Su-33 UB
Operational speed: 1,345 kt (2,500 km/h).
Service ceiling: 59,000 ft (18,000 m).
Range: 2,160 + n miles (4,000 km).

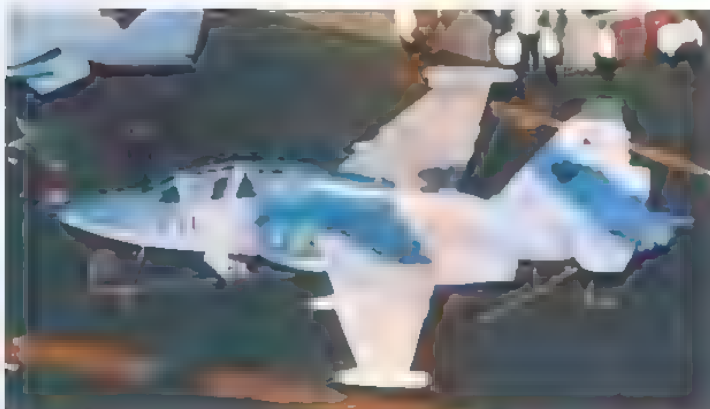
Role/Weapon systems: Fleet air defence fighter. 20 production aircraft delivered of which 2 have been lost. 10 are believed to be operational. All based in the Northern Fleet. Most training is done from a simulated flight deck ashore. Sensors: Track-while-scan pulse Doppler radar, IR scanner. Weapons: One 30 mm cannon, 10 AAMs (AA-12, AA-11, AA-8).



FLANKER 2/1996 / 0506323

Numbers/Type: 5 Sukhoi Su-25UT Frogfoot UTG
Operational speed: 526 kt (975 km/h).
Service ceiling: 22,965 ft (7,000 m).
Range: 675 n miles (1,250 km).

Role/Weapon systems: The UTG version is the two seater ground attack aircraft used for deck training in the carrier *Kuznetsov*. About 40 more of these aircraft are Air Force. Sensors: Laser rangefinder, ESM, ECM. Weapons: One 30 mm cannon, AAMs (AA-8), rockets, bombs.



FROGFOOT 2/1996 / 0506324

Numbers/Type: 2 Kamov Ka-31 Helix RLD
Operational speed: 119 kt (220 km/h).
Service ceiling: 11,480 ft (3,500 m).
Range: 162 n miles (300 km).

Role/Weapon systems: AEW conversions with a solid-state radar under the fuselage. Eight sold to India. Sensors: Oko E-801 Surveillance radar, datalinks. Weapons: Unarmed.



HELIX RLD 9/1995 / 0506325

Numbers/Type: 58/28/5 Kamov Ka-27Pl Helix A/Ka-29 Helix B/Ka-32 Helix D.
Operational speed: 135 kt (250 km/h).
Service ceiling: 19,685 ft (6,000 m).
Range: 432 n miles (800 km).

Role/Weapon systems: ASW helicopter; three main versions — 'A' for ASW, 'B' for assault and D for SAR; deployed to surface ships and some shore stations. Sensors: Osminog Splash Drop search radar, VGS-3 dipping sonar, sonobuoys, MAD, ESM. Weapons: ASW; three APR-2 torpedoes, nuclear or conventional S3V depth bombs or mines. Assault type Two UV-57 rocket pods (2 x 32).



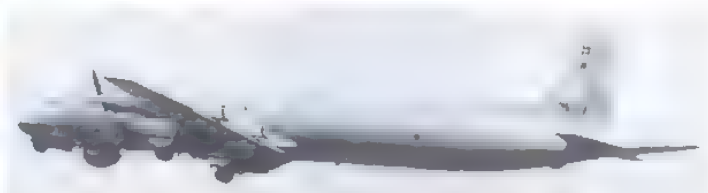
HELIX 6/2006*, *Ships of the World* / 1353315

LAND-BASED MARITIME AIRCRAFT (FRONT LINE)

Notes: (1) The MiG-29 Fulcrum D has been abandoned by the Navy and the Ka-34 Hokum is not in production. Yak-41 Freestyle is not being developed but the prototype is for sale. Fitter C/D, Badgers and Bear D aircraft were out of service by 1995. Blenders and Bear G by 1997, and Mail and Haze A/C by 1999 (except for three still active in the Black Sea Fleet). (2) Tu-204P has been proposed as an ASW/reconnaissance aircraft to replace the 'May'. It would be a development of the commercial transport aircraft. (3) Two Ilyushin Il-20 Coat A Elint aircraft are probably non-operational.

Numbers/Type: 30 Ilyushin Il-38 May.
Operational speed: 347 kt (645 km/h).
Service ceiling: 32,800 ft (10,000 m).
Range: 3,887 n miles (7,200 km).

Role/Weapon systems: Long-range MR and ASW. 14 in the North, 16 in the Pacific. Test flights of an upgraded version started in 2002 and continued in 2003. Sensors: Wet Eye search/weather radar, MAD, sonobuoys. Weapons: ASW; internal storage for 6 tons weapons.



MAY 6/2004, *Paul Tompkins* / 0001128

Numbers/Type: 48 Tupolev Tu-22 M Backfire C.
Operational speed: 2.0 Mach
Service ceiling: 60,000 ft (18,300 m).
Range: 2,500 n miles (4,630 km).

Role/Weapon systems: Medium-range nuclear/conventional strike and reconnaissance. About 20 are operational. Sensors: Down Beat search/Fan Tail attack radars, EW. Weapons: ASW; 12 tons of 'iron' bombs or standoff missiles AS-4 Kitchen (Kh 22N(A)) and AS-6 Kickback (Kh 15P). Self-defence: two 23 mm cannon.



BACKFIRE 6/2003, *Paul Jackson* / 0547315

Numbers/Type: 23/10 Tupolev Tu-142 Bear F/Tu-142 Bear J.
Operational speed: 500 kt (925 km/h).
Service ceiling: 60,000 ft (18,300 m).
Range: 6,775 n miles (12,560 km).

Role/Weapon systems: Multimission long-range aircraft (ASW and communications variants) 36 in the North, remainder Pacific. Sensors: Wet Eye search radar, ESM; search radar, sonobuoys, EW, MAD (F), ELINT systems (J). The Bear J is reported to be equipped with VLF communications for SSBN connectivity. Weapons: ASW; various torpedoes, depth bombs and/or mines (F). Self-defence; some have two 23 mm or more cannon.



BEAR F 6/2006*, *Ships of the World* / 1353316

Numbers/Type: 9 Antonov An-12 Cub ('Cub B/C/D') ('Cub C/D' ECM/ASW).
Operational speed: 419 kt (777 km/h).
Service ceiling: 33,500 ft (10,200 m)
Range: 3,075 n miles (5,700 km).
Role/Weapon systems: Used either for intelligence gathering (B) or electronic warfare (C, D); is versatile with long range. Sensors: Search/weather radar, three EW blisters (B), tail-mounted EW/Eint equipment in addition (C/D) Weapons: Self-defence; two 23 mm cannon (B and D only).

Numbers/Type: 61 Sukhoi Su-24 Fencer D/E
Operational speed: 1.15 Mach
Service ceiling: 57,400 ft (17,500 m)
Range: 950 n miles (1,756 km).
Role/Weapon systems: Fitted for maritime reconnaissance (47) and strike (4) Sensors: Radar and EW. Weapons: 30 mm Gatling gun; various ASM missiles and bombs; some have 23 mm cannon.



FENCER E 6/1999, Jane's / 0048911

PATROL FORCES

1 + 2 (2) BUYAN (PROJECT 21630) CLASS (PG)

ASTRAKHAN 012 (ex-101) VOLGODONSK (ex-Kaspiysk) MAKHACHKALA

Displacement, tons: 520 full load
Dimensions, feet (metres): 203.4 x 31.5 x 6.7 (62.0 x 9.6 x 2.1)
Main machinery: 2 Zvezda M520 diesels; 9,900 hp (7.35 MW); 2 waterjets
Speed, knots: 26
Range, n miles: 1,500 at 15 kt
Complement: To be announced
Missiles: SAM: SA-16 Gubka (Strelets), IR homing to 5 km (2.7 n miles) at 2.6 Mach, warhead 1.3 kg.
Guns: 1—3.9 in (100 mm) A 190, 80 rds/min to 20 km (10.8 n miles); weight of shell 16 kg. 2—30 mm/65 AK 306, 6 barrels per mounting; 3,000 rds/min to 2 km. 2—14.5 mm MGs. 3—7.62 mm MGs. 1—122 mm UMS 73 Grad-M multibarrelled rocket launcher.
Countermeasures: Decoys: 2 KT 216 launchers
Radars: Air/surface search: Cross Dome (Positiv-E); E/F-band
Fire control: Bass Tilt (MR-123); I/J-band.
Navigation: I-band

Comment: Designed by Zelenodolsk Design Bureau and built by Almaz, St Petersburg. *Astrakhan* laid down on 30 January 2004 and launched on 7 October 2005. *Volgodonsk* laid down on 25 February 2005 and *Makhachkala* on 24 March 2006. Heavily armed gunboat designed for littoral operations. The design includes radar and IR signature reduction measures including below water-line exhaust. The first became operational in the Caspian Sea in mid-2007 but the second pair appear to be delayed. At least two further units are expected



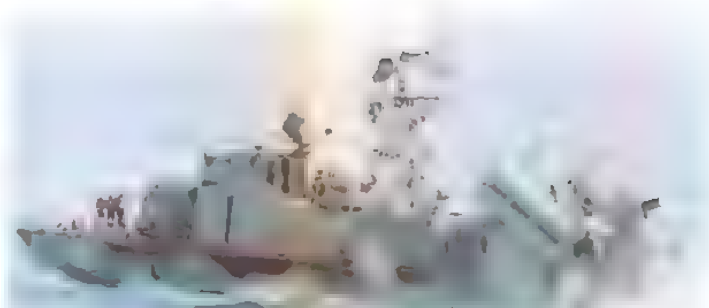
ASTRAKHAN (old number) 6/2006, Lemachko Collection / 1159863

4 MATKA (VEKHR) CLASS (PROJECT 206MP) (FAST ATTACK CRAFT—MISSILE HYDROFOIL) (PGGK)

**BOROVSK (ex-R 25) 706 VOLGOCHERENSK (ex-R 44) 966
 KARACHEJEVO-CHEKKESSIA 701 BUDENOVSK 702**

Displacement, tons: 225 standard, 260 full load
Dimensions, feet (metres): 129.9 x 24.9 (41 over foils) x 6.9 (13.1 over foils) (39.6 x 7.6, 12.5 x 2.1; 4)
Main machinery: 3 Type M 604 diesels; 10,800 hp(m) (7.94 MW) sustained; 3 shafts
Speed, knots: 40. **Range, n miles:** 600 at 35 kt foilborne; 1,500 at 14 kt hullborne
Complement: 33
Missiles: SSM: 2 SS-N-2C/D Styx; active radar or IR homing to 83 km (45 n miles) at 0.9 Mach; warhead 513 kg; sea-skimmer at end of run. 8 SS-N-25 (in 966); radar homing to 130 km (70.2 n miles) at 0.9 Mach, warhead 145 kg, sea-skimmer.
Guns: 1—3 in (76 mm)/59 AK 176; 120 rds/min to 15 km (8 n miles); weight of shell 5.9 kg. 1—30 mm/65 AK 630; 6 barrels per mounting, 3,000 rds/min to 2 km
Countermeasures: Decoys: 2 PK 16 chaff launchers.
ESM: Clay Brick; intercept.
Weapons control: Hood Wink optronic directors.
Radars: Air/surface search: Plank Shave; E-band.
Navigation: SRN-207; I-band.
Fire control: Bass Tilt, H/I-band.
IFF: High Pole B or Salt Pot B and Square Head.

Programmes: In early 1978 the first of class was seen. Built at Kolpino Yard, Leningrad. Production stopped in 1983 being superseded by Tarantul class. Type name is *raketny kuter* meaning missile cutter.
Structure: Similar hull to the deleted Osa class with similar single hydrofoil system to Turya class. The combination has produced a better sea-boat than the Osa class. *Volgocherensk* in the Black Sea was the trials craft for the SS-N-25.
Operational: *Volgocherensk* is based in the Black Sea and the other three are based in the Caspian. Five units transferred to Ukraine in 1996



R 44 6/2003, Lemachko Collection / 0570917

1 MUKHA (SOKOL) (PROJECT 1145) CLASS (FAST ATTACK CRAFT—PATROL HYDROFOIL) (PGK)

VLADIMIRETS (ex-MPK 220) 060
Displacement, tons: 400 full load
Dimensions, feet (metres): 164 x 27.9 (33.5 over foils) x 13.1 (19.4 foils) (50 x 8.5; 10.2 x 4; 5.9)
Main machinery: CODOG; 2 Type NK 12M gas turbines, 23,046 hp(m) (16.95 MW) sustained; 2 diesels; 2,400 hp(m) (1.76 MW); 2 shafts
Speed, knots: 40; 12 hullborne
Complement: 45
Guns: 1—3 in (76 mm)/59 AK 176; 120 rds/min to 15 km (8 n miles); weight of shell 5.9 kg. 2—30 mm/65 AK 630, 6 barrels per mounting; 3,000 rds/min combined to 2 km
Torpedoes: 8—16 in (406 mm) (2 quad) tubes. SAET-40; anti-submarine; active/passive homing to 10 km (5.4 n miles) at 30 kt, warhead 100 kg
Countermeasures: Decoys: 2 PK 16 chaff launchers
ESM: Radar warning
Radars: Surface search: Peel Cone; E band
Navigation: SRN 206, I-band
Fire control: Bass Tilt; H/I-band
Sonars: Foal Tail; VDS; active search, high frequency

Comment: Built in 1986 at Feodosuja. Features include a hydrofoil arrangement with a single fixed foil forward, large gas-turbine exhausts aft, and trainable torpedo mountings. The only ship of the class, which was used as a trials platform for the Medveka ASW guided weapon, is based in the Black Sea. The vessel was badly damaged in a storm on 11 November 2007 and its future is unclear



VLADIMIRETS 10/2006, Laursen/Jarnesen / 1353337

AMPHIBIOUS FORCES

Notes: (1) It was announced in mid 2006 that a new large landing ship displacing 8,000-9,000 tons was to be laid down by late 2006. Further details have not been announced. (2) A new LCU, known as the Project 21820 Dyuigon class, was laid down in 2006. A larger version of the Serna class, it is under construction at Volga Shipyard.

0 + 1 (5) MODIFIED ALLIGATOR (PROJECT 11711E) CLASS (LSTHM)

Name	No	Builders	Laid down	Launched	Commissioned
IWAN GREN	-	Yantar, Kaliningrad	23 Dec 2004	2008	2010

Displacement, tons: 5,000 full load
Dimensions, feet (metres): 419.9 x 54.1 x 11.8 (128.0 x 16.5 x 3.6)
Main machinery: 2 diesels; 10,000 hp(m) (7.5 MW); 2 shafts
Speed, knots: 18. **Range, n miles:** 3,500 at 16 kt
Complement: 100
Military lift: 300 troops; 13-60 ton tanks or 36 armoured personnel carriers
Missiles: 2-140 mm multilaunch rocket system.
Guns: 1—3 in (76 mm)/60; AK-176, 120 rds/min to 15 km (8 n miles); weight of shell 7 kg. 2—30 mm/65 AK-630; 6 barrels per mounting, 3,000 rds/min to 2 km.
Radars: To be announced
Helicopters: 1 Ka-29 Helix B.

Comment: First of a new class of amphibious ship which, based on the Project number, is likely to be a modified version of the Alligator class landing ships which were built between 1966-76. Progress is slow but up to six ships, to replace the Alligator class, are expected



IWAN GREN (Scale 1 : 1,500), Ian Sturton / 1353317

14 ROPUCHA (PROJECT 775/775M) CLASS (LSTM)

North: OLENEGORSKIY GORNIAC 012
 Baltic: KALININGRAD 102
 Black: AZOV 151 (II)
 Pacific: BDK-98 055

GEORGIY POBEDONOSETS 018
 ALEXANDER SHABALIN 110
 YAMAL 156
 OSLYABYA (ex-Mukhter Avezov) 066

KONDOPOGA 027
 MINSK 127
 TSESAR KUNIKOV 158
 PERESVET (ex-Nicolay Korsakov) 077 (II)

ALEXANDER OTRAKOVSKIY 031
 KOROLEV 130 (II)

Displacement, tons: 4,400 full load
 Dimensions, feet (metres): 369.1 x 49.2 x 12.1
 (112.5 x 15 x 3.7)
 Main machinery: 2 Zgoda-Suzer 16ZV840/48 diesels,
 19,230 hp(m) (14.14 MW) sustained; 2 shafts
 Speed, knots: 17.5
 Range, n miles: 3,500 at 16 kt; 6,000 at 12 kt
 Complement: 95 (7 officers)
 Military lift: 10 MBT plus 190 troops or 24 AFVs plus 170
 troops or mines

Missiles: SAM: 4 SA-N-5 Grail quad launchers (in at
 least two ships); manual aiming; IR homing to 6 km
 (3.2 n miles) at 1.5 Mach; altitude to 2,500 m (8,000 ft);
 warhead 1.5 kg; 32 missiles.
 Guns: 4—57 mm/75 AK 725 (2 twin) (Ropucha II); 120 rds/min
 to 12.7 km (6.8 n miles); weight of shell 2.8 kg
 1—76 mm/59 AK 176 (Ropucha II); 120 rds/min to 15 km
 (8 n miles); weight of shell 5.9 kg.
 2—30 mm/65 AK 630 (Ropucha II).
 2—122 mm UMS-73 Grad-M (in some) 2—40-barrelled
 rocket launchers; range 9 km (5 n miles).
 Mines: 92 contact type
 Weapons control: 2 Squeeze Box optronic directors ●
 Hood Wink and Odd Box
 Radars: Air/surface search: Strut Curve ● (Ropucha I) or
 Cross Dome (Ropucha II); F-band.
 Navigation: Don 2 or Nayada; I-band.
 Fire control: Muff Cob ● (Ropucha I); G/H-band.
 Bass Tilt (Ropucha II); H/I-band.
 IFF: 2 High Pole A or Salt Pot A
 Sonars: Mouse Tail VDS can be carried

Programmes: Ropucha is completed at Northern Shipyard,
 Gdansk, Poland in two spells from 1974-78 (12 ships) and
 1980-88. Ropucha IIs started building in 1987 with the first
 one commissioning in May 1990. The third and last of the
 class completed in January 1992. Type name is *bolshoy*
desantny korabl (BDK) meaning large landing ship.
 Structure: A Ro-Ro design with a tank deck running the
 whole length of the ship. All have very minor differences
 in appearance. These ships have a higher troop-to-vehicle
 ratio than the Alligator class. At least five of the class
 have rocket launchers at the after end of the forecastle.
 The second type have a 76 mm gun forward in place of one
 twin 57 mm and an ADG aft instead of the second. Radar
 and EW suites are also different. The after mast has been
 replaced by a solid extension to the superstructure.
 Operational: Eleven more have been deleted so far.
 Sales: One to South Yemen in 1979, returned to Russia in
 late 1991 for refit and was back in Aden in 1993. One to
 Ukraine in 1996.



ROPUCHA I (Scale 1 : 1,200), Ian Sturton / 0506247



TSESAR KUNIKOV 8/2007, Marco Ghuglino / 1353338



AZOV (ROPUCHA II) 2/2006, C D Yaylali / 1159878

4 ALLIGATOR (TAPIR) (PROJECT 1171) CLASS (LSTM)

SARATOV (ex-Voronezhsky Konsomolats) 50
 NIKOLAY FILCHENKOV 152

NIKOLAY VILKOV 081 (IV)
 ORSK (ex-Nicolay Obyenka) 148

Displacement, tons: 3,400 standard; 4,700 full load
 Dimensions, feet (metres): 370.7 x 50.8 x 14.7
 (113 x 15.5 x 4.5)
 Main machinery: 2 diesels; 9,000 hp(m) (6.6 MW); 2 shafts
 Speed, knots: 18. Range, n miles: 10,000 at 15 kt
 Complement: 100
 Military lift: 300 troops; 1,750 tons including about 20 tanks and various trucks, 40 AFVs

Missiles: SAM: 2 or 3 SA-N-5 Grail twin launchers, manual aiming, IR homing to 6 km
 (3.2 n miles) at 1.5 Mach, altitude to 2,500 m (8,000 ft); warhead 1.5 kg; 16 missiles.
 Guns: 2—57 mm/75 AK 725 (twin); 120 rds/min to 12 km (6.8 n miles); weight of shell 2.8 kg.
 4—25 mm/80 (2 twin) (Type 4); 270 rds/min to 3 km (1.6 n miles); weight of shell 0.34 kg.
 1—122 mm UMS-72 Grad-M; 2—40-barrelled rocket launchers (in Types 3 and 4); range
 9 km (5 n miles).
 Weapons control: 1 Squeeze Box optronic director (Types 3 and 4).
 Radars: Surface search: 2 Don 2; I-band.

Programmes: First ship commissioned in 1966 at Kaliningrad. Last of class in service
 completed in 1976. Type name is *bolshoy desantny korabl* meaning large landing ship.
 One more Type 3 in service with Ukraine.
 Structure: These ships have ramps on the bow and stern. In Type 3 the bridge structure
 has been raised and a forward deck house has been added to accommodate shore
 bombardment rocket launchers. Type 4 is similar to Type 3 with the addition of two twin
 25 mm gun mountings on centreline abaft the bridge superstructure. As well as a tank deck
 300 ft long stretching right across the hull there are two smaller deck areas and a hold.
 Operational: In the 1980s the class operated regularly off West Africa, in the Mediterranean
 and in the Indian Ocean, usually with Naval Infantry units embarked. Half the class have
 been scrapped or laid up. Of the remainder, *Vilkov* is in the Pacific and the others in
 the Black Sea.
 Sales: One to Ukraine in 1995



SARATOV 10/2008, Laursen/Jarnasen / 1353339

2 POMORNIK (ZUBR) (PROJECT 1232.2) CLASS (ACVM/LCUJM)

YEVGENIY KOCHESHKOV (ex-MDK-118) 770

MORDOVIYA (ex-MDK-94) 782

Displacement, tons: 550 full load
 Dimensions, feet (metres): 189 x 84 (57.6 x 25.6)
 Main machinery: 5 Type NK-12MV gas-turbines; 2 for lift, 23,672 hp(m) (17.4 MW) nominal;
 3 for drive, 35,508 hp(m) (26.1 MW) nominal
 Speed, knots: 63
 Range, n miles: 300 at 55 kt
 Complement: 31 (4 officers)
 Military lift: 3 MBT or 10 APC plus 230 troops (total 130 tons)

Missiles: SAM: 2 SA-N-5 Grail quad launchers; manual aiming; IR homing to 6 km
 (3.2 n miles) at 1.5 Mach; altitude to 2,500 m (8,000 ft); warhead 1.5 kg.
 Guns: 2—30 mm/65 AK 630; 8 barrels per mounting; 3,000 rds/min combined to 2 km.
 2—140 mm A-22 Ogon 22-barrelled rocket launchers.
 Mines: 2 rails can be carried for 80
 Countermeasures: Decoys: MS227 chaff launcher.
 ESM: Tool Box; intercept
 Weapons control: Quad Look (DWU-3) (modified Squeeze Box) optronic director.
 Radars: Surface search: Curl Stone; I-band.
 Fire control: Bass Tilt; H/I-band
 IFF: Salt Pot A/B Square Head.

Comment: First of class delivered 1986, commissioned in 1988. Last of class launched
 December 1994. Produced at St Petersburg and at Feodosiya. Bow and stern ramps for
 ro-ro working. Last survivors are based at Baltiysk and one is still operated by Ukraine.
 One (plus one from Ukraine) transferred and two new build for Greece by 2005. These
 are the first Former Soviet Union (FSU) naval platform sales to a NATO country.



MORDOVIYA 7/2008, Harmut Ehlers / 1353296

1 POLNOCHNY B CLASS (PROJECT 771) CLASS (LSM)

VTR 140

Displacement, tons: 760 standard, 834 full load
 Dimensions, feet (metres): 246.1 × 31.5 × 7.5 (75 × 9.6 × 2.3)
 Main machinery: 2 Kolomna Type 40-D diesels; 4,400 hp(m) (3.2 MW) sustained; 2 shafts
 Speed, knots: 19
 Range, n miles: 1,000 at 18 kt
 Complement: 40-42
 Military lift: 180 troops; 350 tons including 6 tanks
 Missiles, SAM: 4 SA-N-5 Grail quad launchers.
 Guns: 2 or 4—30 mm (1 or 2 twin).
 2—140 mm WM-18 rocket launchers; 18 barrels.
 Weapons control: PED-1 system.
 Radars: Surface search, Spin Trough; I-band.
 Fire control: Drum Tilt; H/I-band (for 30 mm guns).
 IFF: High Pole A, Square Head.

Comment: Built at Northern Shipyard, Gdansk, Poland in 1970. VTR 140 serves in the Northern Fleet as a logistic support ship. Others of the class are in reserve.



VTR 140

7/2006, Lemachko Collection / 1159870

6 ONDATRA (AKULA) (PROJECT 1176) CLASS (LCMS)

DKA 70 877 DKA 164 - DKA 464 -
 DKA 148 - DKA 325 799 DKA 704 640

Displacement, tons: 145 full load
 Dimensions, feet (metres): 78.7 × 16.4 × 4.9 (24 × 5 × 1.5)
 Main machinery: 2 diesels; 300 hp(m) (220 kW); 2 shafts
 Speed, knots: 10
 Range, n miles: 500 at 5 kt
 Complement: 5
 Military lift: 1 MBT

Comment: First completed in 1979 and associated with *Ivan Rogov*. 33 deleted so far. Tank deck of 45 × 13 ft Two to Yemen in 1983. Two of unknown pennant number are based in the Caspian. The remainder are in the Baltic.



DKA 70

6/2008*, 1353340

4 SERNA CLASS (LCU)

DKA 67 747 - 645 DKA 144 575 +1

Displacement, tons: 105 full load
 Dimensions, feet (metres): 86.3 × 19 × 5.2 (26.3 × 5.8 × 1.6)
 Main machinery: 2 M 503A3 diesels; 6,522 hp(m) (4.06 MW); 2 shafts
 Speed, knots: 30
 Range, n miles: 100 at 30 kt, 600 at 22 kt
 Complement: 6
 Military lift: 45 tons or 100 troops

Comment: High-speed utility landing craft capable of beaching and in service in May 1995. Have an 'air-lubricated' hull. Designed for both military and civilian use by the R Alexeyev Central Design Bureau and built at Nizhny Novgorod. Can be armed. DKA-67 is operational in the Baltic Fleet and two are reported to be in the Caspian. Three others have been sold commercially.



SERNA CLASS

8/2007, Lemachko Collection / 1353295

2 AIST (DZHEYRAN) (PROJECT 1232.1) CLASS (ACV/LCUJ)

MDK 18 608

MDK 88 609

Displacement, tons: 298 full load
 Dimensions, feet (metres): 155.2 × 58.4 (47.3 × 17.8)
 Main machinery: 2 Type NK-12M gas turbines driving 4 axial lift fans and 4 propeller units for propulsion; 19,200 hp(m) (14.1 MW) nominal
 Speed, knots: 70
 Range, n miles: 120 at 50 kt
 Complement: 15 (3 officers)
 Military lift: 80 tons or 4 light tanks plus 50 troops or 2 medium tanks plus 200 troops or 3 APCs plus 100 troops
 Guns: 4—30 mm/66 (2 twin) AK 630, 6 barrels per mounting; 3,000 rds/min combined to 2 km
 Countermeasures: Decoys, 2 PK 16 chaff launchers
 Radars: Surface search, Kivach; I-band
 Fire control: Drum Tilt, H/I-band
 IFF: High Pole B, Square Head

Comment: First produced at Leningrad in 1970, subsequent production at rate of about six every four years. The first large hovercraft for naval use. Similar to UK SR. N4. Type name is *maly desantny korabl na vozdushnoy podushke* meaning small ACV. Modifications have been made to the original engines and some units have been reported as carrying two SA-N-5 quadruple SAM systems and chaff launchers. Based in the Caspian.



AIST CLASS

8/2000, J Cidlak / 0105561

3 LEBED (KALMAR) (PROJECT 1206) CLASS (ACV/LCUJ)

639

640

641

Displacement, tons: 87 full load
 Dimensions, feet (metres): 80.1 × 36.7 (24.4 × 11.2)
 Main machinery: 2 Ivchenko AI-20K gas turbines for lift and propulsion; 8,000 hp(m) (5.88 MW)
 Speed, knots: 50
 Range, n miles: 100 at 50 kt
 Complement: 6 (2 officers)
 Military lift: 2 light tanks or 40 tons cargo or 120 troops
 Guns: 2—30 mm/65 AK 630; 6 barrels per mounting; 3,000 rds/min combined to 2 km
 Radars: Navigation Kivach; I-band

Comment: First entered service 1975. Can be carried in *Ivan Rogov* class. Has a bow ramp with gun on starboard side and the bridge to port. All based in the Caspian. 639 and 640 took part in the Caspian Sea exercise in July 2002.



LEBED 641

6/2005, Lemachko Collection / 1159874

3 GUS (SKAT) (PROJECT 1205) CLASS (ACV/LCMJ)

631

615

650

Displacement, tons: 17 light; 27 full load
 Dimensions, feet (metres): 69.9 × 27.5 × 0.6 (21.3 × 8.4 × 0.2)
 Main machinery: 3 TVD 10 gas turbines for lift and propulsion
 Speed, knots: 49
 Range, miles: 200 at 49 kt
 Complement: 7 + 24 troops

Comment: Last survivors of an original class of 32 which entered service 1969-76. Based in the Caspian.



GUS

6/1992, Lemachko Collection / 01055617

MINE WARFARE FORCES

Notes: (1) All remaining Yevgenya (Korond) class MHCs were laid up by 2001, except for two in the Caspian Sea which may still be used as patrol craft. These include RT 236 (259). (2) Some 40 to 50 craft of various dimensions, some with cable reels, some self-propelled and unmanned, some towed and unmanned are reported including the 8 m Kater and Volga unmanned mine clearance craft.



RT 236 7/2006, Lemachko Collection / 1305146

11 NATYA I (AKVAMAREN) (PROJECT 266M) CLASS (MINESWEEPERS—OCEAN) (MSOM)

North	Pacific	Black
MOTORIST 806	MT 265 718	VALENTIN PIKUL 770
KOMENDOR 831	MT 264 738	VITSEADMIRAL ZHUKOV 909
KONTRADMIRAL VLASOV		IVAN GOLUBETS (ex-Radist) 911
(ex-Machinist) 855		TURBINIST 912
		KOVROVETS 913
		VITSE-ADMIRAL ZAKHARIN 908 (ex-611)

Displacement, tons: 804 full load
Dimensions, feet (metres): 200.1 (219 8 Natya III) x 33.5 x 9.8 (61; 67 x 10.2 x 3)
Main machinery: 2 Type M 504 diesels, 5,000 hp(m) (3.67 MW) sustained; 2 shafts, cp props
Speed, knots: 16
Range, n miles: 3,000 at 12 kt
Complement: 67 (8 officers)

Missiles: SAM: 2 SA-N-5/8 Grail quad launchers (in some); manual aiming; IR homing to 6 km (3.2 n miles) at 1.5 Mach; altitude to 2,500 m (8,000 ft); warhead 1.5 kg; 18 missiles.
Guns: 4—30 mm/65 (2 twin) AK 230; 500 rds/min to 6.5 km (3.5 n miles); weight of shell 0.54 kg or 2—30 mm/65 AK 306; 6 barrels per mounting; 3,000 rds/min combined to 2 km
 4—25 mm/80 (2 twin); 270 rds/min to 3 km (1.6 n miles); weight of shell 0.34 kg
A/S mortars: 2 RBU 1200 5-tubed fixed; range 1,200 m; warhead 34 kg.
Depth charges: 62
Mines: 10.
Countermeasures: MCM: 1 or 2 GKT-2 contact sweeps; 1 AT-2 acoustic sweep, 1 TEM-3 magnetic sweep.
Radars: Surface search: Don 2 or Long Trough; I-band.
Fire control: Drum Tilt, H/I-band (not in all)
 IFF: 2 Square Head, High Pole B.
Sonars: MG 79/89; hull-mounted, active minehunting; high frequency.

Programmes: First reported in 1970. Built at Kolpino and Khabarovsk. Type name is *morskoy tralshchik* meaning seagoing minesweeper. MT 264 and MT 265 were a new variant commissioned in 1988 in which AK 306 mounts replaced the twin AK 230 mounts. One further unit, known as Natya III started construction in 1994. *Valentin Pikul*, left St Petersburg for the Black Sea in July 2002. A further development of the class (known as the Agat class), *Vitseadmiral Zakharin*, was launched at the Kolpino Yard on 26 May 2006.

Structure: Some have hydraulic gantries aft. Have aluminium/steel alloy hulls. Some have Gatling 30 mm guns and a different radar configuration without Drum Tilt. The Natya IIIs are 6 m longer than earlier ships.

Operational: Usually operate in home waters but have deployed to the Mediterranean, Indian Ocean and West Africa. Sweep speed is 14 kt.

Sales: India (two in 1978, two in 1979, two in 1980, one in August 1986, two in 1987, three in 1988). Libya (two in 1981, two in February 1983, one in August 1983, one in January 1984, one in January 1985, one in October 1986). Syria (one in 1985). Yemen (one in 1991) Ethiopia (one in 1991). Some have been deleted.



IVAN GOLUBETS 10/2008*, Laursen/Jarnasen / 1353341



KONTRADMIRAL VLASOV 6/2006, Lemachko Collection / 1305151



VALENTIN PIKUL 5/2006, C D Yaylali / 1159881

2 GORYA (TYPE 12660) CLASS (MINEHUNTERS—OCEAN) (MHOM)

Name	No	Builders	Laid down	Launched	Commissioned
A ZHELEZNYAKOV	901 (ex-811)	Kolpino Yard, Leningrad	28 Feb 1985	17 July 1986	30 Dec 1988
V GUMANENKO	811 (ex-812, ex-762)	Kolpino Yard, Leningrad	15 Sep 1985	4 Mar 1991	9 Jan 1994

Displacement, tons: 1,130 full load
Dimensions, feet (metres): 218.5 x 36.1 x 10.8 (66.0 x 11.0 x 3.3)
Main machinery: 2 M 503 diesels; 5,000 hp(m) (3.7 MW); 2 shafts
Speed, knots: 15
Range, n miles: 3,000 at 12 kt
Complement: 65 (7 officers)

Missiles: 2 SA-N-5 Grail quad launchers; IR homing to 6 km (3.2 n miles) at 1.5 Mach
Guns: 1—3 in (76 mm)/60 AK 176; 120 rds/min to 12 km (6.4 n miles); weight of shell 7 kg.
 1—30 mm/65 AK 630; 6 barrels, 3,000 rds/min to 2 km.
Countermeasures: Decoys: 2 PK 16 chaff launchers.
 ESM: Cross Loop, Long Fold
Radars: Surface search: Palm Frond; I-band.
 Navigation: Nayada, I-band
Fire control: Bass Tilt, H/I-band.
 IFF: Salt Pot C, 2 Square Head.
Sonars: Hull-mounted; active search; high frequency.

Programmes: A third of class was started but has been scrapped.
Structure: Appears to carry mechanical, magnetic and acoustic sweep gear and may have accurate positional fixing equipment. A remote-controlled submersible is housed behind the sliding doors in the superstructure below the AK 630 mounting. Two 406 mm torpedo tubes are reported as used for mine countermeasures.

Operational: 811 is based in the Black Sea. 812 transferred from the Baltic to the Northern Fleet in 2000



V GUMANENKO (old number) 6/2005, Lemachko Collection / 1159811

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24 SONYA (YAKHONT) (PROJECT 12650/1265M) CLASS
(MINESWEEPERS—HUNTERS/COASTAL) (MHSC/MHSCM)

North	Pacific	Baltic	Caspian	Black
POLYARNY (ex-BT 97) 402	BT 232 525	ALEKSEY	BT 48 513	LEYTENANT
KOLOMNA 425	BT 256 560	LEBEDEV 505	BT 44 563	ILIN (ex-BT 40) 438
BUEVLYANIN 418	BT 215 993	BT 230 510	MAGAMED	MINERALNY VODI
KOTELNICH 443	BT 114 542	SERGEI KOLBASSEV	GADGIEV 564	(ex-BT 241) 426
YELNYA (ex-BT 50) 454	BT 115 581	(ex-BT 213) 522	GERMAN	
AVANGARD 466	BT 100 565		UGRYUMOV 501	
YADRYN 469			YUSUP AKAEV 107	

Displacement, tons: 450 full load
Dimensions, feet (metres): 157.4 x 28.9 x 6.6 (48 x 8.8 x 2)
Main machinery: 2 Kolomna Type 9-D-8 diesels; 2,000 hp(m) (1.47 MW) sustained; 2 shafts
Speed, knots: 15
Range, n miles: 3,000 at 10 kt
Complement: 43 (5 officers)
Missiles: SAM: 2 quad SA-N-5 launchers (in some).
Guns: 2 30 mm/65 AK 630 or 2—30 mm/65 (twin) and 2—25 mm/80 (twin).
Mines: 8.
Radars: Surface search: Don 2 or Kivach or Nayada, I-band.
IFF: 2 Square Head High Pole B.
Sonars: MG 69/79; hull-mounted; active minehunting; high frequency.

Comment: Wooden hull with GRP sheath. Built at about two a year at Petrozavodsk and at Ulis, Vladivostok (Pacific). First reported 1973 and the last one commissioned in January 1995. Type name is *bazovy tralshchik* meaning base minesweeper. Some have two twin 30 mm Gatling guns, others one 30 mm/65 (twin) plus one 25 mm (twin). In addition there are further 50 in reserve. At least one of the Caspian Sea units has been transferred to the Federal Border Guard.
Transfers: Bulgaria, four in 1981–85. Cuba, four in 1980–85. Syria, one in 1986. Vietnam, one in February 1987, one in February 1988, one in July 1989 and one in February 1990. Ethiopia, one in February 1991. Ukraine, two in 1996.



SERGEI KOLBASSEV 7/2008*, Hartmut Ehlers / 1353285



YUSUP AKAEV 4/2006, Lemachko Collection / 1305143

9 LIDA (SAPFIR) (PROJECT 10750) CLASS
(MINEHUNTERS—COASTAL) (MHC)

RT 249 206	RT 231 219	RT 341 331
RT 273 210	RT 252 239	RT 210 340
RT 233 215	RT 57 316	RT 248 348

Displacement, tons: 135 full load
Dimensions, feet (metres): 103.3 x 21.3 x 6.2 (31.5 x 6.5 x 1.6)
Main machinery: 3 D12MM diesels; 900 hp(m) (690 kW); 3 shafts
Speed, knots: 12
Range, n miles: 650 at 10 kt
Complement: 14 (1 officer)
Guns: 1—30 mm/65 AK 630; 6 barrels, 3,000 rds/min to 2 km.
Countermeasures: MCM: AT-6 acoustic, SEMT-1 magnetic and GKT-3M wire sweeps.
Radars: Surface search, Pochora, MR241; I-band
Sonars: Kabarge I; minehunting; high frequency

Comment: Type name *Reydnny Tralshchik* meaning roadstead minesweeper. A follow-on to the Yevgenya class started construction in 1989 at Kolpino Yard, St Petersburg. Similar in appearance to Yevgenya. Building rate was about three a year to 1992 and then slowed to one a year until 1995. Some are painted a blue/grey colour. All are in the Baltic except RT 233 which is in the Caspian.



RT 273 7/2008*, Hartmut Ehlers / 1353285

3 OLYA (MALAKHIT) (PROJECT 1259) CLASS
(MINEHUNTERS—INSHORE) (MSB)

202	230	235
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Displacement, tons: 64 full load
Dimensions, feet (metres): 84.6 x 14.9 x 3.3 (25.8 x 4.5 x 1.0)
Main machinery: 2 Type 3D 6S11/235 diesels, 471 hp(m) (364 kW); 2 shafts
Speed, knots: 12
Range, n miles: 500 at 12 kt
Complement: 15
Guns: 2—25 mm/80 (twin).
Radars: Surface search/navigation: Don 2; I-band

Comment: Built in 1973–75 and, although believed to have been deleted in 2001, were reported in 2008 to have been reactivated



OLYA 202 7/2008*, Hartmut Ehlers / 1353284

3 TOLYA (PROJECT 696) CLASS
(MINEHUNTERS—COASTAL) (MSI)

229	+2
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Displacement, tons: 95 full load
Dimensions, feet (metres): 78.7 x 17.7 x 7.2 (24.0 x 5.4 x 2.2)
Main machinery: 2 diesels, 500 hp(m) (367 kW); 2 shafts
Speed, knots: 12
Range, n miles: 300 at 10 kt
Complement: 15
Guns: 2—12.7 mm MGs.
Radars: Navigation, Spin Trough; I-band.

Comment: The first ship commissioned in 1992 and the second pair in early 1993. Capable of drone control. Based in the Baltic. Although believed to have been deleted in 2001, were reported in 2008 to have been reactivated.



TOLYA 229 7/2008*, Hartmut Ehlers / 1353293

SURVEY AND RESEARCH SHIPS

Notes: (1) Civilian research ships are now all used for commercial purposes only or are laid up, and are no longer naval associated, although some can still be leased for short operations. The former section has therefore been deleted since 1998.

(2) A new Project 19920 hydrographic ship, *Victor Faleev* (BGK 797) was laid down by Vostochnaya Shipyard, Vladivostok on 17 October 2006 and launched on 22 July 2008. The vessel is approximately 1,000 tons displacement and is to be based in the Pacific Fleet.



VICTOR FALEEV

7/2008*, Lemachko Collection / 1353676

2 SIBIRIYAKOV (PROJECT 865) CLASS (AGOR)

SIBIRIYAKOV ROMZUALD MUKLEVITCH

Displacement, tons: 3,422 full load

Dimensions, feet (metres): 281.2 × 49.2 × 16.4 (85.7 × 15 × 5)

Main machinery: Diesel-electric, 2 Cegielski Sulzer 12AS25 diesels; 6,480 hp(m) (4.44 MW) sustained; 2 motors; 2 shafts; cp props; bow and stern thrusters

Speed, knots: 14. Range, n miles: 11,000 at 14 kt

Complement: 58 plus 12 scientists

Guns: 1–30 mm AK 630 can be carried.

Radars: Navigation: 2 Nayada; I-band.

Comment: Built in Northern Shipyard, Gdansk 1990–92. Has a pressurised citadel for NBC defence, and a dogaussing installation. Six separate laboratories for hydrographic and geophysical research. Two submarines can be embarked. Both ships are very active, *Sibiriyakov* in the Baltic at Kronstadt, and *Muklevitch* in the North.



SIBIRIYAKOV

5/2000 / 0105564

2 AKADEMIK KRYLOV (PROJECT 852/856) CLASS (AGORH)

LEONID DEMIN ADMIRAL VLADIMIRSKIY

Displacement, tons: 9,100 full load

Dimensions, feet (metres): 482.3 × 60.7 × 20.3 (147 × 18.5 × 6.2)

Main machinery: 4 Sulzer diesels; 14,500 hp(m) (10.7 MW); 2 shafts, bow and stern thrusters

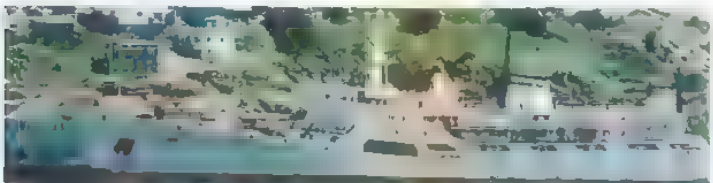
Speed, knots: 20. Range, n miles: 36,000 at 15 kt

Complement: 120

Radars: Navigation: Nayada, Palm Frond and Don 2; I band

Helicopters: 1 Hormone

Comment: Built in Szczecin 1974–79. Carry two survey launches and have 26 laboratories. Based in the Baltic at Kronstadt. *Akademik Krylov* sold to a Greek company in 1993 and now flies the Cyprus flag. *Admiral Vladimirovsky*, previously inactive at Kronstadt, has been reactivated in the Baltic.



LEONID DEMIN

5/1994 / 0081696

7 MOMA (PROJECT 861) CLASS (AGS)

ANTARES SEVER (AGE) ANTARKTYDA MARS KRILON ANDROMEDA CHELEKEN

Displacement, tons: 1,550 full load

Dimensions, feet (metres): 240.5 × 36.8 × 12.8 (73.3 × 11.2 × 3.9)

Main machinery: 2 Zgoda-Sulzer 6TD48 diesels; 3,300 hp(m) (2.43 MW) sustained;

2 shafts; cp props

Speed, knots: 17. Range, n miles: 9,000 at 11 kt

Complement: 55

Radars: Navigation: Nayada and Don 2; I-band.

IFF: High Pole A.

Comment: Built at Northern Shipyard, Gdansk 1967–72. Some of the class are particularly active in ASW research associated operations. Four laboratories. One survey launch and a 7 ton crane. The AGE is fitted with bow probes. Two (*Krilon* and *Mars*) in the Northern Fleet, two (*Antarktyda* and *Antares*) in the Pacific, two (*Cheleken* and *Sever*) in the Black and one (*Andromeda*) in the Baltic. One transferred to Ukraine.



CHELEKEN

10/2006*, Laursen/Jarnesen / 1353342

14 YUG (PROJECT 862) CLASS (AGS/AGI/AGE)

North PLUTON STRELETS GORIZONT GIDROLOG WYMI SENEZH TEMRYUK (ex-Mangyshlak) SSV 700	Pacific V ADM VORONTSOV (ex-Briz) PEGAS MARSHAL GELOVANI	Baltic PERSEY NIKOLAY MATUSEVICH	Black DONUZLAV STVOR
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Displacement, tons: 2,500 full load

Dimensions, feet (metres): 270.6 × 44.3 × 13.1 (82.5 × 13.5 × 4)

Main machinery: 2 Zgoda-Sulzer Type 6TD48 diesels; 3,300 hp(m) (2.43 MW) sustained; 2 auxiliary motors; 272 hp(m) (200 kW); 2 shafts; cp props; bow thruster; 300 hp (220 kW)

Speed, knots: 15

Range, n miles: 9,000 at 12 kt

Complement: 46 (8 officers) plus 20 scientists

Guns: 6–25 mm/80 (3 twin) (fitted for but not with).

Radars: Navigation: Palm Frond or Nayada; I-band

Comment: Built at Northern Shipyard, Gdansk 1977–83. Have 4 ton davits at the stern and two survey craft. Others have minor variations around the stern area. *Pluton* 028 and *Strelets* 025 have been taken over by the Arctic Border Guard. *SSV 700* is to a modified design and is classified as AGE.



DONUZLAV

10/2006*, Laursen/Jarnesen / 1353343



TEMRYUK

10/2006, Lemachko Collection / 1167419

1 SAMARA (PROJECT 860) CLASS (AGS)

GIGROMETER

Displacement, tons: 1,050 standard; 1,270 full load

Dimensions, feet (metres): 193.5 × 34.4 × 12.5 (59.0 × 10.5 × 3.8)

Main machinery: 2 Zgoda-Sulzer Type 6TD48 diesels; 3,300 hp(m) (2.43 MW) sustained;

2 shafts; cp props

Speed, knots: 15. Range, n miles: 6,200 at 10 kt

Complement: 45

Radars: Navigation: Don 2; I-band.

Comment: The last survivor of eight built at Northern Shipyard Gdansk 1962–65 for hydrographic surveying and research. Has laboratories, one survey launch and a 5 ton crane. Based in the Baltic.



SAMARA CLASS

4/1992, van Ginderen Collection / 0506090

25 FINIK (PROJECT 872) CLASS (AGS/AGE/AE)

North: GS 87 GS 260 GS 271 GS 278 GS 297 GS 392 GS 405
 Pacific: GS 44 GS 47 GS 84 GS 200 GS 272 GS 296 GS 397 GS 404
 Black: GS 78 GS 86 GS 402 PETR GRADOV (ex-VTR 75)
 Baltic: GS 270 GS 399 GS 400 GS 403
 Caspian: GS 202 GS 301

Displacement, tons: 1,200 full load
 Dimensions, feet (metres): 201.1 x 35.4 x 10.8 (61.3 x 10.8 x 3.3)
 Main machinery: 2 Cegielski-Sulzer 6AL25/30 diesels; 1,920 hp(m) (1.4 MW); auxiliary propulsion; 2 motors, 204 hp(m) (150 kW); 2 shafts; cp props; bow thruster
 Speed, knots: 13
 Range, n miles: 3,000 at 13 kt
 Complement: 26 (5 officers) plus 9 scientists
 Radars: Navigation, Kivach B; I-band

Comment: Improved Biya class. Built at Northern Shipyard, Gdansk 1978-83. Fitted with 7 ton crane for buoy handling. Can carry two self-propelled pontoons and a boat on well deck. Some have been used commercially. Ships of same class serve in the Polish Navy. Three transferred to Ukraine in 1997. Some may be laid up. VTR 75, originally built as a survey ship, was converted for use as an ammunition carrier in 2000



10/2002, Lemachko Collection / 0570911



PETR GRADOV 10/2008*, Laursen/Jarnesen / 1353344

60 GPB-480 (PROJECT 1896) CLASS (INSHORE SURVEY CRAFT) (YGS)

BGK series

Displacement, tons: 116 full load
 Dimensions, feet (metres): 93.8 x 17.1 x 6.6 (28.6 x 5.2 x 1.7)
 Main machinery: 1 diesel; 300 hp(m) (223 kW); 1 shaft
 Speed, knots: 12

Comment: Entered service from 1955. Numbers approximate. Inshore survey craft equipped with two 1.5 ton derricks



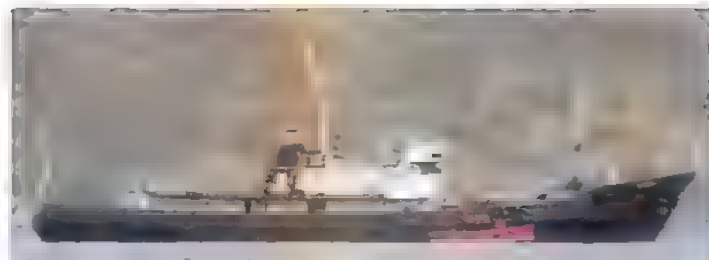
BGK 889 10/2008*, Laursen/Jarnesen / 1353345

8 BIYA (PROJECT 870/871) CLASS (AGS)

North	Pacific	Baltic	Caspian
GS 193	GS 198	GS 204	GS 202
	GS 200	GS 208	
	GS 210	GS 214	
	GS 269		

Displacement, tons: 766 full load
 Dimensions, feet (metres): 180.4 x 32.1 x 8.5 (55 x 9.8 x 2.6)
 Main machinery: 2 diesels; 1,200 hp(m) (882 kW); 2 shafts; cp props
 Speed, knots: 13
 Range, n miles: 4,700 at 11 kt
 Complement: 25
 Radars: Navigation; Don 2; I-band.

Comment: Built at Northern Shipyard, Gdansk 1972-76. With laboratory and one survey launch and a 5 ton crane. Two transferred to Ukraine in 1997.



GS 269 9/2007, Lemachko Collection / 1353287

6 KAMENKA (PROJECT 870/871) CLASS (AGS)

GS 66 GS 113 GS 118 GS 199 GS 207 GS 211

Displacement, tons: 760 full load
 Dimensions, feet (metres): 176.5 x 29.8 x 8.5 (53.5 x 9.1 x 2.6)
 Main machinery: 2 Sulzer diesels, 1,800 hp(m) (1.32 MW); 2 shafts; cp props
 Speed, knots: 14. Range, n miles: 4,000 at 10 kt
 Complement: 25
 Radars: Navigation, Don 2, I-band.
 IFF: High Poie

Comment: Built at Northern Shipyard, Gdansk 1968-69. A 5 ton crane forward. They do not carry a survey launch but have facilities for handling and stowing buoys. Two in the Baltic and four in the Pacific. One transferred to Vietnam in 1979, one to Estonia in 1995 and one to Ukraine in 1997.



GS 118 6/2003, Lemachko Collection / 0570901

9 ONEGA (PROJECT 1806) CLASS (AGS)

VICTOR SUBBOTIN	SFP 173	SFP 295
AKADEMIK SEMINIKHIN SFP 183	SFP 240	SFP 542
AKADEMIK ISANIN SFP 588	SFP 286	SFP 562

Displacement, tons: 2,150 full load
 Dimensions, feet (metres): 265.7 x 36 x 13.7 (81 x 11 x 4.2)
 Main machinery: 2 gas turbines, 8,000 hp(m) (5.88 MW); 1 shaft
 Speed, knots: 20
 Complement: 45
 Radars: Navigation; Nayada; I-band

Comment: Built at Zelenodolsk and first seen in September 1973. Helicopter platform but no hangar in earlier ships of the class but in later hulls the space is taken up with more laboratory accommodation. Used as hydroacoustic monitoring ships. Akademik Semnikhin was completed in October 1992 and Victor Subbotin in 2006. One to Ukraine in 1997. Victor Subbotin based in the Baltic, Akademik Semnikhin in the Black Sea, Akademik Isanin, SFP 240, SFP 286 and SFP 562 in the Northern Fleet and SFP 173, SFP 295 and SFP 542 in the Pacific.



AKADEMIK SEMINIKHIN 10/2008*, Laursen/Jarnesen / 1353346



SFP 286 7/2006, Lemachko Collection / 1305145

2 VINOGRAD CLASS (AGOR)

GS 525-526

Displacement, tons: 498 full load
 Dimensions, feet (metres): 108.3 x 34.1 x 9.1 (33 x 10.4 x 2.8)
 Main machinery: Diesel-electric; 2 diesels; 2 motors; 1,200 hp(m) (882 kW); 2 trainable propellers
 Speed, knots: 9
 Range, n miles: 1,000 at 6 kt
 Complement: 19

Comment: Built by Rauma-Repote, Finland, 1985-87 as hydrographic research ships. GS 525 commissioned 12 November 1985 and GS 526 on 17 December 1985. 525 is in the Baltic and 526 in the North. Both have side scan sonars. A similar ship has been reported operating with the Northern Fleet.



GS 525 6/1998, Hartmut Ehlers / 00540054

1 MARSHAL NEDELIN (PROJECT 1914) CLASS (MISSILE RANGE SHIP) (AGMH)

MARSHAL KRYLOV

Displacement, tons: 24,500 full load
 Dimensions, feet (metres): 695.5 x 88.9 x 26.3 (211.2 x 27.1 x 7.7)
 Main machinery: 2 gas turbines, 54,000 hp(m) (40 MW); 2 shafts
 Speed, knots: 20 Range, n miles: 22,000 at 16 kt
 Complement: 450
 Radars: Air search: Top Plate
 Navigation: 3 Palm Front; I-band
 Helo control: Fly Screen B; I-band
 Space trackers: End Tray (balloons), Quad Leaf, 3 Quad Wedge, 4 smaller aerials.
 Tacan: 2 Round House
 Helicopters: 2-4 Ka-32 Helix C.

Comment: Completed at Admiralty Yard, Leningrad 23 February 1990. Fitted with a variety of space and missile associated electronic systems. Fitted for but not with six twin 30 mm/65 ADG guns and three Bass Tilt fire-control radars. Naval subordinated, the task is monitoring missile tests with a wartime role of command ship. The Ship Globe radome is for SATCOM. Based in the Pacific and active. Second of class defeted.



MARSHAL KRYLOV 10/1995, van Ginderen Collection / 0506249

1 PROJECT 19910 CLASS (AGS)

VAYGACH

Displacement, tons: To be announced
 Dimensions, feet (metres): 185.0 x 38.4 x 9.6 (56.4 x 11.7 x 2.94)
 Main machinery: Diesel-electric; 2 diesel generators, 2 motors; 1,475 hp (1.1 MW); 2 shafts
 Speed, knots: 12
 Complement: 20
 Radars: To be announced.

Comment: New class of hydrographic ship built by Vympel Shipyard, Rybinsk, and launched on 28 August 2006. Completed in 2007, she is based in the Baltic. Further ships are expected.



VAYGACH 9/2007, Lemachko Collection / 1305148

1 MOD SORUM (PROJECT 1454) CLASS (RESEARCH SHIP) (AGE)

TCHUSOVOY GS 31 (ex-OS 572)

Displacement, tons: 1,250 standard; 1,695 full load
 Dimensions, feet (metres): 193.9 x 41.3 x 15.1 (59.1 x 12.6 x 4.6)
 Main machinery: Diesel electric; 2 Type 5-2 DW2 diesel generators; 2,900 hp(m) (2.13 MW); 1 motor, 2,000 hp(m) (1.47 MW); 1 shaft
 Speed, knots: 14
 Range, n miles: 3,500 at 13 kt
 Complement: 60
 Radars: Navigation: 2 Don 2 or Nayada; I-band.

Comment: A variant of the Sorum class ocean tug design completed at Yaroslavl in 1987. The ship was originally built as a towed-array trials platform; the array and towing winch are contained in the aft superstructure. Based in the Northern Fleet, the ship is deployed on general research duties.



TCHUSOVOY 7/2008, / 1338045

1 ZVEZDOCHKA (PROJECT 20180) CLASS (AGE/ASR)

Name	No	Builders	Laid down	Launched	Commissioned
ZVEZDOCHKA	600	Zvezdochka Shipyard, Severodvinsk	3 Sep 2004	26 Dec 2007	2008

Displacement, tons: 5,000
 Dimensions, feet (metres): 314.9 x 7 x 7 (96.0 x 7 x 7)
 Main machinery: Diesel electric
 Speed, knots: To be announced
 Range, n miles: To be announced
 Complement: To be announced
 Radars: To be announced.

Comment: Multipurpose ship capable of conducting and supporting salvage operations, underwater research and transport of ammunition. The ship is capable of operating small submersibles and is equipped with a 150 ton crane and a forward helicopter deck.



ZVEZDOCHKA (Scale 1 : 1,200), Ian Sturton / 1353318



ZVEZDOCHKA 12/2007, Lemachko Collection / 1353294

INTELLIGENCE VESSELS

- Notes: (1) About half the AGIs are fitted with SA-N-5/8 SAM launchers.
- (2) SSV in pennant numbers of some AGIs is a contraction of *sudno svyazy* meaning communications vessel.
- (3) GS in pennant numbers of some AGIs is a contraction of *gidrograficheskoye sudno* meaning survey ship.
- (4) Activity reported in all Fleet areas, as well as in the Mediterranean, in 2008.

0 + 2 PROJECT 18280 CLASS (AGI)

Name	Builders	Laid down	Launched	Commissioned
ADMIRAL YURI IVANOV	Savernaya, St Petersburg	28 Dec 2004	2009	2010

Displacement, tons: 4,000
 Dimensions, feet (metres): 311.7 x 52.5 x 13.1 (95.0 x 16.0 x 4.0)
 Main machinery: To be announced
 Speed, knots: To be announced
 Range, n miles: To be announced
 Complement: 120
 Radars: To be announced.

Comment: A new class of AGI. The first is to be based in the Pacific Fleet and the second in the Northern Fleet

6 VISHNYA (PROJECT 864) CLASS (AGIM)

Name	No	Builders	Commissioned
TAVRIYA	SSV 169	Northern Shipyard, Gdansk	Dec 1987
VIKTOR LEONOV	SSV 175	Northern Shipyard, Gdansk	July 1988
PRIAZOVE	SSV 201	Northern Shipyard, Gdansk	Jan 1987
KURILY	SSV 208	Northern Shipyard, Gdansk	Apr 1987
VASSILY TATISCHEV (ex-Pelengator)	SSV 231	Northern Shipyard, Gdansk	Apr 1989
FEODOR GOLOVIN (ex-Meridian)	SSV 520	Northern Shipyard, Gdansk	July 1986

Displacement, tons: 3,470 full load
 Dimensions, feet (metres): 309.7 x 47.9 x 14.8 (94.4 x 14.6 x 4.5)
 Main machinery: 2 Zgoda 12AV25/30 diesels; 4,406 hp(m) (3.24 MW) sustained; 2 auxiliary electric motors; 286 hp(m) (210 kW); 2 shafts; cp props
 Speed, knots: 18
 Range, n miles: 7,000 at 14 kt
 Complement: 146
 Missiles: SAM 2 SA-N-5 Grail quad launchers; manual aiming, IR homing to 6 km (3.2 n miles) at 1.5 Mach, altitude to 2,500 m (8,000 ft); warhead 1.5 kg.
 Guns: 2-30 mm/65 AK 630, 6 barrels per mounting, 2-72 mm 4-tubed rocket launchers
 Radars: Surface search: 2 Nayada; I-band.
 Sonars: Lamb Tail VDS can be carried.

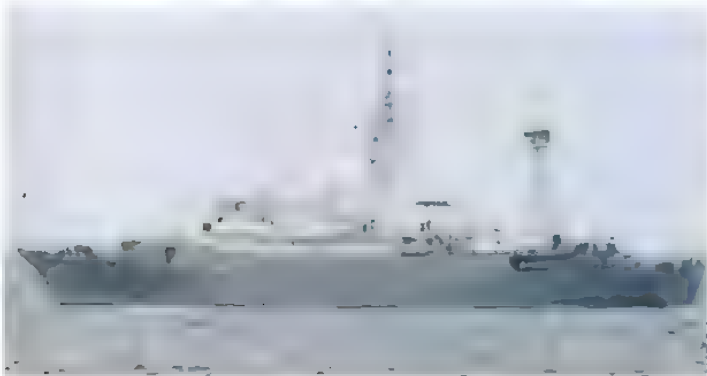
Comment: SSV 231 and 520 based in the Baltic, SSV 201 in the Black Sea, SSV 169 and SSV 175 in the Northern Fleet and SSV 208 in the Pacific. All have a full EW fit plus optronic systems and datalinks. Punch Bowl is fitted in SSV 231 and possibly in others. Some superstructure differences in all of the class. SSV 231 reported with modified mainmast in 2006. NBC pressurised citadels. Ice-strengthened hulls. All are comparatively active.



FEODOR GOLOVIN 6/2005, Lemachko Collection / 1159861



PRIAZOVE 9/2000, Lemachko Collection / 0176270



VASSILY TATISCHEV 5/2007, M Deckerck / 1170205

2 BALZAM (ASIA) (PROJECT 1826) CLASS (AGIM)

Name	No	Builders	Commissioned
PRIBALTIKA	SSV 080	Yantar, Kaliningrad	July 1984
BELOMORE	SSV 571	Yantar, Kaliningrad	Dec 1987

Displacement, tons: 4,500 full load
 Dimensions, feet (metres): 344.5 x 50.9 x 16.4 (105 x 15.5 x 5)
 Main machinery: 2 diesels; 18,000 hp(m) (13.2 MW); 2 shafts
 Speed, knots: 20
 Range, n miles: 7,000 at 16 kt
 Complement: 200
 Missiles: SAM: 2 SA-N-5 Grail quad launchers; manual aiming; IR homing to 6 km (3.2 n miles) at 1.5 Mach, altitude to 2,500 m (8,000 ft); warhead 1.5 kg; 16 missiles.
 Guns: 1-30 mm/65 AK 630; 6 barrels per mounting.
 Radars: Surface search: Palm Frond and Don Key; I-band.
 Sonars: Lamb Tail/Mouse Tail VDS can be fitted.

Comment: Notable for twin radomes. Full EW and optronic fits. The first class of AGI to be armed. SSV 571 based in the Northern fleet and SSV 080 is based in the Pacific. Capable of underway replenishment.



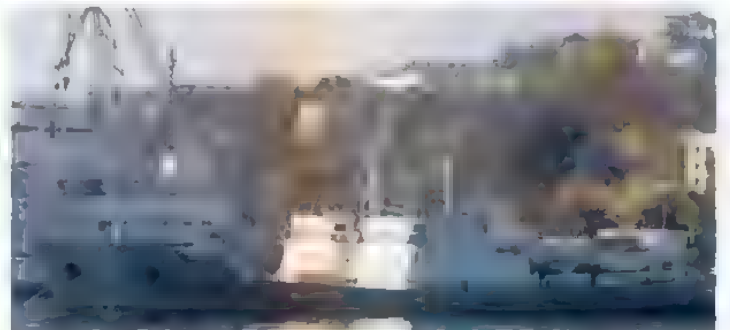
PRIBALTIKA 6/2006, Ships of the World / 1159979

3 MOMA (PROJECT 861M) CLASS (AGI/AGIM)

EKVATOR SSV 418	LIMAN SSV 824	KILDIN (mod) SSV 512
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Displacement, tons: 1,240 standard; 1,600 full load
 Dimensions, feet (metres): 240.5 x 36.8 x 12.8 (73.3 x 11.2 x 3.9)
 Main machinery: 2 Zgoda-Suizer 6TD48 diesels; 3,300 hp(m) (2.43 MW) sustained; 2 shafts; cp props
 Speed, knots: 17
 Range, n miles: 9,000 at 11 kt
 Complement: 66 plus 19 scientists
 Missiles: SAM: 2 SA-N-5 Grail quad launchers in some.
 Radars: Surface search: 2 Don 2; I band

Comment: Modernised ships have a foremast in the fore well-deck and a low superstructure before the bridge. Non-modernised ships retain their cranes in the forward well-deck. Similar class operates as survey ships. Built at Gdansk, Poland between 1968-72. All based in the Black Sea. One to Ukraine in 1996.



EKVATOR AND KILDIN 10/2006*, Laursen/Jarnasen / 1353341

2 ALPINIST (PROJECT 503M/R) CLASS (AGIM)

ZHIGULEVSK GS 19	SYZRAN GS 39
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Displacement, tons: 1,260 full load
 Dimensions, feet (metres): 177.1 x 34.4 x 13.1 (54 x 10.5 x 4)
 Main machinery: 1 SKL 8 NVD 48 AZU diesel, 1,320 hp(m) (970 kW) sustained; 1 shaft; bow thruster
 Speed, knots: 13
 Range, n miles: 7,000 at 13 kt
 Complement: 50
 Missiles: SAM: 1 SA-N-5 Grail quad launcher (GS 39).
 Countermeasures: ESM, 2 Watch Dog; intercept
 Radars: Surface search: Nayada and Kivach; I-band.
 Sonars: Paltus; active; high frequency.

Comment: Similar to Alpinist stern-trawlers which were built at about 10 a year at the Leninskaya Kuznitsa yard at Kiev and at the Volgograd shipyard. These AGIs were built at Kiev. In 1987 and 1988 fore-castle was extended further aft and the electronics fit upgraded. Both based in the Baltic. GS 7 probably non-operational in the Pacific. A fourth of class converted for ASW training was laid up in 1997.



ZHIGULEVSK 8/2007, Lemachko Collection / 1305144

DEEP SUBMERGENCE VEHICLES

1 BESTER CLASS RESCUE SUBMERSIBLES (PROJECT 18270) (DSRV)

AS 38

Displacement, tons: 50 dived
Dimensions, feet (metres): 57.4 x 12.8 x 16.7 (17.5 x 3.9 x 5.1)
Main machinery: Battery-powered; 1 propeller; 2 vertical thrusters; 2 horizontal thrusters
Speed, knots: 4. **Range, n miles:** 11.5 at 2.5 kt
Complement: 3 + 18 passengers

Comment: Designed by the Lazurit Central Design Bureau and built at the Krasnoye Sormovo Shipyard, Nizhny Novgorod in 1994. Can mate with hulls at angles of 45° to horizontal. Endurance 4 hours. Can be carried onboard rescue ship *Alagez* or the salvage *Mikhail Rudnitsky*. Reported diving depth of over 750 m. Has an underwater manipulation system and four viewing ports. AS 36 based in Northern Fleet.



BESTER 6/2004, S Breyer / 1127289

5 PRIZ (PROJECT 1855) CLASS (SALVAGE SUBMERSIBLES) (DSRV)

AS 22 AS 26 AS 28 AS 30 AS 34

Displacement, tons: 58 dived
Dimensions, feet (metres): 44.3 x 12.5 x 12.8 (13.5 x 3.8 x 3.9)
Speed, knots: 3.3. **Range, n miles:** 21 at 2.3 kt
Complement: 4 + 20 passengers

Comment: Designed by the Lazurit Central Design Bureau and built in Nizhny Novgorod 1986–89. Can be carried onboard rescue ship *Alagez* or from the salvage ship *Mikhail Rudnitsky*. Has titanium hull and reported diving depth of over 1,000 m. Endurance 2–3 hours submerged. Has an underwater manipulation system. One (possibly AS 32) was involved in the *Kursk* rescue attempt. AS 28 became trapped on the sea-bottom off the Kamchatka peninsula on 5 August 2005. It was later rescued with the help of the British submarine rescue system. AS 34 based in Northern Fleet. AS 28 in Pacific Fleet.



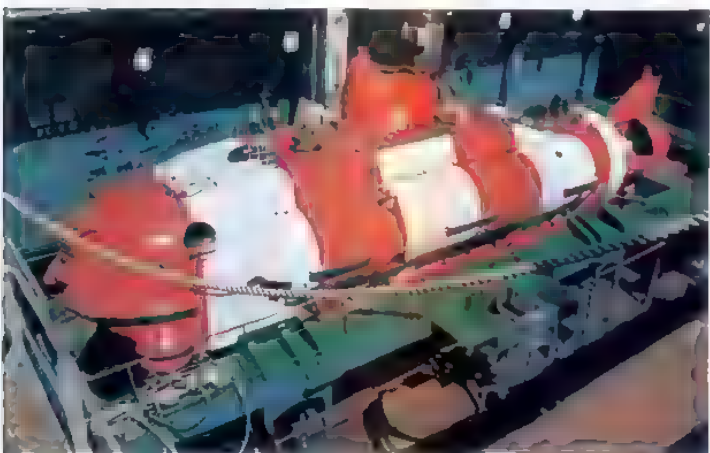
AS 34 6/2008*, Richard Scott / 1336057

3 UNDERWATER WORKING VEHICLES (PROJECT 1839)

AS 25 +2

Displacement, tons: 47 dived
Dimensions, feet (metres): 44.6 x 11.5 x 9.5 (13.6 x 3.5 x 2.9)
Speed, knots: 3.5
Complement: 3

Comment: Entered naval service from 1984. Designed to perform underwater technical work and to assist in submarine rescue operations in depths up to 500 m. Double-hulled



AS 25 6/2008*, Richard Scott / 1336054

4 SALVAGE SUBMERSIBLES (PROJECT 1837) (DSRV)

Displacement, tons: 45 dived
Dimensions, feet (metres): 41.7 x 11.5 x 10.7 (12.7 x 3.5 x 3.25)
Speed, knots: 3.6. **Range, n miles:** 16 at 2 kt
Complement: 3 + 11 passengers

Comment: Designed and built by Sudomekh, St Petersburg. Can be carried onboard Kashtan class SS 750 rescue ship and Elbrus class *Alagez*. Has double hull and diving depth of 500 m. Equipped with an underwater manipulation system. Twelve reported to have been built of which some were reported to have been decommissioned in the 1990s. Operational numbers are approximate.

1 RUS (PROJECT 16810) CLASS (RESEARCH SUBMERSIBLE)

AS 37

Displacement, tons: 25 dived
Dimensions, feet (metres): 28.2 x 12.8 x 12.6 (8.0 x 3.9 x 3.85)
Speed, knots: 3
Complement: 3

Comment: Entered naval service in 2000. Designed to perform research and technical underwater work at up to 6,000 m. Titanium spherical hull. Three horizontal propulsion motors, two vertical propulsion motors and one thruster. Based in Baltic fleet.

2 POISK-2 (PROJECT 1832) CLASS (RESEARCH SUBMERSIBLES)

Displacement, tons: 65 dived
Dimensions, feet (metres): 63.5 x 8.2 x 10.8 (19.3 x 2.5 x 3.3)
Speed, knots: 3
Complement: 3

Comment: Entered naval service in 1988 and 1989. Designed to perform research and technical underwater work at up to 2,000 m.

TRAINING SHIPS

Notes: The Mir class sail training ships have no military connections.

2 SMOLNY (PROJECT 887) CLASS

PEREKOP 200 SMOLNY 210

Displacement, tons: 9,160 full load
Dimensions, feet (metres): 452.8 x 53.1 x 21.3 (138 x 16.2 x 6.5)
Main machinery: 2 Zgoda Sulzer 12ZV 40/48 diesels; 15,000 hp(m) (11 MW); 2 shafts
Speed, knots: 20. **Range, n miles:** 9,000 at 15 kt
Complement: 137 (12 officers) plus 330 cadets
Guns: 4–3 in (76 mm)/60 (2 twin), 4–30 mm/65 (2 twin)
A/S mortars: 2 RBU 2500
Countermeasures: ES: 2 Watch Dog; radar warning
Radars: Air/surface search: Head Net C; 3D; E-band; range 128 km (70 n miles).
Navigation: 4 Don 2; I-band, Don Kay (*Perekop*); I-band.
Fire control: Owl Screech, G-band, Drum Tilt; H/I-band.
IFF: 2 High Pole A, Square Head
Sonars: Mouse Tail VDS, active, high frequency

Comment: Built at Szczecin, Poland. *Smolny* completed in 1976, *Perekop* in 1977. Have considerable combatant potential. Both are active in the Baltic.



PEREKOP 6/2007, Selim San / 1170204

10 PETRUSHKA (UK-3) CLASS (AXL)

MK 391 MK 1277 MK 1407–1411
 MK 408 MK 1303 MK 1556

Displacement, tons: 335 full load
Dimensions, feet (metres): 129.3 x 27.6 x 7.2 (39.4 x 8.4 x 2.2)
Main machinery: 2 Wola H12 diesels, 756 hp(m) (556 kW); 2 shafts
Speed, knots: 11. **Range, n miles:** 1,000 at 11 kt
Complement: 13 plus 30 cadets

Comment: Training vessels built at Wisla Shipyard, Poland; first one commissioned in 1989. Very similar to the SK 620 class used as ambulance craft. Used for seamanship and navigation training and may be commercially owned.



PETRUSHKA CLASS 6/2003, E & M Laursen / 0570909

AUXILIARIES

Notes: Two Belyanka-class tankers *Amur* and *Pinega* are used for stowing low level radioactive waste

2 AMGA (PROJECT 1791) CLASS
(MISSILE SUPPORT SHIPS) (AEM)

VETLUGA DAUGAVA

Displacement, tons: 6,100 (*Vetluga*), 6,350 (*Daugava*) full load
Dimensions, feet (metres): 354.3 × 69 × 14.8 (108 × 18 × 4.5) (*Vetluga*)
Main machinery: 2 diesels; 9,000 hp(m) (6.6 MW); 2 shafts
Speed, knots: 16
Range, n miles: 4,500 at 14 kt
Complement: 210
Guns: 4–25 mm/80 (2 twin)
Radars: Surface search: Strut Curve; F-band
Navigation: Don 2; I-band
IFF: High Pole B.

Comment: Built at Gorkiy Ships with similar duties to the Lama class. Fitted with a large 55 ton crane forward and thus capable of handling much larger missiles than their predecessors. Each ship has a different length and type of crane to handle later types of missiles. Designed for servicing submarines. *Vetluga* completed in 1976 and *Daugava* (5m longer than *Vetluga*) in 1981. Both are in the Pacific Fleet. A third of class is laid up in the North



DAUGAVA

3/2003, Lemachko Collection / 0573518

13 AMUR (PROJECT 304/304M) CLASS (REPAIR SHIPS) (AR)

AMUR I
PM 10 PM 15 PM 30 PM 56 PM 64 PM 82 PM 138 PM 140 PM 156
AMUR II
PM 59 PM 69 PM 86 PM 97

Displacement, tons: 5,500 full load
Dimensions, feet (metres): 400.3 × 55.8 × 16.7 (122 × 17 × 5.1)
Main machinery: 1 Zgoda 8 TAD-48 diesel; 3,000 hp(m) (2.2 MW); 1 shaft
Speed, knots: 12
Range, n miles: 13,000 at 8 kt
Complement: 145
Radars: Navigation: Kivach or Palm Frond or Nayada; I-band.

Comment: Amur I class general purpose depot and repair ships completed 1968–83 in Szczecin, Poland. Successors to the Oskol class. Carry two 5 ton cranes and have accommodation for 200 from ships alongside. Amur II class has extra deckhouse forward of the funnel. Built at Szczecin 1983–85. Three Amur IIs are based in the Pacific and one in the North. Three are laid up in the Baltic. PM 9 transferred to Ukraine



AMUR II PM 86

9/2000, J Cislak / 0105571



AMUR I PM 138

3/2002, Globke Collection / 0528330

1 MALINA (PROJECT 2020) CLASS
(NUCLEAR SUBMARINE SUPPORT SHIP) (AS)

PM 63

Displacement, tons: 10,500 full load
Dimensions, feet (metres): 449.5 × 69.9 × 18.4 (137 × 21 × 5.6)
Main machinery: 4 gas turbines; 60,000 hp(m) (44 MW); 2 shafts
Speed, knots: 17
Complement: 260
Radars: Navigation: 2 Palm Frond or 2 Nayada; I-band

Comment: Built at Nikolayev. First deployed to Pacific in 1986. PM is an abbreviation of *Plavuchaya Mestorskaya* (Floating workshop). A fourth of class (PM 16) launched early in 1992, was not completed. Designed to support nuclear-powered submarines and surface ships. Carry two 15 ton cranes. Based in the Northern Fleet. PM 12 and PM 74 are inactive



PM 74

7/1996 / 0081704

2 VYTEGRALES II (PROJECT 596P) CLASS
(SUPPLY SHIPS) (AKH/AGF)

APSHERON (ex-*Vagales*) 204 DAURIYA (ex-*Vyborgles*) 506

Displacement, tons: 6,150 full load
Dimensions, feet (metres): 400.3 × 55.1 × 22.3 (122.1 × 16.8 × 6.8)
Main machinery: 1 Burmeister & Wain 950VTBF diesel; 5,200 hp(m) (3.82 MW); 1 shaft
Speed, knots: 15
Complement: 48
Radars: Navigation: Nayada or Palm Frond or Spin Trough; I-band.
CCA. Fly Screen.
Helicopters: 1 Ka-25 Hormone C.

Comment: Standard timber carriers of a class of 27. These ships were modified for naval use in 1966–68 with helicopter flight deck. Built at Zhdanov Yard, Leningrad between 1963 and 1966. *Dauriya* has a deckhouse over the aft hold. The first of class, completed in 1962, was originally *Vytorales*, but this was later changed to *Kosmonaut Pavel Belyayev* and, with three other ships of this class, converted to Space Support Ships. The civilian-manned ships together with these naval ships are often incorrectly called Vostok or Beskunchak class. *Apsheron* and *Dauriya* are in the Black Sea, *Sevan* and *Yamal* have been decommissioned. Two others transferred to Ukraine in 1996.



DAURIYA

7/2000, Hartmut Ehlers / 0105572

30 BOLVA (PROJECT 688/688A) CLASS
(BARRACKS SHIPS) (YPB)

Displacement, tons: 6,500
Dimensions, feet (metres): 560.9 × 45.9 × 9.8 (171 × 14 × 3)
Cargo capacity: 350–400 tons

Comment: A total of 59 built by Valmet Oy, Helsinki between 1960 and 1984. Of the remaining 30 ships, six are Bolva 1, 16 are Bolva 2 and eight are Bolva 3. Used for accommodation of ships' companies during refit and so on. The Bolva 2 and 3 have a helicopter pad. Have accommodation facilities for about 400 people. No means of propulsion but can be steered. In addition there are several other types of Barracks Ships including five ex-*Atrek* class depot ships as well as converted merchant ships and large barges. At least 18 have been scrapped



IMATRA (at Sevastopol)

3/2002, Hartmut Ehlers / 0529613

5 BORIS CHILIKIN (PROJECT 1559V) CLASS (REPLENISHMENT SHIPS) (AOR)

BORIS BUTOMA **SEGEI OSIPOV (ex-Dnestr)** **GENRICH GASANOV**
IVAN BUBNOV **VLADIMIR KOLECHITSKY**

Displacement, tons: 23,450 full load
Dimensions, feet (metres): 531.5 × 70.2 × 33.8 (162.1 × 21.4 × 10.3)
Main machinery: 1 diesel; 9,600 hp(m) (7 MW); 1 shaft
Speed, knots: 17
Range, n miles: 10,000 at 16 kt
Complement: 75 (without armament)
Cargo capacity: 13,000 tons oil fuel and dieso; 400 tons ammunition; 400 tons spares; 400 tons victualling stores, 500 tons fresh water

Guns: 4–57 mm/80 (2 twin). Most are fitted for but not with the guns.
Radars: Air/surface search/fire control Strut Curve (fitted for but not with). Muff Cob (fitted for but not with)
Navigation: 2 Nayada or Palm Frond (plus Don 2 in V *Kolechitsky*), I-band.
IFF: High Pole B.

Programmes: Based on the Veliky Oktyabr merchant ship tanker design. Built at the Baltic Yard, Leningrad; *Vladimir Kolechitsky* completed in 1972, *Osipov* in 1973, *Ivan Bubnov* in 1975, *Genrich Gasanov* in 1977. Last of class *Boris Butoma* completed in 1978.

Structure: This is the only class of purpose-built underway fleet replenishment ships for the supply of both liquids and solids. Although most operate in merchant navy paint schemes, all wear naval ensigns.

Operational: Earlier ships can supply solids on both sides forward. Later ships supply solids to starboard, liquids to port forward. All can supply liquids either side aft and astern. *Osipov* and *Gasanov* are based in the North, *Bubnov* in the Black Sea, *Butoma* and *Kolechitsky* in the Pacific. Most are used for commercial purposes. *Boris Chilikin* transferred to Ukraine in 1997.



SERGEI OSIPOV

1/2008*, B *Przełaz* / 1353288

VLADIMIR KOLECHITSKY

3/2001, *Ships of the World* / 0126351

2 DUBNA CLASS (REPLENISHMENT TANKERS) (AOL/AOT)

DUBNA **PECHENGA**

Displacement, tons: 11,500 full load
Dimensions, feet (metres): 426.4 × 65.6 × 23.6 (130 - 20 × 7.2)
Main machinery: 1 Russkiy 8DRPH23/230 diesel, 6,000 hp(m) (4.4 MW); 1 shaft
Speed, knots: 16
Range, n miles: 7,000 at 16 kt
Complement: 70
Cargo capacity: 7,000 tons fuel, 300 tons fresh water; 1,500 tons stores
Radars: Navigation: 2 Nayada; I-band.

Programmes: Completed 1974 at Rauma-Repola, Finland.

Structure: *Dubna* has 1 ton replenishment stations forward. Normally painted in merchant navy colours.

Operational: *Dubna* can refuel on either beam and astern. *Pechenga* has had RAS gear removed. Based in North. One of the class transferred to Ukraine in 1997. *Irkut* is believed to have been sold commercially in 1999.



DUBNA

7/1996, *van Ginderen Collection* / 0019061

PECHENGA

6/2006, *Ships of the World* / 1159988

6 MOD ALTAI CLASS (PROJECT 160) (REPLENISHMENT TANKERS) (AOL)

PRUT **KOLA** **YELNYA** **IZHORA** **ILIM** **YEGORLIK**

Displacement, tons: 7,250 full load
Dimensions, feet (metres): 348 × 51 × 22 (106.2 × 15.5 × 6.7)
Main machinery: 1 Burmeister & Wain 8M550VTBN110 diesel, 3,200 hp(m) (2.35 MW); 1 shaft
Speed, knots: 14. **Range, n miles:** 8,600 at 12 kt
Complement: 60
Cargo capacity: 4,400 tons oil fuel, 200 m³ solids
Radars: Navigation: 2 Don 2 or 2 Spin Trough; I-band.

Comment: Built from 1967–72 by Rauma-Repola, Finland. Modified for alongside replenishment. This class is part of 38 ships, being the third group of Rauma types built in Finland in 1967. *Ilim* and *Yegorlik* transferred to civilian companies in 1996/97 and operate in the Pacific with *Izhora*. *Prut* in the North, *Yelnya* and *Kola* in the Baltic.



KOLA

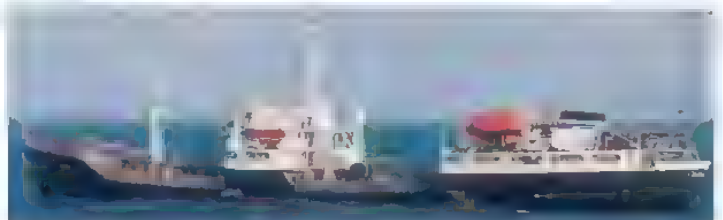
1/1997, *van Ginderen Collection* / 0019067

2 OLEKMA CLASS (PROJECT 92) (REPLENISHMENT TANKERS) (AORL)

OLEKMA **IMAN**

Displacement, tons: 7,300 full load
Dimensions, feet (metres): 344.5 × 47.9 × 22 (105.1 × 14.6 × 6.7)
Main machinery: 1 Burmeister & Wain diesel; 2,900 hp(m) (2.13 MW); 1 shaft
Speed, knots: 14. **Range, n miles:** 8,000 at 14 kt
Complement: 40
Cargo capacity: 4,500 tons oil fuel; 180 m³ solids
Radars: Navigation: Don 2 or Nayada and Spin Trough; I-band.

Comment: Built by Rauma-Repola, Finland in 1966. Modified for replenishment with refuelling rig abaft the bridge as well as astern refuelling. *Olekma* based in the Baltic and *Iman* in the Black Sea.



IMAN

6/2006 / 1164801

5 UDA CLASS (PROJECT 577D) (REPLENISHMENT TANKERS) (AOL)

LENA **TEREK** **VISHERA** **KOYDA** **DUNAY**

Displacement, tons: 5,500 standard; 7,126 full load
Dimensions, feet (metres): 400.3 × 51.8 × 20.3 (122.1 × 15.8 × 6.2)
Main machinery: 2 diesels; 9,000 hp(m) (6.6 MW); 2 shafts
Speed, knots: 17
Range, n miles: 4,000 at 15 kt
Complement: 85
Cargo capacity: 2,900 tons oil fuel, 100 m³ solids
Radars: Navigation: 2 Don 2 or Nayada/Palm Frond; I-band.
IFF: High Pole A.

Comment: Built between 1962 and 1967 at Vyborg Shipyard. All have a beam replenishment capability. Guns removed. *Vishera* and *Dunay* in the Pacific, *Terek* in the Northern Fleet, *Koyda* in the Black Sea and *Lena* in the Baltic.



LENA

8/2004 / 1042375

692 Russian Federation/Auxiliaries

2 MANYCH (PROJECT 1549) CLASS (WATER TANKERS) (AWT)

MANYCH TAGIL

Displacement, tons: 7,700 full load
Dimensions, feet (metres): 380.5 × 51.6 × 23.0 (116.0 × 16.7 × 7.6)
Main machinery: 2 diesels, 9,000 hp (6.6 MW); 2 shafts
Speed, knots: 18
Range, n miles: 7,500 at 16 kt
Complement: 90
Cargo capacity: 4,400 tons
Radars: Air/surface search: Strut Curve; E/F-band.
Navigation: Don Kay; I-band.

Comment: Distilled water carrier built at Vyborg and completed in 1972. Decommissioned and disarmed in 1996 but returned to service in 1998 after refit in Bulgaria. *Manych* based in the Black Sea



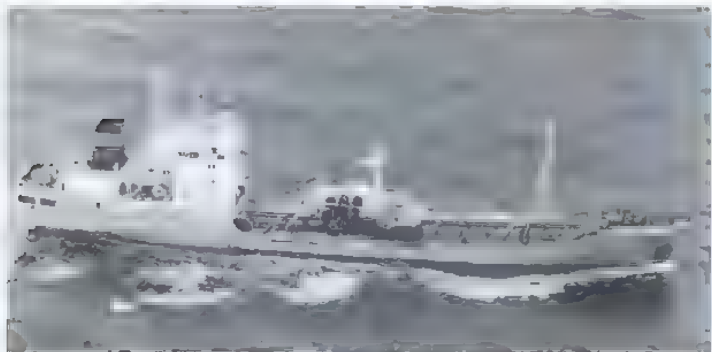
MANYCH 10/2008*, Laursen/Jarnasen / 1353348

1 KALININGRADNEFT CLASS (SUPPORT TANKER) (AORL)

VYAZMA (ex-Katun)

Displacement, tons: 8,600 full load
Dimensions, feet (metres): 380.5 × 58 × 21 (116 × 17 × 6.5)
Main machinery: 1 Russkiy Burmeister & Wain 5DKRP50/110-2 diesel; 3,850 hp (2.83 MW); 1 shaft
Speed, knots: 14
Range, n miles: 5,000 at 14 kt
Complement: 32
Cargo capacity: 5,400 tons oil fuel and other liquids
Radars: Navigation: Okean; I-band.

Comment: Built by Rauma-Repola, Finland in 1982. Can refuel astern. At least an additional 20 of this class operate with the fishing fleets. Operational in the Northern Fleet.



KALININGRADNEFT CLASS 11/1991, G Jacobs / 0506192

30 TOPLIVO CLASS (PROJECT 1844/1844D) CLASS (YO)

VTN series

Displacement, tons: 1,180 full load
Dimensions, feet (metres): 178.1 × 24.3 × 10.5 (54.3 × 7.4 × 3.2)
Main machinery: 1 diesel, 800 hp (450 kW); 1 shaft
Speed, knots: 10
Range, n miles: 1,500 at 10 kt
Complement: 20
Radars: Navigation: Don-2; I-band.

Comment: Details given are for the Toplivo-2 class, some of which were built in Egypt but the majority in the USSR. The Toplivo-3 class, built in the USSR, are slightly larger at 1,300 tons full load. Numbers remaining in service are approximate. All the original Toplivo-1 class are believed to have been decommissioned.



VTN 30 7/2008*, Hartmut Ehlers / 1353290

5 KHOBI CLASS (PROJECT 437M) CLASS (YO)

LOVAT SISOLA SOSHA ORSHA INDIGA (ex-Seyma)

Displacement, tons: 1,520 full load
Dimensions, feet (metres): 221.1 × 33.1 × 11.8 (674 × 10.1 × 3.6)
Main machinery: 1 diesel; 1,600 hp (1.2 MW); 2 shafts
Speed, knots: 13
Range, n miles: 2,000 at 10 kt
Complement: 30
Radars: Navigation: Don-2; I-band.

Comment: *Sisola* based in the North. *Sosha, Lovat* and *Orsha* in the Baltic and *Indiga* in the Black Sea. Used for the transport of all forms of liquids.



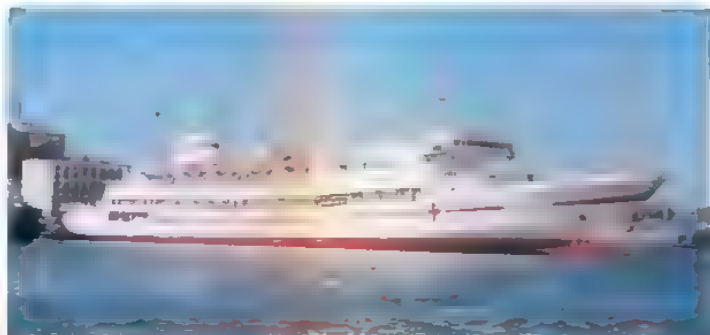
LOVAT 7/2008*, Hartmut Ehlers / 1353289

3 OB (PROJECT 320) CLASS (HOSPITAL SHIPS) (AHH)

YENISEI SVIR IRTYSH

Displacement, tons: 11,570 full load
Dimensions, feet (metres): 499.7 × 63.6 × 20.5 (1523 × 19.4 × 6.3)
Main machinery: 2 Zgoda-Sulzer 12ZV40/48, 15,600 hp (11.47 MW) sustained; 2 shafts; cp props
Speed, knots: 19
Range, n miles: 10,000 at 18 kt
Complement: 124 plus 83 medical staff
Radars: Navigation: 3 Don 2 or 3 Nayada; 1 band.
IFF: High Pole A.
Helicopters: 1 Ka-25 Hormona C.

Comment: Built at Szczecin, Poland. *Yenisei* completed 1981 and is based in the Black Sea. *Svir* completed in early 1989 and transferred to the Northern Fleet in September 1989. *Irtys* completed in June 1990, was stationed in the Gulf in 1990-91 and is now based in the Pacific. A fourth of class is derelict and a fifth was cancelled. Have 100 beds and seven operating theatres. The first purpose-built hospital ships in the Navy, a programme which may have been prompted by the use of several merchant ships off Angola for Cuban casualties in the 'war of liberation.' NBC pressurised citadel. Ship stabilisation system. Decompression chamber. All are in use, mostly as alongside medical facilities.



YENISEI 10/2008*, Laursen/Jarnasen / 1353351

3 KLASMA (PROJECT 1274) CLASS (CABLE SHIPS) (ARC)

DONETS INGURI YANA

Displacement, tons: 6,000 standard, 6,900 full load
Measurement, tons: 3,400 dwt; 5,786 gross
Dimensions, feet (metres): 427.8 × 52.5 × 19 (130.5 × 16 × 5.8)
Main machinery: Diesel-electric; 5 Wärtsilä Sulzer 624TS diesel generators (4 in *Inguri* and *Yana*, 5,000 hp (3.68 MW); 2 motors; 2,150 hp (1.58 MW); 2 shafts
Speed, knots: 14
Range, n miles: 12,000 at 14 kt
Complement: 118
Radars: Navigation: Spin Trough and Nayada; I-band.

Comment: *Yana* built by Wärtsilä, Helsingforsvarvet, Finland in 1962; *Donets* at the Wärtsilä, Åbovarvet in 1968-69. *Donets* is of a slightly modified design. *Inguri* completed in 1978. All are ice strengthened and can carry 1,650 miles of cable. *Yana* is distinguished by gantry right aft. *Donets* is in the Baltic, and the other two are in the North. All are active and can be leased for commercial use. One to Ukraine in 1997.



KLASMA 3/1992 / 0081709

4 EMBA (PROJECT 1172/1175) CLASS (CABLE SHIPS) (ARC)

SETUN (I) NEPRYADAVA (II) KEM (II) BIRIUSA (II)

Displacement, tons: 2,050 full load (Group I); 2,400 (Group II)
Dimensions, feet (metres): 249 x 41.3 x 9.8 (75.9 x 12.6 x 3) (Group I)
 282.4 x 41.3 x 9.9 (86.1 x 12.6 x 3) (Group II)
Main machinery: Diesel-electric; 2 Wärtsilä Vasa 6R22 diesel alternators; 2,350 kVA 60 Hz; 2 motors; 1,360 hp(m) (1 MW); 2 shafts (Group I)
 2 Wärtsilä Vasa 8R22 diesel alternators, 3,090 kVA 60 Hz; 2 motors; 2,180 hp(m) (1.6 MW); 2 shafts (Group II)
 The 2 turnable propulsion units can be inclined to the ship's path giving, with a bow thruster, improved turning movement
Speed, knots: 11
Complement: 40
Radars: Navigation: Kivsch and Don 2; I-band

Comment: Both Emba Is built in 1981. Designed for shallow water cable-laying. Carry 380 tons of cable. Order placed with Wärtsilä in January 1985 for two larger (Group II) ships; Kem completed on 23 October 1986. Can lay about 600 tons of cable. Designed for use off Vladivostok but also capable of operations in inland waterways. Setun is based in the Black Sea, Nepryadava in the Baltic, and Kem and Biriusa are in the Pacific. Both of the latter two were active in 2005



SETUN 6/2003, Lemachka Collection / 0573515

4 MIKHAIL RUDNITSKY (PROJECT 05360/1) CLASS (SALVAGE AND MOORING VESSELS) (ARS)

MIKHAIL RUDNITSKY GEORGY KOZMIN GEORGY TITOV SAYANY

Displacement, tons: 10,700 full load
Dimensions, feet (metres): 427.4 x 58.7 x 23.9 (130.3 x 17.3 x 7.3)
Main machinery: 1 S5DKRN62/140-3 diesel; 6,100 hp(m) (4.48 MW); 1 shaft
Speed, knots: 16
Range, n miles: 12,000 at 15.5 kt
Complement: 72 (10 officers)
Radars: Navigation: Palm Frond; Nayada, I-band.
Sonars: MG 89 (Sayany).

Comment: Built at Vyborg, based on Moskva Pioneer class merchant ship hull. First completed 1979, second in 1980, third in 1983 and fourth in 1984. Fly flag of Salvage and Rescue Service. Have two 40 ton and one 20 ton lift with cable fairleads forward and aft. This lift capability is adequate for handling small submersibles, such as Project 1855 Priz, one of which is carried in the centre hold. Sayany is also described as a research ship and has a high-frequency sonar. Rudnitsky and Titov in the Northern Fleet and the other two in the Pacific.



GEORGY TITOV 6/2008, Richard Scott / 1353357

8 KASHTAN (PROJECT 141) CLASS (BUOY TENDERS) (ABU/AGL/ARS)

ALEXANDR PUSHKIN (ex-KIL 926) KIL 498 SS 750 (ex-KIL 140)
 KIL 143 KIL 927 KIL 168
 KIL 164 KIL 158

Displacement, tons: 4,600 full load
Dimensions, feet (metres): 313.3 x 56.4 x 16.4 (95.5 x 17.2 x 5)
Main machinery: 4 Wärtsilä diesels; 29,000 hp(m) (2.31 MW); 2 shafts
Speed, knots: 13.5
Complement: 51 plus 20 spare berths
Radars: Navigation: 2 Nayada; I-band.

Comment: Enlarged Sura class built at the Neptun Shipyard, Rostock. Ordered 29 August 1986; Alexandr Pushkin handed over in June 1988 and is classified as an AGL in the Baltic; 927 to the Pacific in July 1989; 143 to the North in July 1989; 158 to the Black Sea in November 1989; 164 to the North in January 1990, 498 to the Pacific in November 1990 and 168 to the Pacific in mid-1991. Lifting capacity: one 130 ton lifting frame, one 100 ton derrick, one 12.5 ton crane and one 10 ton derrick. All are civilian operated except SS 750 in the Baltic which is used to support Project 1837 submersibles AS 22 and AS 26. 158 deployed to Tartous for several months in late 2002.



KIL 158 10/2008, Laurssen/Jarnesen / 1353353



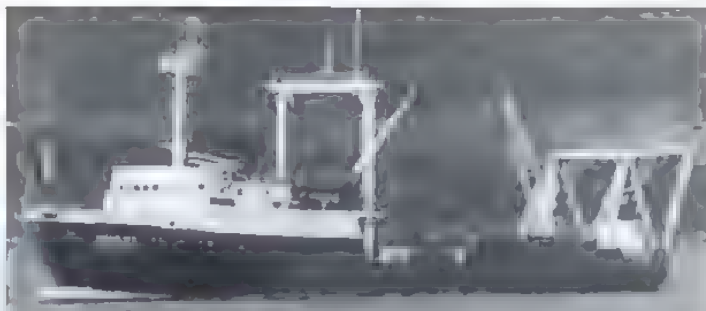
KIL 168 6/2007, Ships of the World / 1306151

4 SURA (PROJECT 145) CLASS (BUOY TENDERS) (ABU)

KIL 22 KIL 27 KIL 29 KIL 31

Displacement, tons: 2,370 standard; 3,150 full load
Dimensions, feet (metres): 285.4 x 48.6 x 16.4 (87 x 14.8 x 5)
Main machinery: Diesel-electric, 4 diesel generators; 2 motors; 2,240 hp(m) (1.65 MW); 2 shafts
Speed, knots: 12 **Range, n miles:** 2,000 at 11 kt
Complement: 40
Cargo capacity: 900 tons cargo, 300 tons fuel for transfer
Radars: Navigation: 2 Don 2; I-band.

Comment: Heavy lift ships built as mooring and buoy tenders at Rostock in East Germany between 1965 and 1976. Lifting capacity: one 65 ton derrick and one 65 ton stern cage. Have been seen to carry 12 m DSRVs. KIL 27 is in the Pacific, KIL 29 in the Baltic and KIL 22 and KIL 31 in the North. Four others are laid up. One to Ukraine in 1997.



KIL 31 4/1996, van Ginderen Collection / 0506326

1 ELBRUS (OSIMOL) (PROJECT 537) CLASS (SUBMARINE RESCUE SHIP) (ASRH)

ALAGEZ

Displacement, tons: 19,000 standard, 22,500 full load
Dimensions, feet (metres): 575.8 x 80.4 x 27.9 (175.5 x 24.5 x 8.5)
Main machinery: Diesel-electric; 4 diesel generators; 2 motors, 20,000 hp(m) (14.7 MW); 2 shafts
Speed, knots: 17 **Range, n miles:** 14,500 at 15 kt
Complement: 420
Radars: Navigation, 2 Nayada and 2 Palm Frond; I-band.
Helicopters: 1 Ka-25 Hormone C.

Comment: Very large submarine rescue and salvage ship with icebreaking capability, possibly in view of under-ice capability of some SSBNs. Built at Nikolayev, and completed in 1982. Can carry two submersibles in store abaft the funnel which are launched from telescopic gantries. Based in the Pacific. Probably disarmed



ALAGEZ 6/2004, Ships of the World / 0583298

24 SHELON I/II (PROJECT 1388/1388M) CLASS (YPT/YAG)

TL and KRKH series

Displacement, tons: 270 full load
Dimensions, feet (metres): 150.9 x 19.7 x 6.6 (46 x 6 x 2)
Main machinery: 2 diesels; 8,976 hp(m) (6.6 MW); 2 shafts
Speed, knots: 26
Range, n miles: 1,500 at 10 kt
Complement: 14
Radars: Navigation: Spin Trough or Kivach; I-band.

Comment: Type I built 1978-84. Built-in weapon recovery ramp aft. Type II built 1985-87. Type IIs can be used as environmental monitoring ships. One is an Admirals' yacht in the Baltic, and others are used as personnel transports.



KRKH 1688 9/2008*, Frank Findler / 1353308



TL 1603 7/2008*, Hartmut Ehlers / 1353291

48 FLAMINGO (TANYA) (PROJECT 1415) CLASS (TENDERS) (YDT)

Displacement, tons: 42 full load
Dimensions, feet (metres): 72.8 x 12.8 x 4.6 (22.2 x 3.9 x 1.4)
Main machinery: 1 Type 3-D-12 diesel, 300 hp(m) (220 kW) sustained; 1 shaft
Speed, knots: 12
Complement: 8

Comment: Successor to Nyryat II. There are some 28 with RVK numbers (diving tenders). There are also about 20 (PSKA numbers) assigned to the Border Guard for harbour patrol duties. These are known as the Kulik class. Other craft have BSK, RK (workboats) PRDKA (counterswimmer cutter) and BGK (inshore survey) numbers.



RVK 1579 7/2008*, Hartmut Ehlers / 1353307

35 POLUCHAT I, II AND III CLASSES (PROJECT 364) (YPT)

TL series

Displacement, tons: 70 standard; 100 full load
Dimensions, feet (metres): 97.1 x 19 x 4.8 (29.6 x 5.8 x 1.5)
Main machinery: 2 M 60 diesels; 2,200 hp(m) (1.6 MW) sustained; 2 shafts
Speed, knots: 20
Range, n miles: 1,500 at 10 kt
Complement: 15
Guns: 2 - 14.5 mm (twin) MGs (in some)
Radars: Spin Trough; I-band

Comment: Employed as specialised or dual-purpose torpedo recovery vessels and/or patrol boats. They have a stern slipway. Several exported as patrol craft. Some used by the Border Guard.

Transfers: Algeria, Angola, Congo (three), Ethiopia (one), Guinea-Bissau, India, Indonesia (three), Iraq (two), Mozambique, Somalia (six), Syria, Tanzania, Vietnam (five), North Yemen (two), South Yemen.



POLUCHAT I 11/1991, MoD Bonn / 0081713

20 NYRYAT 2 (PROJECT 522) CLASS (DIVING TENDERS) (YDT)

RVK Series

Displacement, tons: 56 full load
Dimensions, feet (metres): 70.5 x 11.5 x 3.3 (21.5 x 3.5 x 1)
Main machinery: 1 Type 3-D-12 diesel, 300 hp(m) (220 kW) sustained; 1 shaft
Speed, knots: 12
Complement: 8
Guns: Some carry 1 - 12.7 mm MG on the forecastle.

Comment: Nyryat 2 are the diving tender variants of the 1950s PO 2 class workboat design widely used for both military and civilian use.

Transfers: Albania, Bulgaria, Cuba, Guinea, Iraq. Many deleted.



RVK 860 7/2006, Lemachko Collection / 1159850

30 NYRYAT I (PROJECT 1896) CLASS (TENDERS) (YDT)

Displacement, tons: 120 full load
Dimensions, feet (metres): 93 x 18 x 5.5 (28.4 x 5.5 x 1.7)
Main machinery: 1 diesel, 450 hp(m) (331 kW); 1 shaft
Speed, knots: 12.5. **Range, n miles:** 1,500 at 10 kt
Complement: 15
Guns: 1 - 12.7 mm MG (in some).

Comment: Built from 1955. Can operate as patrol craft or diving tender with recompression chamber. Similar hull and propulsion used for inshore survey craft. Some have BGK, VM or GBP (survey craft) numbers.

Transfers: Albania, Algeria, Cuba, Egypt, Iraq, North Yemen. Many deleted.



NYRYAT I 10/2008*, Laursen/Jarnesen / 1353354

15 SK 620 CLASS (DRAKON) (TENDERS) (YH/YFL)

MK 391	MK 1407-1409	PSK 405	PSK 1411	SN 109	SN 128	SN 1318
MK 1303	PSK 382	PSK 673	PSK 1518	SN 126	SN 401	SN 1520

Displacement, tons: 236 full load
Dimensions, feet (metres): 108.3 x 24.3 x 6.9 (33 x 7.4 x 2.1)
Main machinery: 2 56ANM30-H12 diesels; 620 hp(m) (456 kW) sustained; 2 shafts
Speed, knots: 12 **Range, n miles:** 1,000 at 12 kt
Complement: 14 plus 3 spare

Comment: Built at Wisla Shipyard, Poland as a smaller version of the Petrushka class training ship. PSK series serve as harbour ferries. Mostly used as hospital tenders capable of carrying 15 patients.



PSK 405 7/2001, J Cisiak / 0578310

**28 YELVA (KRAB) (PROJECT 535M) CLASS
(DIVING TENDERS) (YDT)**

VM 20	VM 263	VM 420	VM 907-910
VM 72	VM 268	VM 425	VM 915
VM 146	VM 270	VM 429	VM 916
VM 153	VM 277	VM 725	VM 919
VM 154	VM 409	VM 807	
VM 250	VM 413-418	VM 809	

Displacement, tons: 295 full load
 Dimensions, feet (metres): 134.2 x 26.2 x 6.6 (40.9 x 8 x 2)
 Main machinery: 2 Type 3-D-12A diesels; 630 hp(m) (463 kW) sustained; 2 shafts
 Speed, knots: 12.6 Range, n miles: 1,870 at 12 kt
 Complement: 30
 Radars: Navigation: Spin Trough; I-band

Comment: Diving tenders built 1971-83. Carry a 1 ton crane and diving bell. Some have submersible recompression chamber. Ice strengthened. One to Cuba 1973, one to Libya 1977. Some have probably been decommissioned



VM 909 7/2008*, Hartmut Ehlers / 1353306

3 PROJECT 11980 (DIVING TENDERS) (YDT)

VM 596 +2

Displacement, tons: 330 full load
 Dimensions, feet (metres): 121.7 x 25.3 x 8.2 (37.1 x 7.7 x 2.5)
 Main machinery: 2 diesels, 525 hp (385 kW); 2 shafts
 Speed, knots: 12.5
 Complement: 29

Comment: A new class of diving vessel designed by Almaz Central Design Bureau and built at Vympel Shipyard, Rybinsk. Construction started in the early 1990s but the building programme was suspended until new funds were assigned in 2002. The ship is designed to support diving and salvage operations down to a depth of 60 m and is equipped with the Falcon remote-controlled underwater equipment, which can work at depths up to 300 m. It also carries hydrological instruments and welding equipment for deep-sea work, a satellite television system and a barochamber. The lead vessel was commissioned in the Northern Fleet on 28 November 2004 and is based at Severomorsk. Two further units may also have been built.



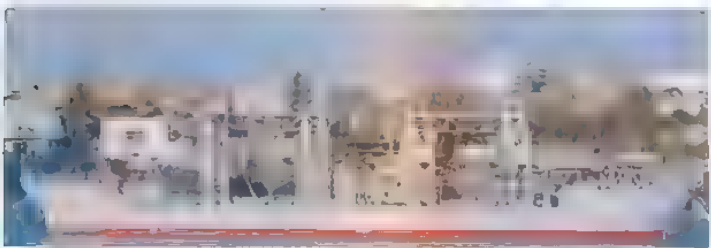
VM 596 7/2008* / 1353304

1 SALVAGE LIFTING SHIP (YS)

Name	Builders	Launched	Commissioned
KOMMUNA (ex-Volkhov)	De Schelde, Vlissingen	30 Nov 1913	27 July 1915

Displacement, tons: 2,450 full load
 Dimensions, feet (metres): 315.0 x 66.9 x 15.4 (96.0 x 20.4 x 4.7)
 Main machinery: 2 diesels; 2 shafts
 Speed, knots: 10. Range, n miles: 1,700 at 6 kt
 Complement: 250
 Radars: Navigation: I-band.

Comment: Catamaran-hulled vessel fitted with four lifting rigs to enableunken submarines to be lifted between the hulls. Laid down in 1912, the vessel was thought to have been decommissioned in 1978 but returned to service after a refit from 1980-84. Now based at Sevastopol to support the operation of submersibles.



KOMMUNA 10/2008*, Laursen/Jarnesen / 1353355

**27 POZHARNY I (PROJECT 364) CLASS
(FIREFIGHTING CRAFT) (YTR)**

PZHK 3	PZHK 36-37	PZHK 59	PZHK 79
PZHK 6	PZHK 41-47	PZHK 64	PZHK 82
PZHK 17	PZHK 49	PZHK 66	PZHK 84
PZHK 30-32	PZHK 53-55	PZHK 68	PZHK 86

Displacement, tons: 180 full load
 Dimensions, feet (metres): 114.5 x 20 x 6 (34.9 x 6.1 x 1.8)
 Main machinery: 2 Type M 50 diesels; 2,200 hp(m) (1.6 MW) sustained; 2 shafts
 Speed, knots: 12. Range: 250 at 12 kt
 Complement: 26
 Guns: 4-12.7 mm (2 twin) MGs (in some).

Comment: Total of 84 built from mid-1950s to mid-1960s. Harbour fire boats but can be used for patrol duties. One transferred to Iraq (now deleted) and two to Ukraine.



POZHARNY I 8/2000, Lemachko Collection / 0126774

15 MORKOV (PROJECT 1461.3) CLASS (YTR)

PZHK 415	PZHK 1296	PZHK 1544-1547	PZHK 1859
PZHK 417	PZHK 1378	PZHK 1560	PZHK 2055
PZHK 900	PZHK 1514-1515	PZHK 1680	

Displacement, tons: 320 full load
 Dimensions, feet (metres): 119.8 x 25.6 x 7.2 (36.5 x 7.8 x 2.2)
 Main machinery: 2 diesels; 1,040 hp(m) (764 kW); 2 shafts
 Speed, knots: 12.5. Range: 250 at 12 kt
 Complement: 20

Comment: Carry four water monitors. Completed in 1984-86 at Rybinsk. Can be used for patrol/towage. Some are under civilian control.



PZHK 1680 7/2008*, Hartmut Ehlers / 1353305

**13 PELYM (PROJECT 1799) CLASS
(DEGAUSSING SHIPS) (YDG)**

SR 26	SR 188	SR 267	SR 370
SR 111	SR 203	SR 280	SR 455
SR 179-180	SR 233	SR 334	AKADEMIK VLADIMIR KOTELNIKOV

Displacement, tons: 1,370 full load
 Dimensions, feet (metres): 214.8 x 38 x 11.2 (65.5 x 11.6 x 3.4)
 Main machinery: 1 diesel; 1,536 hp(m) (1.13 MW); 1 shaft
 Speed, knots: 14
 Range, n miles: 1,000 at 13 kt
 Complement: 70
 Radars: Navigation: Don 2; I-band

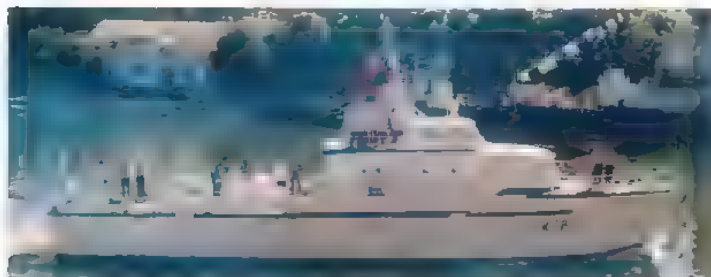
Comment: Built from 1970 to 1987 at Khabarovsk and Gorokhovets. Earlier ships have stump mast on funnel, later ships a tripod main mast and a platform deck extending to the stern. Kotelnikov was laid down in 1991 and commissioned into the Northern Fleet in 2007. Type name is sudna razmagnichivanya meaning degaussing ship. One to Cuba 1982. Several in reserve.



SR 26 10/2008*, Laursen/Jarnesen / 1353356

HARBOUR CRAFT (YFLYFU)

Comment: There are numerous types of officers' yachts, harbour work-boats, training cutters and trials vessels in all of the major Fleet bases. Class names include P 02 (Project 376) *Bryza* (Project 772), *Nazhimovets* (Project 296), *Admiralets* (Project 371), *Slavyanka* (Project 20150), *Albatros* (Project 183), Project 14670, Project 360 and Project 1733



KSV 11 (ALBATROS CLASS)

7/2008*, Hartmut Ehlers / 1353304

15 BEREZA (PROJECT 130) CLASS (DEGAUSSING SHIPS) (YDG)

North	Baltic	Black
SR 74	SR 28	SR 137
SR 216	SR 120	SR 541
SR 478	SR 245	SR 939
SR 548	SR 479	
SR 569	SR 570	
SR 938	SR 936	

Displacement, tons: 1,850 standard; 2,051 full load
Dimensions, feet (metres): 228 × 45.3 × 13.1 (69.5 × 13.8 × 4)
Main machinery: 2 Zgoda-Sulzer 8AL25/30 diesels; 2,938 hp(m) (2.16 MW) sustained; 2 shafts; cp props
Speed, knots: 13. **Range, n miles:** 1,000 at 13 kt
Complement: 48
Radars: Navigation. Kivach; I-band.

Comment: First completed at Northern Shipyard, Gdansk 1984–1991. One transferred to Bulgaria in 1988. Have NBC citadels and three laboratories. Several in reserve. One to Ukraine in 1997. SR 938 converted to a logistic ship for service in the Polish Navy.



SR 541

10/2008*, Laursen/Jarnesen / 1353357

0 + 1 (1) IGOR BELOUSOV (PROJECT 23100) CLASS (SUBMARINE RESCUE SHIP) (ASRH)

Name	Builders	Launched	Commissioned
IGOR BELOUSOV	Admiralty Shipyard, St Petersburg	24 Dec 2005	2009

Displacement, tons: 5,300
Dimensions, feet (metres): 351.7 × 56.4 × 26.6 (107.2 × 17.2 × 8.1)
Main machinery: To be announced
Speed, knots: 15. **Range, n miles:** 3,000 at 12 kt
Complement: To be announced
Guns: To be announced
Radars: To be announced
Helicopters: To be announced.

Comment: Developed by the Almaz Central Marine Design Bureau. Initially, it is expected that two ships are to be built, one each for the Northern and Pacific fleets. The first of class is named after a former minister of shipbuilding of the USSR. A further two ships may be built in order to equip all four fleets. In addition to its principal submarine rescue role, it is likely to have a secondary role as a research ship. Equipment is likely to include a submergence vehicle capable of operation at a depth of down to 700 m, special-purpose deep diver equipment, and a helicopter. In addition, the ship is to be capable of deploying the British Seavey Panther Plus Remotely Operated Vehicle (ROV). The ROV is to be fitted with sonar, an acoustic tracking system, a suite of cameras to provide rescue planners with underwater pictures of the submarine on the seabed and various cutters and manipulators. The ROV is also capable of inserting emergency life support stores into a distressed submarine and of connecting hoses and lines to a submarine's salvage connections.



IGOR BELOUSOV

(Scale 1 : 1,200), Ian Sturton / 1353319

1 NEPA (PROJECT 530) CLASS (SUBMARINE RESCUE SHIP) (ASR)**KARPATY**

Displacement, tons: 9,800 full load
Dimensions, feet (metres): 424.9 × 63.0 × 21.0 (129.5 × 19.2 × 6.4)
Main machinery: Diesel-electric; 4 diesel generators; 2 motors; 8,000 hp(m) (5.88 MW); 2 shafts
Speed, knots: 16
Range, n miles: 8,000 at 14 kt
Complement: 270
Radars: Navigation: I-band.

Comment: Built at Nikolayev Shipyard and originally commissioned on 29 March 1967. Submarine rescue and salvage ship with a high stern which extends over the water to facilitate rescue operations. Equipped with two 750-ton lifts which can work in tandem. Also fitted with a 100-ton lift, one 60-ton derrick and two 10-ton derricks. Can carry rescue bells, two submersibles and decompression chambers. Based in the Baltic at Kronshadt and although previously reported decommissioned, appeared to be undergoing a refit during 2007.

1 LAMA (TYPE 323/323B) CLASS (MISSILE SUPPORT SHIP) (AEM)**GENERAL RYABIKOV**

Displacement, tons: 4,800 full load
Dimensions, feet (metres): 370 × 49.2 × 14.4 (112.8 × 15 × 4.4)
Main machinery: 2 diesels; 4,800 hp(m) (3 MW); 2 shafts
Speed, knots: 14
Range, n miles: 6,000 at 10 kt
Complement: 200
Missiles: SAM: 4 SA-N-5 Grail quad launchers
Guns: 4–25 mm/80
Radars: Surface search: Strut Curve; F band
Navigation: Don 2; I-band.
IFF: 2 Square Head. High Pole A.

Comment: Built 1968 at Nikolayev. The engines are sited aft to allow for a very large and high hangar or hold amidships for carrying missiles or weapons' spares for submarines, surface ships and missile craft. This is about 12 ft high above the main deck. There are doors at the forward end with rails leading in and a raised turntable gantry or 20 ton travelling cranes for armament supply. The well-deck is about 40 ft long, enough for most missiles to fit horizontally before being lifted for loading. Type name is *plavuchaya masterskaya* meaning floating workshop. Based in the Black Sea and used as a troopship during Black Sea operations in 2008. Voronezh has been renamed VTR 33 and is an alongside civilian-manned support ship.



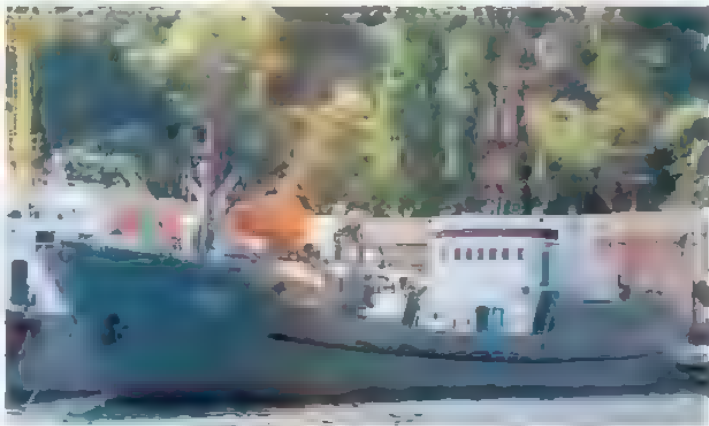
GENERAL RYABIKOV

10/2008*, Laursen/Jarnesen / 1353348

1 MUNA (TYPE 1823) CLASS (AEL)**VTR 94**

Displacement, tons: 690 full load
Dimensions, feet (metres): 165 × 26.8 × 8.5 (50.3 × 8.2 × 2.9)
Main machinery: 1 diesel, 300 hp(m) (220 kW); 1 shaft
Speed, knots: 10
Range, n miles: 3,000 at 10 kt
Complement: 40
Radars: Navigation. Kivach; I-band

Comment: Built in the 1970s and converted at Nikolayev in 1990. Used as ammunition transport ship in the Black Sea.



VTR 94

10/2008*, Laursen/Jarnesen / 1353350

ICEBREAKERS

Notes: Only military icebreakers are shown in this section. Other icebreakers come under civilian management and are now used predominantly for commercial purposes. Civilian ships include the nuclear powered *Taymyr*, *Vaygach*, *Arktika*, *Rossiya*, *S Soyuz*, *Yamal*, all of which are operated by the Murmansk Shipping Company. Diesel powered ships include: 20,000 tons: *Ermak*, *Admiral Makarov*, *Kresin*; 15,400 tons: *Moskva*, *St Petersburg*; 14,600 tons: *Kapitan Sorokin*, *Kapitan Dranitsyn*, *Kapitan Nikolayev*, *Kapitan Khlebnikov*; 7,700 tons: *Mudyug*; 6,200 tons: *Magadan*, *Dikson*; 2,900 tons: *Afanasy Nikitin*, *Fedor Litke*, *Georgiy Sedov*, *Ivan Kruzenshtern*, *Ivan Moskvitin*, *Petr Pakhtusovov*, *Semen Chelyushkin*, *Semen Dezhnev*, *Vasily Poyarkov*, *Vladimir Rusanov*, *Yuriy Lisynsky*; 2,240 tons: *Kapitan Bukayev*, *Kapitan Chadayev*, *Kapitan Chechkin*, *Kapitan Krutov*, *Kapitan Plakhin*, *Kapitan Zarubin*; 2,200 tons: *Kapitan Babichev*, *Kapitan Borodkin*, *Kapitan Chudinov*, *Kapitan Damidov*, *Kapitan Evdokimov*, *Kapitan Metsayk*, *Kapitan Moshkin*, *Kapitan Yevdokimov*, *Ayvaamiy Zavenyagin*; 2,100 tons: *Kapitan A Radzhabov*, *Kapitan Kosolobov*, *Kapitan M Izmaylov*. The growing demand for oil tanker shipments in the Arctic region means that there is a potential shortage of icebreakers. This may be met by completing *50 Let Pobeda*, a 25,000 ton nuclear-powered vessel which has been at Baltic Shipyard, St Petersburg since 1989. Following post refit sea trials, she returned to service in 2007. *Arktika*, *Rossiya* and *Taymyr* are due life-extension refits.



50 LET POBEDA

6/2005 / 1164805

4 DOBRYNYA NIKITICH (PROJECT 97) CLASS (AGB)

BURAN PERESVET SADKO ILYA MUROMETS

Displacement, tons: 2,995 full load
Measurement, tons: 2,254 gross; 1,118 dwt; 50 net
Dimensions, feet (metres): 222.1 × 59.4 × 20 (677 × 18.7 × 6.7)
Main machinery: Diesel-electric; 3 Type 13-D-100 or 3 Wärtsilä 6L 26 (*Kruzenshtern*) diesel generators; 3 motors, 5,400 hpm (4 MW); 3 shafts (1 fwd, 2 aft)
Speed, knots: 14.5. **Range, n miles:** 5,500 at 12 kt
Complement: 45
Guns: 2–57 mm/70 (twin) 2–37 mm/63.
Radars: Navigation: 2 Don 2; I-band.

Comment: Built at Admiralty Yard, Leningrad between 1960 and 1971. *Kavraysky* is in the Northern Fleet and *Buran* in the Baltic. Of the 18 others originally built, some have been decommissioned and others (about eight) transferred to civilian service.



BURAN

6/2004, Marco Ghiglino / 1151373

TUGS

Notes: SB means *Spasatelny Buksir* or Salvage Tug. MB means *Morskoy Buksir* or Seagoing Tug.

2 BAKLAZHAN (PROJECT 5757) CLASS (SALVAGE TUGS) (ATS)

NICOLAY CHIKER SB 131 FOTIY KRYLOV SB 135

Displacement, tons: 7,300 standard; 8,000 full load
Dimensions, feet (metres): 324.8 × 64.0 × 23.3 (99.0 × 19.5 × 7.7)
Main machinery: 4 Wärtsilä diesels; 24,120 hpm (18.0 MW); 2 shafts
Speed, knots: 18
Range, n miles: 11,000 at 16 kt
Radars: Navigation I-band.

Comment: Both ships constructed by Holmring, Rauma, Finland. Laid down in 1987 and entered service with the Soviet Navy in 1989. Under ownership of Russian company Sovfracht, operated by Greek company Tsavliris during the 1990s before returning to Russian naval service in about 2006. Both tugs are probably still available for commercial use. Equipped with three water cannons.

2 NEFTEGAZ (PROJECT B-92) CLASS (ATA)

ILGA KALAR

Displacement, tons: 4,013 full load
Dimensions, feet (metres): 264.8 × 53.5 × 16.4 (80.3 × 16.3 × 5.0)
Main machinery: 2 Sulzer diesels; 7,200 hp (5.3 MW); 2 shafts, cp props
Speed, knots: 15. **Range, n miles:** 5,000 at 12 kt
Complement: 23
Radars: Navigation: I-band.

Comment: Large oilfield support tugs built by A Warski SY, Szczecin, Poland. Taken over for naval service; some 40 others are in civilian service. Now employed as ocean-going rescue tugs with heavy towing and firefighting capabilities. *Kalar* also operates in the salvage role. Capacity of 600 tons cargo on deck and 1,000 m³ of liquid cargo. Entered naval service in 1983 (*Ilga*) and 1990 (*Kalar*). *Ilga* based in the Northern Fleet and *Kalar* in the Pacific.



KALAR

12/2005, Ships of the World / 1151145

1 PRUT (PROJECT 527M) CLASS (RESCUETUG) (ATS)

EPRON

Displacement, tons: 2,120 standard; 2,800 full load
Dimensions, feet (metres): 295.9 × 48.9 × 18.0 (90.2 × 14.3 × 5.5)
Main machinery: Diesel-electric; 4 diesel generators; 2 motors; 10,000 hp (7.35 MW); 2 shafts
Speed, knots: 20. **Range, n miles:** 9,000 at 16 kt
Complement: 140
Radars: Navigation: Don-2; I-band.

Comment: Large rescue tug built at Nikolayev, Ukraine and completed in 1968. Carries two heavy-duty derricks, submersible recompression chambers, rescue chambers and bells. Last survivor of the class which is based in the Black Sea.



EPRON

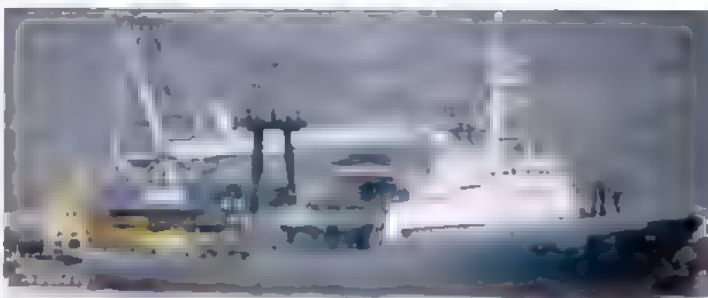
6/2004, Hartmut Ehlers / 1042786

3 INGUL (PROJECT 1453) CLASS (SALVAGE TUGS) (ATS)

PAMIR MASHUK ALTAY (ex-Karabakh)

Displacement, tons: 4,050 full load
Dimensions, feet (metres): 304.4 × 50.5 × 19 (92.8 × 15.4 × 5.8)
Main machinery: 2 Type 58-D-4R diesels; 6,000 hp (4.4 MW); 2 shafts; cp props
Speed, knots: 19. **Range, n miles:** 9,000 at 19 kt
Complement: 71 plus salvage party of 18
Radars: Navigation: 2 Palm Frond; I-band.
IFF: High Pole. Square Head

Comment: Built at Admiralty Yard, Leningrad in 1975–84. NATO class name the same as one of the *Klasma* class cable-ships. Naval-manned arctic salvage and rescue tugs. Two more, *Yaguar* (Murmansk) and *Bars* (Vladivostok), operate with the merchant fleet. Carry salvage pumps, diving and firefighting gear as well as a high-line for transfer of personnel. Fitted for guns but these are not carried. *Pamir* and *Altay* in the North, *Mashuk* in the Pacific.



PAMIR

7/2008* / 1353358

3 SLIVA (PROJECT 712) CLASS (SALVAGE TUGS) (ATS)

SB 406 PARADOKS SB 921 SHAKHTER SB 922

Displacement, tons: 3,050 full load
Dimensions, feet (metres): 227 × 50.5 × 16.7 (69.2 × 15.4 × 5.1)
Main machinery: 2 Russkiy SEMT-Pielstick 6 PC2.5 L 400 diesels, 7020 hp(m) (5.2 MW) sustained, 2 shafts; cp props, bow thruster
Speed, knots: 16
Range, n miles: 6,000 at 16 kt
Complement: 43 plus 10 salvage party
Radars: Navigation: 2 Nayada, I-band

Comment: Built at Rauma-Repola, Finland. Based on Goryn design. SB 406 completed 20 February 1984. Second pair ordered 1984 SB 921 completed 5 July 1985 and SB 922 on 20 December 1985. SB 922 named *Shakhter* in 1989. A fourth of class, *Iva* SB 408, was sold illegally to a Greek company in March 1993 and now flies the flag of Cyprus but is operated as a 'joint venture' with the Russian Navy. Diving facilities to 60 m. Bollard pull 60 tons. SB 406 based in the Northern Fleet, SB 921 in the Baltic and SB 922 in the Black Sea.



SB 921 7/2008*, Hartmut Ehlers / 1353302

5 KATUN CLASS (PROJECT 1893/1993) (SALVAGE TUGS) (ATS)

Katun I: PZHS 64, 96, 98, 123, 273, 282, 309, 551
 Katun II: PZHS 64, 92

Displacement, tons: 1,005 (Katun I), 1,220 (Katun II) full load
Dimensions, feet (metres): 205.3 × 33.1 × 11.5 (62 × 10.7 × 3.5) (Katun I)
Main machinery: 2 diesels; 5,000 hp(m) (3.68 MW); 2 shafts
Speed, knots: 17. Range, n miles: 2,000 at 17 kt
Complement: 32
Radars: Navigation: Spin Trough or Kivach (Katun II); I-band.
 IFF: High Pole A.

Comment: Eight Katun I built at Kolpino 1970-78. Equipped for firefighting and rescue. Two remaining Katun II PZHS 92 and 95 have an extra bridge level and lattice masts. 273 based in the Caspian; 95 and 209 in the Pacific, 64, 92 and 98 in the North, 282 and 551 in the Baltic and 123 in the Black Sea



PZHS 282 (Katun I) 8/2004 / 1042310

10 GORYN (PROJECT 714) CLASS (ARS/ATA)

MB 15 MB 38 MB 110 SB 521-523
 EVGENY KHOROV MB 35 MB 105 SB 36 SB 931

Displacement, tons: 2,240 standard, 2,600 full load
Dimensions, feet (metres): 208.3 × 46.9 × 16.7 (63.5 × 14.3 × 5.1)
Main machinery: 2 Russkiy SEMT-Pielstick 6 PC2.5 L 400 diesels; 7020 hp(m) (5.2 MW) sustained, 2 shafts; cp props, bow thruster
Speed, knots: 15
Complement: 43 plus 16 spare berths
Radars: Navigation: 2 Don 2 or Nayada or Kivach; I-band.

Comment: Built by Rauma-Repola 1977-83. Have sick-bay. First ships have goalpost mast with 10 and 5 ton derricks and bollard pull of 35 tons. Remainder have an A-frame mast with a 15 ton crane and bollard pull of 45 tons. SB number indicates a 'rescue' tug. Three in the North, four in the Pacific, two in the Baltic and one in the Black Sea. One transferred to Ukraine in 1997.



SB 522 10/2008*, Guy Toremans / 1353359

13 SORUM (PROJECT 745) CLASS (ATA)

MB 4 MB 28 MB 56 MB 61 MB 99 MB 110 MB 304
 MB 19 MB 37 MB 58 MB 76 MB 100 MB 148

Displacement, tons: 1,660 full load
Dimensions, feet (metres): 190.2 × 41.3 × 15.1 (58 × 12.6 × 4.6)
Main machinery: Diesel-electric; 2 Typo 5-2-DW2 diesel generators; 2,900 hp(m) (2.13 MW); 1 motor; 2,000 hp(m) (1.47 MW); 1 shaft
Speed, knots: 14
Range, n miles: 3,600 at 13 kt
Complement: 35
Guns: 4-30 mm/65 (2 twin) (all fitted for, but only Border Guard ships carry them).
Radars: Navigation: 2 Don 2 or Nayada, I-band.
 IFF: High Pole B

Comment: A class of ocean tugs with firefighting and diving capability. Built in Yaroslavl and Oktyabskoye from 1973 to 1989, design used for Ministry of Fisheries rescue tugs.



MB 100 7/2008* / 1353360

14 OKHTENSKY (PROJECT 733/733S) CLASS (ARS/ATA)

AYANKA SB 3 SPUTNIK MB 52 LOKSA MB 171
 MOSHCHNY SB 6 MB 162 MB 172
 SB 5 SERDITY MB 165 MB 174
 MB 21 MB 166 SATURN MB 178
 MB 23 POCHETNY MB 169

Displacement, tons: 948 full load
Dimensions, feet (metres): 156.1 × 34 × 13.4 (47.6 × 10.4 × 4.1)
Main machinery: Diesel-electric; 2 BM diesel generators; 1 motor; 1,500 hp(m) (1.1 MW); 1 shaft
Speed, knots: 13
Range, n miles: 8,000 at 7 kt; 6,000 at 13 kt
Complement: 40
Guns: 2 57 mm/70 (twin) or 2-25 mm/80 (twin) (Border Guard only).
Radars: Navigation: 1 or 2 Don 2 or Spin Trough; I-band
 IFF: High Pole B.

Comment: Ocean-going salvage (MB) and rescue tugs (SB). First of a total of 62 completed 1958. Fitted with powerful pumps and other apparatus for salvage. A number of named ships are operated by the Border Guard and are armed. Two to Ukraine in 1997. Many have been scrapped.



MB 23 10/2008*, Laursen/Jarnasen / 1353361

18 PROMETEIY (PROJECT 498/04983/04985) CLASS (TUGS) (YTB)

RB 1 RB 98 RB 179 RB 239 RB 296 RB 360
 RB 7 RB 158 RB 201-202 RB 262 RB 314 RB 362
 RB 57 RB 173 RB 217 RB 265 RB 327

Displacement, tons: 360 full load
Dimensions, feet (metres): 96.1 × 27.2 × 10.5 (29.3 × 8.3 × 3.2)
Main machinery: 2 diesels; 1,200 hp(m) (895 kW); 2 shafts
Speed, knots: 11

Comment: Entered service 1973-83. Bollard pull 14 tons. Later versions have more powerful engines. Based in the Northern, Pacific, Baltic and Black Sea Fleets.



RB 201 8/2008*, Hartmut Ehlers / 1353300

11 STIVIDOR (PROJECT 192) CLASS (TUGS) (YTB)

RU 33	RB 108-109	RB 167	RB 247	RB 325-326
RU 40	RB 136	RB 244	RB 280	

Displacement, tons: 575 full load
 Dimensions, feet (metres): 117.1 × 31.1 × 15.1 (35.7 × 9.5 × 4.6)

Main machinery: 2 diesels; 2,400 hp(m) (1.78 MW); 2 shafts; bow-thruster
 Speed, knots: 12

Comment: Entered service 1980-90. Bollard pull 35 tons. Equipped with three water cannons. Based in the Northern, Pacific and Black Sea Fleets.



RB 325

6/2007, Lemachko Collection / 1105147

37 SIDEHOLE I AND II (PROJECT 737 K/M) CLASS (TUGS) (YTB)

BUK 600	RB 29	RB 192	RB 233	RB 250
RB 2	RB 43	RB 193	RB 237	RB 255
RB 5	RB 44	RB 194	RB 240	RB 256
RB 17	RB 46	RB 197	RB 244	RB 310
RB 20	RB 49	RB 198	RB 246	RB 311
RB 23	RB 51	RB 199	RB 247	
RB 25	RB 52	RB 212	RB 248	
RB 26	RB 168	RB 232	RB 249	

Displacement, tons: 206 full load
 Dimensions, feet (metres): 79.4 × 23.0 × 11.1 (24.2 × 7.0 × 3.4)
 Main machinery: 2 diesels, 900 hp(m) (670 kW); 2 shafts
 Speed, knots: 10

Comment: Entered service 1973-83. Bollard pull 10 tons. Based in all fleets.



RB 249 (Sidehole II)

7/2006*, Hartmut Ehlers / 1353303

RUSSIAN FEDERAL BORDER GUARD SERVICE (EX MARITIME BORDER GUARD)

General

(1) The Border Guard would be integrated with naval operations in a crisis. Formerly run by the KGB, the force came under the Ministry of Defence in October 1991 and was then given to the Ministry of Interior in December

1993. It merged with the Federal Security Service on 11 March 2003

(2) From 1993 the Border Guard started to fly its own ensign which is the St Andrews Cross with a white border on a green background. Diagonal stripes are painted on the hull which from 2004 have been painted blue

(3) Roles include Law Enforcement, Port Security, Counter Intelligence, Counter Terrorism and Fishery Protection.

Personnel

2009: 10,000 approx

FRIGATES**5 GRISHA (ALBATROS) (PROJECT 1124P/1124M/1124MP/1124MU) CLASS (FFLM)**

NADEZHNYI (III) -

SMELYY (III) 178

DOZORNYY (III) 113

ZORKIY (III) 170

PREDANYI (III) 079

Displacement, tons: 860 standard; 990 full load
 Dimensions, feet (metres): 233.6 × 32.2 × 21.1
 (71.2 × 9.9 × 3.7)

Main machinery: CODAG; 1 gas turbine; 16,000 hp(m)
 (11 MW); 2 diesels; 16,000 hp(m) (11.8 MW); 3 shafts
 Speed, knots: 30. Range, n miles: 2,500 at 14 kt
 Complement: 83 (5 officers) (Grisha III); 79 (Grisha II)

Missiles: SAM. SA-N-4 Gecko twin launcher, semi-active radar homing to 15 km (8 n miles) at 2.5 Mach; warhead 50 kg, 20 missiles

Guns: 2 (4) - 57 mm/80 (twin/2 twin) (Grisha II/III); 120 rds/min to 6 km (3.3 n miles); weight of shell 2.8 kg.
 1-3 in 176 mm/60 (Grisha V); 120 rds/min to 15 km (8 n miles); weight of shell 5.9 kg.
 1-30 mm/65 (Grisha III and V classes) AK 630; 6 barrels; 3,000 rds/min combined to 2 km

Torpedoes: 4-21 in (533 mm) (2 twin) tubes. Combination of 53 cm torpedoes.

A/S mortars: 2 RBU 6000 12-tubed trainable, range 6,000 m; warhead 31 kg (Only 1 in Grisha V).

Depth charges: 2 racks (12)

Mines: Capacity for 18 in lieu of depth charges.

Countmeasures: Decoys: 4 PK 10 or 2 PK 16 chaff launchers.

ESM: 2 Watch Dog.

Radars: Air/surface search. Strut Curve (Strut Pair in Grisha V); F-band.

Navigation: Don 2, I-band.

Fire control: Pop Group; F/H/I-band (for SA-N-4). Bass Tilt (Grisha III and V), H/I-band (for 57/76 mm and 30 mm).

IFF: High Pole A or B. Square Head. Salt Pot.

Sonars: Bull Nose; hull-mounted; active search and attack, high/medium frequency.

Elk Tail; VDS, active search; high frequency. Similar to Hormone helicopter dipping sonar.

Programmes: Surviving ships of Grisha class variants built for the Border Guard. Some ships, previously reported to have been decommissioned, have been reported operational although the overall status of the class remains unclear. Grisha II (1973-74), Grisha III (1981-85) and Grisha V (1985 onwards). All were built at Kharbarovsk and Zelenodolsk.

Structure: Grisha III class has Muff Cob radar removed, Bass Tilt and 30 mm ADG (fitted aft), and Rad-haz screen removed from shaft funnel as a result of removal of Muff Cob. Grisha V is similar to Grisha III with the after twin 57 mm mounting replaced by a single 76 mm gun.

Operational: Divided between the Northern and Pacific Fleets.

7 KRIVAK III (NEREY) (PROJECT 1135MP) CLASS (FFHM)

Name	No	Builders	Laid down	Launched	Commissioned
MENZHINSKY	113	Kamish-Burun, Kerch	14 Aug 1981	31 Dec 1982	29 Dec 1983
DZERZHINSKY	158 (ex-097)	Kamish-Burun, Kerch	11 Jan 1984	2 Mar 1984	29 Dec 1984
OREL (ex-Imeni XXVII Sezda KPSS)	156	Kamish-Burun, Kerch	26 Sep 1983	2 Nov 1985	30 Sep 1986
PSKOV (ex-Imeni LXX Letiya VCHK-KGB)	175 (ex-104)	Kamish-Burun, Kerch	—	1987	30 Dec 1987
ANADYR (ex-Imeni LXX Letiya Pogranvoysk)	060	Kamish-Burun, Kerch	22 Oct 1987	28 Mar 1988	16 Aug 1989
KEDROV	103	Kamish-Burun, Kerch	5 Nov 1988	30 Apr 1989	20 Nov 1990
VOROVSKY	160 (ex-052)	Kamish-Burun, Kerch	20 Feb 1990	28 July 1990	29 Dec 1990

Displacement, tons: 3,100 standard; 3,650 full load

Dimensions, feet (metres): 405.2 × 46.9 × 24 (sonar)
(123.5 × 14.3 × 7.3)

Main machinery: COGAG; 2 M8K gas-turbines, 55,500 hp(m)
(40.8 MW); 2 M 62 gas-turbines; 13,600 hp(m) (10 MW);
2 shafts

Speed, knots: 32

Range, n miles: 4,000 at 14 kt; 1,600 at 30 kt

Complement: 194 (18 officers)

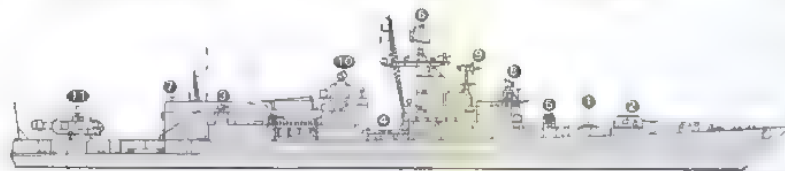
Missiles: SAM: 1 SA-N-4 Gecko (Zif 122) twin launchers ●;
Osa-M semi-active radar homing to 15 km (8 n miles) at
2.5 Mach; warhead 50 kg; altitude 9.1-3,048 m (30-10,000 ft);
20 miss les.

Guns: 1-3.9 in (100 mm) 70 AK 100 ●; 60 rds/min to
21.5 km (11.5 n miles); weight of shell 15.6 kg.
2-30 mm/65 ●; 6 barrels per mounting; 3,000 rds/min
combined to 2 km.

Torpedoes: 8-21 in (533 mm) (2 quad) tubes ●. Combination
of 53 cm torpedoes (see table at front of section).

A/S mortars: 2 RBU 6000 12-tubed trainable ●; range
6,000 m; warhead 31 kg. MRG-7 55 mm grenade
launcher

Mines: Capacity for 16.



KRIVAK III

(Scale 1 : 1,200), Ian Sturton / 0506085

Countermeasures: Decoys: 4 PK 16 or 10 PK 10 chaff
launchers. Towed torpedo decoy
ESM/ECM: 2 Bell Shroud. 2 Bell Squat. Half Cup laser
warning (in some).

Radars: Air search: Top Plate ●; 3D; D/E-band.

Surface search: Peel Cone ●; I-band

Fire control: Pop Group ●; F/H-I band (for SA-N-4). Kite

Screech ●; H/I-K-band. Bass Tilt ●; H/I-band.

IFF: High Pole B. Salt Pot.

Sonars: Bull Nose (MGK-335S or MG-332); hull-mounted;
active search and attack; medium frequency.

Helicopters: 1 Ka-27 Helix ●.

Programmes: Type name was originally *bolshoy protivolodochny korabl*, meaning large anti-submarine ship. Changed in 1977-78 to *storozhevoy korabl* meaning escort ship. The naval Krivaks are known as the *Burevestnik* class.

Structure: Krivak III class built for the former KGB but now under Border Guard Control. The removal of SS-N-14 and one SA-N-4 mounting compensates for the addition of a hangar and flight deck

Sales: The Talwar class is an improved version of the Krivak III built for India. Three of the Krivak III class transferred to Ukraine in July 1997.



VOROVSKY

11/2007, Lemachko Collection / 1353301



PSKOV

6/2005, Lemachko Collection / 1159852

PATROL FORCES

Notes: In addition to the patrol forces listed, *Pluton* 028 and *Strelets* 025, two Yug class former research vessels, are operated as patrol craft in Arctic waters.

8 ALPINIST (PROJECT 503) CLASS (PBO)

ANTIAS ARGAL BARS DIANA PALUYA PARELLA KURS GRINDA

Displacement, tons: 1,150 full load
Dimensions, feet (metres): 176.2 x 34.4 x 13.4 (53.7 x 10.5 x 4.1)
Main machinery: 1 diesel; 1 shaft; cp prop
Speed, knots: 12. Range, n miles: 7,000 at 12 kt
Complement: 44

Comment: Trawler design adapted for use as fishery protection role. The named ships were built at Volgograd and at Khabarovsk between 1997 and 2000 while the latest two (unnamed) ships were built at Yarslavl and entered service in late 2001.



ALPINIST 9/2006, *Globe Collection* / 1159884

4 KOMANDOR CLASS (PSO)

KOMANDOR SHKIPER GYEK HERLUF BIDSTRUP MANCHZHUR

Displacement, tons: 2,435 full load
Dimensions, feet (metres): 289.7 x 44.6 x 15.4 (88.3 x 13.6 x 4.7)
Main machinery: 2 Russkly SEMT-Pielstick 6 PC2 5 L400 diesels; 7,020 hp(m) (5.2 MW); 1 shaft; cp prop; bow thruster
Speed, knots: 20
Range, n miles: 7,000 at 19 kt
Complement: 42
Radars: Navigation: Furuno, I-band.
Helicopters: 2 Ka-32 Helix D for SAR

Comment: Specialist offshore patrol vessels ordered in December 1987 from Danyard, Frederikshaven, Denmark and delivered 1989-1990. The hangar is below the helicopter deck. Transferred from the Ministry of Fisheries to the Federal Border Guard and based in the Pacific.



MANCHZHUR 6/2003, *Lemachko Collection* / 0580538

5 IVAN SUSANIN (PROJECT 97P) CLASS (PATROL SHIPS) (PGH)

AISBERG 161 MURMANSK (ex-Dunay) 018 NEVA 170 ANADYR 173 VOLGA 183

Displacement, tons: 3,567 full load
Dimensions, feet (metres): 229.7 x 59.4 x 21 (70 x 18.1 x 6.4)
Main machinery: Diesel-electric; 3 Type 13-D-150 diesel generators; 3 motors; 5,400 hp(m) (4 MW); 3 shafts (1 fwd, 2 aft)
Speed, knots: 14.5
Range, n miles: 5,500 at 12.5 kt
Complement: 45
Guns: 2-3 in (76 mm)/59 AK 726 (twin), 90 rds/min to 16 km (8.5 n miles); weight of shell 5.9 kg, 2-30 mm/65 AK 630 (not in all).
Radars: Surface search: Strut Curve; F-band
Navigation: 2 Don Kay or Palm Frond, I-band.
Fire control: Hawk Scream; I-band.
Helicopters: Platform only.

Comment: Built at Admiralty Yard, Leningrad between 1974 and 1981. Generally similar to Dobrynya Nikitich class though larger with a tripod mast and different superstructure. Former icebreakers operated primarily as patrol ships. Two in the Pacific and three in the Northern Fleet. Two deleted so far.



VOLGA 11/2007, *Lemachko Collection* / 1353309

18 SORUM (PROJECT 745P) CLASS (PBO)

AMUR 043	KAMCHATKA 198	ZABAYKALYE 196
MAGADNETS 044	GENERAL MATROSOV 101	TVER 022
AMUR 010	SAKHALIN 185	PRIMORYE 172
BREST 106	URAL 016	LADOGA 058
CHUKOTKA 011	BAYKAL (ex-Yan Berzin) 105	VICTOR KINGISEPP (ex-Vyatka) 035
KARELIA 103	ZAPOLARYE 038	BUG 142

Displacement, tons: 1,660 full load
Dimensions, feet (metres): 190.2 x 41.3 x 15.1 (58 x 12.6 x 4.6)
Main machinery: Diesel-electric; 2 Type 5-2-DW2 diesel generators; 2,900 hp(m) (2.13 MW); 1 motor; 2,000 hp(m) (1.47 MW); 1 shaft
Speed, knots: 14
Range, n miles: 3,500 at 13 kt
Complement: 35
Guns: 4-30 mm/65 (2 twin) (all fitted for, but only Border Guard ships carry them).
Radars: Navigation: 2 Don 2 or Nayada; I-band
IFF: High Pole B.

Comment: A class of ocean tugs armed for use as patrol vessels in the North, Pacific, Baltic and Caspian. Built in Yaroslavl and Oktyabskoye from 1973 to 1989, design used for Ministry of Fisheries rescue tugs.



CHUKOTKA 5/2008, *Hachiro Nakai* / 1353292

1 + (9) SPRUT (PROJECT 6457S) CLASS (PSO)

Name	No	Builders	Laid down	Launched	Commissioned
SPRUT	-	Yantar Shipyard, Kaliningrad	27 May 2002	12 Oct 2007	2008

Displacement, tons: 900 standard
Dimensions, feet (metres): 216.2 x 34.8 x 11.5 (65.9 x 10.6 x 3.5)
Main machinery: 1 MTU 16V 1163 diesel; 7,000 hp(m) (5.2 MW); 1 shaft; fixed propeller
Speed, knots: 21.5
Range, n miles: 12,000 at 12 kt
Complement: 15 + 10 in temporary accommodation
Radars: Surface search: I-band.
Navigation: I-band
Helicopters: Platform for 1 light.

Comment: Specialist Fishery Protection vessel based on German Coast Guard Bad Bremstedt design. Steel hull with aluminium superstructure. Equipped with a high speed RHIB for interception. A class of ten is planned.



SPRUT 9/2008, *Frank Findler* / 1353310

For details of the latest updates to *Jane's Fighting Ships* online and to discover the additional information available exclusively to online subscribers please visit
jfs.janes.com

**17 PAUK I (MOLNYA) (PROJECT 12412) CLASS
(FAST ATTACK CRAFT—PATROL) (PCM)**

TOLYATTI (ex-PSKR 804) 021
 NAKHODKA (ex-PSKR 818) 023
 KALININGRAD (ex-PSKR-802) 024
 YAROSLAVL (ex-PSKR-810) 031
 YASTREB (ex-PSKR-816) 037
 SARYCH (ex-PSKR-811) 040
 GRIF (ex-PSKR-808) 041
 ORLAN (ex-PSKR-814) 042
 CHEBOKSARY (ex-PSKR-817) 052
 SOKOL (ex-PSKR 812) 063
 MINSK (ex-PSKR-806) 065
 NIKOLAY KAPLUNOV (ex-PSKR-815) 077
 KOBCHIK (ex-PSKR-807) 078
 KRECHET (ex-PSKR-809) 099
 BERKUT (ex-PSKR-800) 152
 KORSHUN (ex-PSKR-805) 161
 VORON (ex-PSKR 801) 163

Displacement, tons: 440 full load
Dimensions, feet (metres): 189 × 33.5 × 10.8 (576 × 10.2 × 3.3)
Main machinery: 2 Type M 521 diesels; 16,184 hp(m) (11.9 MW) sustained; 2 shafts
Speed, knots: 32
Range, n miles: 2,400 at 14 kt
Complement: 38

Missiles: SAM SA-N-5 Grail quad launcher; manual aiming; IR homing to 6 km (3.2 n miles) at 1.5 Mach, altitude to 2,500 m (8,000 ft); warhead 1.5 kg; 8 missiles
Guns: 1–3 in (76 mm)/59 AK 178; 120 rds/min to 15 km (8 n miles); weight of shell 5.9 kg. 1–30 mm/65 AK 630, 6 barrels, 3,000 rds/min combined to 2 km.
Torpedoes: 4–16 in (406 mm) tubes. For torpedo details see table at front of section.
A/S mortars: 2 RBU 1200 5-tubed fixed, range 1,200 m; warhead 34 kg.
Depth charges: 2 racks (12).
Countermeasures: Decoys: 2 PK 16 or 4 PK 10 chaff launchers.
ESM: 3 Brick Plug and 2 Half Hat; radar warning.
Weapons control: Hood Wink optronic director.
Radars: Air/surface search: Peel Cone, E/F-band.
Surface search: Kivach or Pechora or SRN 207, I-band.
Fire control: Bass Tilt, H/I-band
Sonars: Foal Tail; VDS (mounted on transom); active attack; high frequency.

Programmes: First laid down in 1977 and completed in 1979. In series production at Yaroslavl in the Black Sea and at Vladivostok until 1988 when the Svetlyak class took over. Type name is *maly protivolodochny korabl* meaning small anti-submarine ship. An improved version building at Kharberovsk in 1995 was not completed.
Structure: An ASW version of the Tarantul class having the same hull form with a 1.8 m extension for dipping sonar. *Berkut*, *Voron* and *Kaliningrad* have a lower bridge than others. A modified version (Pauk II) with a longer superstructure, two twin 533 mm torpedo tubes and a radome similar to the Parchim class built for export.
Operational: Five in the Baltic, two in the Black Sea and the remainder in the Pacific. In addition five naval craft are laid up in the Baltic and one in the Black Sea.
Sales: One to Bulgaria in September 1989 and a second in December 1990. Two to Ukraine in 1996. A variant design built for Vietnam.



KRECHET

8/2008*, E & M Laursen / 1353262

3 TERRIER (PROJECT 14170) CLASS (PB)

001–003

Displacement, tons: 8.3 full load
Dimensions, feet (metres): 38.4 × 10.2 × 1.6 (11.7 × 3.1 × 0.5)
Main machinery: 2 diesels; 2 waterjets
Speed, knots: 32
Range, n miles: 120 at 30 kt
Complement: 6

Comment: Built at Zelenodolsk in 2000.



TERRIER 001

5/2006, Lemachko Collection / 1159853

2 PAUK II (PROJECT 1241 PE) CLASS (PCM)

NOVOROSSIYSK 043 KUBAN 149

Displacement, tons: 495 full load
Dimensions, feet (metres): 191.9 × 33.5 × 11.2 (58.5 × 10.2 × 3.4)
Main machinery: 2 Type M 521 diesels; 16,184 hp(m) (11.9 MW) sustained; 2 shafts
Speed, knots: 32
Range, n miles: 2,400 at 14 kt
Complement: 32

Missiles: SAM SA-N-5 quad launcher, manual aiming, IR homing to 10 km (5.4 n miles) at 1.5 Mach; warhead 1.1 kg.
Guns: 1 USSR 76 mm/50 AK 178; 120 rds/min to 15 km (8 n miles); weight of shell 5.9 kg. 1–30 mm/65 AK 630; 6 barrels; 3,000 rds/min combined to 2 km.
Torpedoes: 4–21 in (533 mm) (2 twin) fixed tubes.
A/S mortars: 2 RBU 1200 5-tubed fixed; range 1,200 m; warhead 34 kg.
Radars: Air/surface search: Cross Dome (Positiv E); E/F-band.
Navigation: Pechora; I-band
Fire control: Bass Tilt, H/I-band
Sonars: Rat Tail; VDS (on transom), attack; high frequency.

Comment: Built at Yaroslavl Shipyard and entered service in 1997–98 when they were transferred to the Border Guard. Originally intended for Iraq, export Pauk II variant of the type sold to India and Cuba. Has a longer superstructure than the Pauk I with a radome similar to the Parchim II class. The torpedo tubes must be trained out to launch. Both operate in the Black Sea.

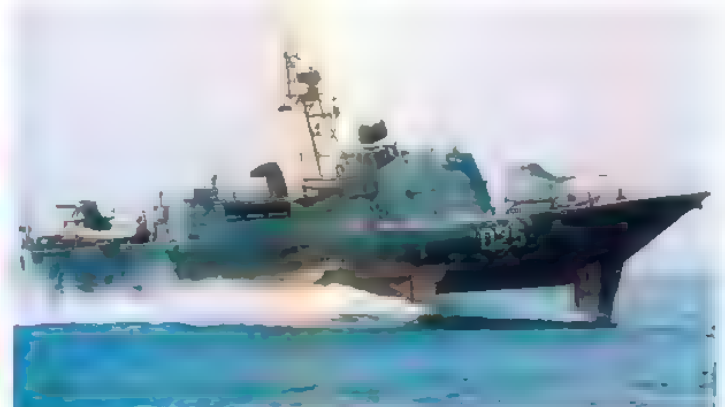
3 MURAVEY (ANTARES) (PROJECT 133) CLASS (PCK)

DELFIN RYBA TUAPSE

Displacement, tons: 212 full load
Dimensions, feet (metres): 126.6 × 24.9 × 6.2, 14.4 (foils) (38.6 × 7.6 × 1.9, 4.4)
Main machinery: 2 gas turbines; 22,600 hp(m) (16.6 MW); 2 shafts
Speed, knots: 60
Range, n miles: 410 at 12 kt
Complement: 30 (5 officers)

Guns: 1–3 in (76 mm)/80; 120 rds/min to 15 km (8 n miles); weight of shell 7 kg. 1–30 mm/65 AK 630; 6 barrels, 3,000 rds/min combined to 2 km.
Weapons control: Hood Wink optronic director.
Radars: Surface search: Peel Cone; E band.
Fire control: Bass Tilt, H/I-band
Sonars: Rat Tail; VDS; active attack, high frequency; dipping sonar.

Comment: Thirteen hydrofoil craft built at Feodosiya in the mid-1980s for the USSR Border Guard. Three transferred to Ukraine and the remainder decommissioned. Two are reported to be operational.



MURAVEY CLASS

3/1998, Ukraine Coast Guard / 0050319

1 MUSTANG (PROJECT 18623) CLASS (PBF)

817

Displacement, tons: 35.5 full load
Dimensions, feet (metres): 65.6 × 14.8 × 3.6 (20.0 × 4.5 × 1.1)
Main machinery: 2 Zvezda M-470 diesels, 2,950 hp (2.2 MW); 2 Kamewa waterjets
Speed, knots: 45
Range, n miles: 350 at 40 kt
Complement: 6

Comment: Designed by Redan Bureau, St Petersburg and built at Yaroslavl in 2000.



MUSTANG

6/2005, A Sheldon-Duplaix / 1127917

12 + 1 (3) SOBOL (PROJECT 12200) CLASS (PBF)

BSK 1-12

Displacement, tons: 54 full load
Dimensions, feet (metres): 90.9 × 18.4 × 3.6 (27.7 × 5.6 × 1.1)
Main machinery: 2 diesels; 3,600 hp (2.6 MW); 2 shafts
Speed, knots: 47
Range, n miles: 700 at 40 kt
Complement: 6
Missiles: SAM, SA-N-10 (Igl'a)
Guns: 1—30 mm AK-306, 1—14.5 mm MG

Comment: Built at Almaz St Petersburg and at Soznuvka Zavod, Rybinsk and delivered 2000-03. One further craft reported under construction and a further three are expected



SOBOL CLASS (artist's impression)

6/2004, S Breyer / 1042412

22 SVETLYAK (PROJECT 1041Z) CLASS (FAST ATTACK CRAFT—PATROL) (PGM)

PODOLSK (ex-PSKR-920) 017	STAVROPOL (ex-PSKR-902) 100
NEVELSK (ex-PSKR-915) 023	KIZLJAR (ex-PSKR-913) 139
YUZHNO-SAKHALINSK (ex-PSKR-918) 028	DERBENT (ex-PSKR-912) 102
SOCHI (ex-PSKR-906) 028	KORSAKOV (ex-PSKR-914) 118
SIKTIVKAR (ex-PSKR-911) 099	— (ex-PSKR 923) 126
SOKOL 083	— (ex-PSKR 910) 132
BRIZ (ex-PSKR-908) 065	ANATOLY KOROLEV (ex-PSKR 916) 137
STOROCHIEVIK 076	VYBORG (ex-PSKR-909) 141
NEFTUN 077	ALMAZ (ex-PSKR-913) 143
CHOLMSK (ex-PSKR-903) 088	— (ex-PSKR 907) 104
PTER ALMAZ 027	— (ex-PSKR 901) 174

Displacement, tons: 375 full load
Dimensions, feet (metres): 159.1 × 30.2 × 11.5 (48.5 × 9.2 × 3.5)
Main machinery: 3 diesels; 14,400 hp(m) (10.58 MW); 3 shafts
Speed, knots: 31
Range, n miles: 2,200 at 13 kt
Complement: 36 (4 officers)

Missiles: SAM: SA-N-5 Grail quad launcher; manual aiming; IR homing to 6 km (3.2 n miles) at 1.5 Mach; warhead 15 kg.
Guns: 1—3 in (76 mm)/59 AK 176; 120 rds/min to 15 km (8 n miles); weight of shell 5.9 kg. 1 or 2—30 mm/65 AK 630; 6 barrels; 3,000 rds/min combined to 2 km; 12 missiles.
Torpedoes: 2—16 in (406 mm) tubes; SAET-40; anti-submarine; active/passive homing to 10 km (5.4 n miles) at 30 kt; warhead 100 kg.
Depth charges: 2 racks; 12 charges.
Countermeasures: Decoys: 2 PK 16 chaff launchers.
Weapons control: Hood Wink optronic director.
Radars: Air/surface search. Peel Cone, E-band.
Fire control: BassTilt (MP 123), H/I-band.
Navigation: Palm Frond B; I-band.
IFF: High Pole B. Square Head.
Sonars: Ret Tail; VDS, active search; high frequency

Comment: A class of attack craft for the Border Guard built at Vladivostok, St Petersburg and Yaroslavl. Series production after first of class trials in 1989. Although deliveries have been very slow in recent years, the class may still be building with the most recent launch in May 2000. A further two craft were delivered in 2007. One has a second AK 630 gun vice the 76 mm and no BassTilt radars. Six in the Northern Fleet, three in the Baltic, seven in the Pacific, two in the Caspian and two in the Black Sea are all known to be active. Two have been built for Vietnam. Three additional craft operated by the Navy.



PODOLSK

7/2008*, Hartmut Ehlers / 1353311

15 STENKA (TARANTUL) (PROJECT 205P) CLASS (FAST ATTACK CRAFT—PATROL) (PTF)

PSKR-714 014	PSKR-717 078	PSKR-641 133
PSKR-660 044	PSKR-712 132	PSKR-725 134
PSKR 700 047	PSKR-655 113	PSKR-631 137
PSKR-715 048	PSKR-657 126	PSKR-659 139
PSKR-718 053	PSKR-690 129	PSKR-723 143

Displacement, tons: 211 standard; 253 full load
Dimensions, feet (metres): 129.3 × 25.9 × 8.2 (39.4 × 7.9 × 2.5)
Main machinery: 3 Type M 517 or M 583 diesels; 14,100 hp(m) (10.36 MW); 3 shafts
Speed, knots: 37
Range, n miles: 800 at 24 kt; 500 at 35 kt; 2,300 at 14 kt
Complement: 25 (5 officers)
Guns: 4—30 mm/65 (2 twin) AK 230.
Torpedoes: 4—16 in (406 mm) tubes.
Depth charges: 2 racks.
Radars: Surface search: Pot Drum or Peel Cone; H/I or E-band
Fire control: Drum Tilt; H/I-band.
Navigation: Palm Frond; I-band
IFF: High Pole. 2 Square Head
Sonars: Stag Ear or Foal Tail, VDS; high frequency; Hormone type dipping sonar.

Comment: Based on the hull design of the Osa class. Construction started in 1967 and continued at a rate of about five a year at Petrovsky, Leningrad and Vladivostok for the Border Guard. Programme terminated in 1989 at a total of 133 hulls. Type name is *pogranichny storozhevoy korabl* meaning border patrol ship. Four based in the Baltic, five in the Black Sea, one in the Pacific, and five in the Caspian Sea. Transfers include: Cuba, two in February 1985 and one in August 1985. Four to Cambodia in October 1985 and November 1987. Five transferred to Azerbaijan control in November 1992 and 10 more to Ukraine.



STENKA

6/2000 / 0126309

1 + (3) SOKZHOI CLASS (PROJECT 14230) (PBF)

ALBATROS

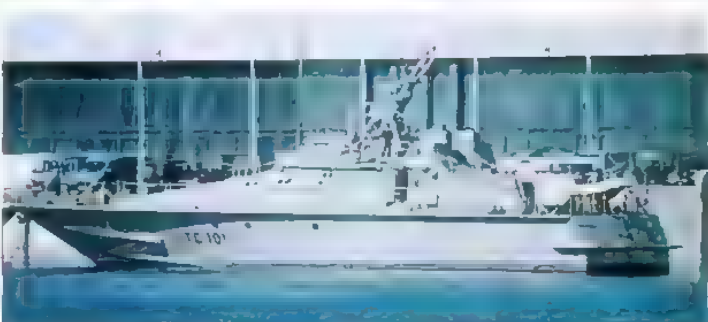
Displacement, tons: 977 full load
Dimensions, feet (metres): 114.8 × 25.7 × 6.6 (35.0 × 7.85 × 2.0)
Main machinery: 2 Zvezda M535 diesels; 9,923 hp(m) (7.4 MW) sustained; 2 shafts
Speed, knots: 50
Range, n miles: 800
Complement: 16
Guns: 2—30 mm AK-306, 1—14.5 mm MG.

Comment: First of a new class of patrol craft launched at Volga Yard, Nizhny Novgorod on 23 June 2000. A feature of the design is that an air-cushion is generated below the hull to produce a planing effect to reduce drag. The machine-gun is mounted in a barbettes in the forward part of the craft. Project 14232 is a family of high-speed air-cavem vessels based on a unified platform design developed by the Alekseyev Hydrofoil Design Bureau, Nizhny Novgorod. Other variants of the design have different superstructure configuration, armament and equipment. These include two unarmed vessels of the sister Project 14232 Mercury class (*Petr Matveyev* (TS-100) and *Pavel Vereshchagin* (TS-101)) built for the customs service at Yaroslavl between 1996-2000. Two more of this type ship are to be completed in Yaroslavl and Khabarovsk.



SOKZHOI CLASS

4/2006, Lemachko Collection / 1154854



PAVEL VERESHCHAGIN (Customs)

6/2003, E & M Laursen / 0570902

9 + (11) MIRAZH (PROJECT 14310) CLASS (PBF)

117 401 402 +6

Displacement, tons: 126 full load
Dimensions, feet (metres): 114.2 × 21.7 × 6.1 (34.8 × 6.6 × 1.95)
Main machinery: 2 Zvezda M-521 diesels; 16,184 hp(m) (11.9 MW); 2 shafts
Speed, knots: 48
Range, n miles: 1,500 at 8 kt
Complement: 12 (2 officers)
Guns: 1—30 mm AK 306.
 2—7.62 mm MGs
Radars: Surface search: I-band

Comment: Designed by Almaz and built by Vympel Shipbuilding, Rybinsk. Aluminium-magnesium alloy construction. Three vessels authorised for construction in 1993 but only first of class was completed in 1998. It entered service with the Border Guard in 2001 and has been based in the Caspian Sea. Nine craft are believed to be in service and a class of 20 craft is reported to be required.



MIRAZH

6/2006* / 1353313

12 ZHUK (GRIF) (PROJECT 1400/1400M) CLASS (COASTAL PATROL CRAFT) (PB)

PSKA series

Displacement, tons: 39 full load
Dimensions, feet (metres): 78.7 × 16.4 × 3.9 (24 × 5 × 1.2)
Main machinery: 2 Type M 401B diesels; 2,200 hp(m) (1.6 MW) sustained; 2 shafts
Speed, knots: 30
Range, n miles: 1,100 at 15 kt
Complement: 11 (3 officers)
Guns: 2—14.5 mm (twin, fwd) MGs, 1—12.7 mm (aft) MG
Radars: Surface search: Spin Trough; I-band.

Comment: Under construction from 1976. Manned by the Border Guard. Export versions have twin (over/under) 14.5 mm aft. Some have twin guns forward and aft. Ukraine Border Guard and has received 12 from the Russians. Eight are in the Baltic and four in the Black Sea. These are the last operational units.

Transfers: Algeria (one in 1981), Angola (one in 1977), Benin (four in 1978–80), Bulgaria (five in 1977), Cape Verde (one in 1980), Congo (three in 1982), Cuba (40 in 1971–88), Equatorial Guinea (three in 1974–75), Ethiopia (two in October 1982 and two in June 1990), Guinea (two in July 1987), Iraq (five in 1974–75), Cambodia (three in 1985–87), Mauritius (two in January 1990), Mozambique (five in 1978–80), Nicaragua (eight in 1982–88), Seychelles (one in 1981, one in October 1982), Somalia (one in 1974), Syria (six in 1981–84), Vietnam (nine in 1978–88 (at least one passed on to Cambodia), five in 1990 and two in 1995), North Yemen (five in 1978–87), South Yemen (two in 1975). Many have been deleted.



ZHUK 616

7/2008*, Hartmut Ehlers / 1353317

6 MANGUST (PROJECT 12150) CLASS (PBF)

VASILY ILYASHENKO ANDREY ROZHKOVA SVYATAYA KSENIYA +3

Displacement, tons: 28.7 standard
Dimensions, feet (metres): 64.0 × 15.1 × 3.8 (19.5 × 4.6 × 1.15)
Main machinery: 2 Zvezda M-470 diesels; 2 Arneson dive props
Speed, knots: 53
Range, n miles: 410 at 35 kt
Complement: 6
Guns: 2—14.5 mm MGs
Radars: Navigation: I-band

Comment: Prototype TS 300 built by Vympel, Rybinsk for the Customs service and completed in 1998. GRP construction. First Border Guard unit entered service in 2001. Further orders are expected.



MANGUST 601

6/2005, A Sheldon-Duplaix / 1164804

1 A-125 CLASS (PBF)

VALENTIN CHUJKIN

Displacement, tons: 26.0 full load
Dimensions, feet (metres): 57.7 × 13.8 × 3.3 (17.6 × 4.2 × 1.0)
Main machinery: 2 MTU 8V2000M90 diesels; 1,830 hp (1.34 MW); 2 waterjets
Speed, knots: 45
Complement: To be announced

Comment: Designed and built by Almaz, St Petersburg and delivered in 2004.



A-125

6/2005, A Sheldon-Duplaix / 1164803

27 TYPE 1496 CLASS (PBO)

Displacement, tons: 107 full load
Dimensions, feet (metres): 76.8 × 19.3 × 6.1 (23.4 × 5.9 × 1.9)
Main machinery: 1 diesel; 315 hp (230 kW); 1 shaft; fixed propeller
Speed, knots: 10
Range, n miles: 450 at 10 kt
Guns: 1—14.5 mm MG
Radars: Surface search/navigation: I-band.

Comment: Former tugs employed as patrol craft. Likely to be armed.



TYPE 1496

8/2006, Lemachko Collection / 1159858

0 + 1 PROJECT 22460 CLASS (PATROL SHIP) (PSO)

Displacement, tons: 630 full load
Dimensions, feet (metres): 205.0 × 7 × 7 (62.5 × 7 × 7)
Main machinery: To be announced
Speed, knots: 30
Range, n miles: 3,500 at 12 kt
Complement: 44
Helicopters: Platform for 1 medium.

Comment: First vessel of a new class of helicopter-capable patrol ships laid down at Almaz, St Petersburg on 3 September 2007.

17 KULIK (PROJECT 1415PV) CLASS (PB)

Displacement, tons: 54 full load
 Dimensions, feet (metres): 69.5 x 12.8 x 4.6 (21.2 x 3.9 x 1.4)
 Main machinery: 1 diesel; 300 hp (225 kW); 1 shaft
 Speed, knots: 12
 Range, n miles: 200 at 11 kt
 Complement: 4
 Radars: Navigation: I-band.

Comment: Harbour patrol craft built in the 1970/80s. Similar craft, known as the Flamingo class, built for the Navy



KULIK CLASS 6/2006, Lemachko Collection / 1305142

2 ENFORCER II CLASS (PATROL CRAFT) (PB)

Displacement, tons: 8.3 full load
 Dimensions, feet (metres): 37.3 x 9.8 x 2.9 (11.36 x 2.94 x 0.9)
 Main machinery: 2 Volvo Penta D9 diesels; 1,000 hp (736 kW); 2 Rolls Royce FF310 waterjets
 Speed, knots: 42
 Range, n miles: 200 at 30 kt
 Complement: 2

Comment: Built by Dockstarvarvet, Sweden, the craft are derived from the Combatboat 90 concept and are known as the HSPC 11.3M design. The aluminium construction craft are to be used for patrols on Russian inland waterways. Both delivered in June 2008.



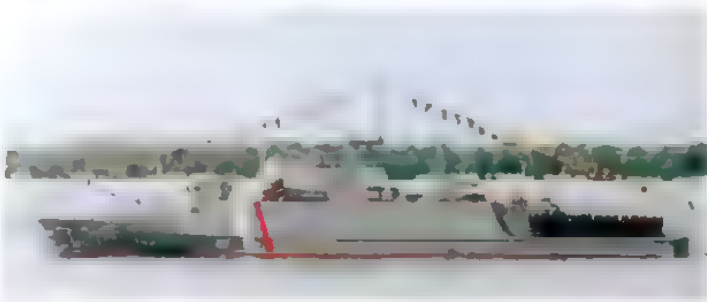
ENFORCER II 6/2008, Lemachko Collection / 1305320

8 PIYAVKA (PROJECT 1249) CLASS (PBR)

PSKR 62 117	PSKR 64 146	PSKR 56 093	PSKR 58 123
PSKR 53 065	PSKR 55 013	PSKR 57 058	PSKR 58 189

Displacement, tons: 229 full load
 Dimensions, feet (metres): 136.5 x 20.7 x 2.9 (41.6 x 6.3 x 0.9)
 Main machinery: 3 diesels; 3,300 hp(m) (2.42 MW); 2 shafts
 Speed, knots: 17
 Complement: 30 (4 officers)
 Guns: 1—30 mm/65 AK 630, 6 barrels. 2—14.5 mm (twin) MGs.
 Radars: Surface search: Spin Trough; I-band.

Comment: Built at Khabarovsk 1979–84. Based in Amur Flotilla mostly for logistic support.



PSKR 58 6/2003, Lemachko Collection / 01580529

3 OGONEK (PROJECT 12130) CLASS (PBR)

Displacement, tons: 98 full load
 Dimensions, feet (metres): 109.6 x 13.8 x 2.6 (33.4 x 4.2 x 0.8)
 Main machinery: 2 diesels; 2 shafts
 Speed, knots: 25
 Complement: 17 (2 officers)
 Guns: 2—30 mm AK 630.

Comment: A smaller version of the Piyavka class built at Khabarovsk from 1999. Numbers in service are uncertain.



OGONEK 4/2006, Lemachko Collection / 1159869

RIVER PATROL FORCES

Notes. Attached to Black Sea and Pacific Fleets for operations on the Danube, Amur and Usuri Rivers, and to the Caspian Flotilla

2 YAZ (SLEPEN) (PROJECT 1208) CLASS (PGR)

BLAGOVESHCHENSK 066	SHKVAL 106
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Displacement, tons: 440 full load
 Dimensions, feet (metres): 180.4 x 29.5 x 4.9 (55.9 x 9 x 1.5)
 Main machinery: 3 diesels; 11,400 hp(m) (8.39 MW); 3 shafts
 Speed, knots: 24
 Range, n miles: 1,000 at 10 kt
 Complement: 32 (4 officers)
 Guns: 2—115 mm tank guns (TB 62) or 100 mm/56.
 2—30 mm/65 AK 630; 6 barrels per mounting
 4—12.7 mm MGs (2 twin).
 2—40 mm mortars on after deckhouse
 Radars: Surface search: Spin Trough; I-band.
 Fire control: Bass Tilt; H/I-band.
 IFF: High Pole B. Square Head.

Comment: First entered service in Amur Flotilla 1978. Built at Khabarovsk until 1987. All but these last two have been placed in reserve.



BLAGOVESHCHENSK 6/1995, Lemachko Collection / 0570903

15 SHMEL (PROJECT 1204) CLASS (PGR)

PSKR series

Displacement, tons: 77 full load
 Dimensions, feet (metres): 90.9 x 14.1 x 3.9 (27.7 x 4.3 x 1.2)
 Main machinery: 2 Type M 50 diesels; 2,200 hp(m) (1.6 MW) sustained; 2 shafts
 Speed, knots: 25
 Range, n miles: 600 at 12 kt
 Complement: 12 (4 officers)
 Guns: 1—3 in (76 mm)/48 (tank turret). 1—25 mm/70 (later ships). 2—14.5 mm (twin) MGs (earlier ships). 5—7.62 mm MGs. 1 BP 6 rocket launcher, 18 barrels.
 Mines: Can lay 9.
 Radars: Surface search: Spin Trough; I-band

Comment: Completed at Kerch and Nikolayev North (81 Kommuna) 1967–74. Some of the later ships also mount one or two multibarrelled rocket launchers amidships. The 7.62 mm guns fire through embrasures in the superstructure with one mounted on the 76 mm. Can be carried on land transport. Type name is *artilleriskiy kater* meaning artillery cutter. About 70 have been scrapped or laid up so far including the last naval units. These last survivors are based on the Amur River and belong to the Border Guard. Transfers: Four to Cambodia (1984–85) (since decommissioned). Some have been taken over by Belorussian forces, and others allocated to Ukraine



SHMEL 6/2000, Lemachko Collection / 0106875

706 Russian Federation (BORDER GUARD)/River patrol forces — Amphibious forces

4 VOSH (MOSKIT) (PROJECT 1248) CLASS (PGR)

STORM 148 GROZA 057 KHABAROVSK 137 SHKVAL 138

Displacement, tons: 229 full load
Dimensions, feet (metres): 140.1 × 20.7 × 3.3 (42 × 6.3 × 1)
Main machinery: 3 diesels, 3,300 hp(m) (2.42 MW); 3 shafts
Speed, knots: 17
Complement: 34 (3 officers)
Guns: 1—3 in (76 mm)/48 (tank turret); 1—30 mm/65 AK 630; 2—12.7 mm (twin) MGs.
Countermeasures: 1 twin barrel decoy launcher.
Radars: Surface search: Spin Trough; I-band.

Comment: Built at Sretensk on the Shilka river 1980–84. Based on Amur River. Same hull as P.yavka



KHABAROVSK

3/2006, Lemachko Collection / 1159857

15 SAYGAK (PROJECT 14081/14081M) CLASS (PBF)

Displacement, tons: 115 full load
Dimensions, feet (metres): 45.9 × 11.5 × 2.1 (14.0 × 3.5 × 0.65)
Main machinery: 1 Zvezda M-401B diesel, 1,000 hp (746 kW); 1 waterjet
Speed, knots: 38
Range, n miles: 135 at 35 kt
Complement: 2 plus 8
Radars: Navigation: I-band.

Comment: Built by Kama Zavod, Perm and entered service 1986–2000. Used for riverine and lake patrol. Others are used by the Customs service.



SAYGAK 069

7/2006, Lemachko Collection / 1159668

AUXILIARIES

10 NEON ANTONOV (PROJECT 1595) CLASS (TRANSPORTS) (AK)

VASILY SUNTZOV 154 MIKHAIL KONOVALOV 184 DVINA 199
 VYACHESLAV DENISOV 178 SERGEY SUDETSKY 143 NEON ANTONOV 124
 IVAN YEVTEYEV 105 NIKOLAY SIPYAGIN 063
 IVAN LEDNEV 115 NIKOLAY STARSHINOV 119

Displacement, tons: 6,400 full load
Dimensions, feet (metres): 311.7 × 48.2 × 21.3 (95 × 14.7 × 6.5)
Main machinery: 2 diesels, 7,000 hp(m) (5.15 MW); 2 shafts
Speed, knots: 17
Range, n miles: 8,500 at 13 kt
Complement: 45
Cargo capacity: 2,500 tons
Missiles: SAM: 2 SA-N-5 Grail twin launchers; manual aiming; IR homing to 6 km (3.2 n miles) at 1.5 Mach; altitude to 2,500 m (8,000 ft); warhead 1.5 kg
Guns: 2—30 mm/65 (twin); 4—14.5 mm (2 twin) MGs, 4—12.7 mm MGs.
Radars: Navigation: Don Kay; Spin Trough or Palm Frond; I-band.

Comment: Ten of the class built at Nikolayev from 1975 to early 1980s. All in the Pacific except *Dvina* and *Irbis* which are operated by the Russian Navy. Have two small landing craft aft. Armament is not normally mounted.



MIKHAIL KONOVALOV

5/2006, Lemachko Collection / 1159872

6 KANIN CLASS (PROJECT 16900A) (AKL)

CHANTIY-MANSISK ARCHANGELSK URENGOY
 JURGA KANIN ANATOLY SHILINSKY

Displacement, tons: 920 full load
Dimensions, feet (metres): 149.6 × 28.9 × 8.2 (45.6 × 8.8 × 2.5)
Main machinery: 2 diesels, 800 hp(m) (558 kW); 2 shafts
Speed, knots: 9
Range, n miles: 3,500 at 9 kt
Complement: 22

Comment: Built in the Pacific since 1996 for the Border Guard. Others may be building for commercial service. Ice reinforced bows for Arctic service. *Chantiy-Mansisk* based in the Black Sea.



CHANTIY-MANSISK

7/2007, Lemachko Collection / 1353314

1 BASKUNCHAK CLASS (PROJECT 1545) (AO)

SOVETSKIY POGRANICHNIK 102

Displacement, tons: 1,260 standard; 2,940 full load
Dimensions, feet (metres): 274.3 × 39.4 × 16.1 (83.6 × 12.0 × 4.9)
Main machinery: 1 diesel, 2,000 hp (1.49 MW); 1 shaft
Speed, knots: 13
Range, n miles: 5,000 at 12 kt
Complement: 30
Radars: Navigation: 1 Don-2; I-band

Comment: Built at Zaliv Shipyard, Kerch, and completed in about 1968. Has ice-reinforced bow and is based in the Pacific.



SOVETSKIY POGRANICHNIK

6/2005, Lemachko Collection / 1159248

AMPHIBIOUS FORCES

4 CZILIM (PROJECT 20910) CLASS (ACV/UCAC)

Displacement, tons: 8.6 full load
Dimensions, feet (metres): 39.4 × 19 (12 × 5.8)
Main machinery: 2 Deutz BF 6M 1013 diesels, 435 hp(m) (320 kW) sustained; for lift and propulsion
Speed, knots: 40
Range, n miles: 300 n miles at 30 kt
Complement: 2 + 6 Border Guard
Guns: 1 762 mm MG 1 40 mm RPG.
Radars: Navigation; I-band.

Comment: Ordered from Jaroslowski Sudostroitelnyj Zavod to an Almaz design for Special Forces of the Border Guard. First one laid down 24 February 1998 and in service in early 2001. Further vessels are expected.



CZILIM

6/2001, S Brayer / 0176719

7 TSAPLYA (MURENA) (PROJECT 12061) CLASS (ACV)

DK-143 659 DK-453 668 DK-285 680 DK-447 699
 DK-259 665 DK-323 670 DK-458 688

Displacement, tons: 149 full load
Dimensions, feet (metres): 103.7 x 47.6 x 5.2 (31.6 x 14.5 x 1.6)
Main machinery: 2 MT-70M gas turbines for lift and propulsion; 8,000 hp (5.88 MW)
Speed, knots: 50
Range, n miles: 500 at 50 kt
Complement: 11 (3 officers) + 100 troops
Guns: 2–300 mm AK 306M. 2–30 mm grenade launchers. 2–12.7 mm MGs.

Comment: Larger version of the Lebed class designed for river patrol. Built at Khabarovsk between 1987 and 1992. Operated on Amur river system.



TSAPLYA
 6/2003, Lemachko Collection
 0560747

St Kitts and Nevis



Country Overview

The Federation of St Kitts and Nevis gained independence in 1983; the British monarch, represented by a governor-general, is the head of state. Located at the northern end of the Leeward Islands in the Lesser Antilles chain, the country comprises St Kitts (formerly Saint Christopher)

(68 square miles) and, 2 n miles to the southeast, Nevis (36 square miles). The constitution allows for the secession of Nevis from the federation. The capital of St Kitts and of the federation is Basseterre; Charlestown is the capital and largest town on Nevis. Territorial seas (12 n miles) are claimed. A 200 n mile Exclusive Economic Zone (EEZ) has been claimed but the limits

are not defined. The Coast Guard was part of the Police Force until 1997 when it transferred to the Regular Corps of the Defence Force

Bases

Basseterre

Headquarters Appointments

Commanding Officer Coast Guard:
 Lieutenant Colonel Patrick Wallace

Personnel

2009: 45

COAST GUARD

Notes. (1) There is a 40 kt RIB number C 420.
 (2) A 920 Zodiac RHIB was donated by the US government in 2003.

1 SWIFTSHIPS 110 ft CLASS (PB)

STALWART C 253

Displacement, tons: 100 normal
Dimensions, feet (metres): 116.5 x 25 x 7 (35.5 x 7.6 x 2.1)
Main machinery: 4 Detroit 12V-71TA diesels; 1,680 hp (1.25 MW) sustained, 4 shafts
Speed, knots: 21
Range, n miles: 1,800 at 15 kt
Complement: 14
Guns: 2–12.7 mm MGs. 2–7.62 mm MGs.
Radars: Surface search: Raytheon; I-band.
Navigation: Furuno; I-band

Comment: Built by Swiftships, Morgan City, and delivered August 1985. Aluminium alloy hull and superstructure.



STALWART 3/1998 0053089

1 DAUNTLESS CLASS (PB)

ARDENT C 421

Displacement, tons: 11 full load
Dimensions, feet (metres): 40 x 14 x 4.3 (12.2 x 4.3 x 1.3)
Main machinery: 2 Caterpillar 3208TA diesels, 870 hp (650 kW); 2 shafts
Speed, knots: 27
Range, n miles: 600 at 18 kt
Complement: 4
Guns: 1–7.62 mm MG.
Radars: Surface search: Raytheon; I-band.

Comment: Built by SeaArk Marine under FMS funding and commissioned 8 August 1995. Aluminium construction.



ARDENT 8/1996, St Kitts-Nevis Police / 0081725

1 FAIREY MARINE SPEAR CLASS (PB)

RANGER I

Displacement, tons: 4.3 full load
Dimensions, feet (metres): 29.8 x 9.5 x 2.8 (9.1 x 2.8 x 0.9)
Main machinery: 2 Ford Mermaid diesels; 360 hp (268 kW); 2 shafts
Speed, knots: 20
Complement: 2
Guns: Mountings for 2–7.62 mm MGs.

Comment: Ordered for the police in June 1974 and delivered 10 September 1974. Refitted 1986. Considerably slower than when new but still in service.



RANGER I 1992, St Kitts-Nevis Police / 0081726

2 BOSTON WHALERS (PBF)

ROVER I C 087 ROVER II C 088

Displacement, tons: 3 full load
 Dimensions, feet (metres): 22 x 7.5 x 2 (6.7 x 2.3 x 0.6)
 Main machinery: 1 Johnson outboard; 223 hp (166 kW)
 Speed, knots: 35
 Range, n miles: 70 at 35 kt
 Complement: 2

Comment: Delivered in May 1988.

ROVER I
 1990, St Kitts-Nevis Police
 0081127



St Lucia

Country Overview

St Lucia gained independence in 1979; the British monarch, represented by a governor-general, is the head of state. The island (238 square miles) is one of the Windward Islands of the Lesser Antilles

chain and is located between Martinique to the north and St Vincent to the south. The capital, main town and principal port is Castries, on the northwestern coast. Territorial seas (12 n miles) are claimed. Exclusive Economic Zone (EEZ) limits will not be fully defined until outstanding

boundary disagreements have been resolved.

Bases

Castries, Vieux-Fort

Headquarters Appointments

Personnel

Coast Guard Commander:
 Assistant Superintendent Winston Mitille

2009: 47

COAST GUARD

1 POINT CLASS (PB)

ALPHONSE REYNOLDS (ex-Point Turner) P 01 (ex-WPB 82365)

Displacement, tons: 66 full load
 Dimensions, feet (metres): 83 x 17.2 x 5.8 (25.3 x 5.2 x 1.8)
 Main machinery: 2 Caterpillar 3412 diesels; 1,600 hp (1.19 MW); 2 shafts
 Speed, knots: 23
 Range, n miles: 1,500 at 8 kt
 Complement: 10
 Guns: 2—12.7 mm MGs.
 Radars: Surface search: Raytheon SPS-64(V)1; I-band.

Comment: Ex-US Coast Guard ship transferred on 3 April 1998. Originally built at Curtis Bay and first commissioned 14 April 1967.



ALPHONSE REYNOLDS 12/2004, Margaret Organ / 1042343

1 SWIFT 65 ft CLASS (PB)

DEFENDER P 02

Displacement, tons: 42 full load
 Dimensions, feet (metres): 64.9 x 18.4 x 6.6 (19.8 x 5.6 x 2)
 Main machinery: 2 Detroit 12V-71 diesels; 680 hp (507 kW, sustained); 2 shafts
 Speed, knots: 22
 Range, n miles: 1,500 at 18 kt
 Complement: 7
 Radars: Surface search: Furuno; I-band.

Comment: Ordered from Swiftships, Morgan City in November 1983. Commissioned 3 May 1984. Similar to craft supplied to Antigua and Dominica. Painted grey instead of original blue and white.



DEFENDER 10/1999, St Lucia CG / 0081729

1 DAUNTLESS CLASS (PB)

PROTECTOR P 04

Displacement, tons: 11 full load
 Dimensions, feet (metres): 40 x 14 x 4.3 (12.2 x 4.3 x 1.3)
 Main machinery: 2 Caterpillar 3208TA diesels; 870 hp (650 kW); 2 shafts
 Speed, knots: 27
 Range, n miles: 600 at 18 kt
 Complement: 4
 Radars: Surface search: Raytheon; I-band.

Comment: Ordered October 1994. Built by SeaArk Marine under FMS funding and commissioned 9 October 1995.



PROTECTOR 8/2008, St Lucia CG / 1335425

4 HARBOUR CRAFT (PB)

P 03 P 05 P 06 P 07

Comment: P 03 is a 9 m Zodiac 920 RHIB donated by the United States in 2004. P 05 is a 35 kt Hurricano RIB acquired in June 1993 and P 06 and P 07 are 45 kt Mako craft acquired in November 1995.



P 05 8/2008, St Lucia CG / 1335474

St Vincent and the Grenadines



Country Overview

St Vincent and the Grenadines gained independence in 1979; the British monarch, represented by a governor-general, is the head of state. Lying between St Lucia to the north and Grenada to the south, they form part of the Windward Islands in the Lesser Antilles chain and comprise the

island of St Vincent (133 square miles) and the 32 northernmost islands and cays of the Grenadines group including (north to south): Bequia, Mustique, Canouan, Mayreau, Union Island, Palm (formerly Prune) Island, and Petit St Vincent. The capital, largest town, and principal port is Kingstown, St Vincent. An archipelagic state, territorial seas (12 n miles) are claimed.

A 200 n mile Exclusive Economic Zone (EEZ) has been claimed but the limits are not defined.

Bases

Callirqua, Bequia, Union Island

Headquarters Appointments

Coast Guard Commander:
Brenton Cain

Personnel

2009: 84

COAST GUARD

1 SWIFTSHIPS 120 ft CLASS (PB)

CAPTAIN MULZAC SVG 01

Displacement, tons: 101
Dimensions, feet (metres): 120 x 25 x 7 (36.6 x 7.6 x 2.1)
Main machinery: 4 Detroit 12V-71TA diesels; 1,360 hp (1.01 MW) sustained; 4 shafts
Speed, knots: 21
Range, n miles: 1,800 at 15 kt
Complement: 14 (4 officers)
Guns: 2 12.7 mm MGs 2— 7.62 mm MGs.
Radars: Surface search: Furuno 1411 Mk II; I/J-band.

Comment: Ordered in August 1986. Built by Swiftships, Morgan City and delivered 13 June 1987. Aluminium construction. Carries a RIB with a 40 hp outboard.



CAPTAIN MULZAC

6/1994, St Vincent Coast Guard / 0081730

1 DAUNTLESS CLASS (PB)

HAIROUN SVG 04

Displacement, tons: 11 full load
Dimensions, feet (metres): 40 x 14 x 4.3 (12.2 x 4.3 x 1.3)
Main machinery: 2 Caterpillar 3208TA diesels, 870 hp (650 kW); 2 shafts
Speed, knots: 27
Range, n miles: 600 at 18 kt
Complement: 4
Guns: 1 7.62 mm MG.
Radars: Surface search: Raytheon; I-band.

Comment: Ordered October 1984. Built by SeaArk Marine under FMS funding and commissioned 8 June 1995. Aluminium construction. The craft was refitted in late 2008.



HAIROUN

7/1997, 0019087

4 HARBOUR CRAFT (PB)

SVG 03 SVG 06 SVG 07 H K TANNIS SVG 10

Comment: SVG 03 is a 30 kt Zodiac RIB. SVG 06, acquired in 2008, is a 7.5 m RHIB. SVG 07, acquired in 2003, is a 9 m RHIB. H K Tannis is a 13.5 m RHIB with waterjet propulsion. It was acquired in 2005.



SVG 07

6/2008*, St Vincent Coast Guard / 1335426



H K TANNIS

6/2008*, St Vincent Coast Guard / 1335427

Samoa



Country Overview

Samoa was a New Zealand-administered UN Trust territory until it became independent in 1962. At the same time a Treaty of Friendship delegated responsibility to New Zealand for foreign affairs. An island nation, it lies in the south Pacific Ocean, approximately midway between Hawaii and New Zealand, in the western portion of the Samoan archipelago. There are two main islands, Savai'i and Upolu, and several smaller islands, of which only two,

Apolima and Manono, are inhabited. The capital and chief port is Apia on Upolu. An archipelagic state, territorial seas (12 n miles) are claimed. An Exclusive Economic Zone (EEZ) (200 n miles) is also claimed but limits have not been fully defined by boundary agreements.

Headquarters Appointments

Head of Police Maritime Division:
Commissioner Papali'i Lorenese Neru

Headquarters Appointments — continued

Maritime Surveillance Advisor:
Commander A R Powell, RAN

Bases

Apia

PATROL FORCES

1 PACIFIC CLASS (LARGE PATROL CRAFT) (PB)

Name	No	Builders	Commissioned
NAFANUA	–	Australian Shipbuilding Industries	5 Mar 1988

Displacement, tons: 165 full load
Dimensions, feet (metres): 103.3 × 26.6 × 6.9 (31.5 × 8.1 × 2.1)
Main machinery: 2 Caterpillar 3516TA diesels; 4,400 hp (3.28 MW) sustained; 2 shafts
Speed, knots: 20
Range, n miles: 2,500 at 12 kt
Complement: 17 (3 officers)
Guns: 2–7.62 mm MGs.
Radars: Surface search; Furuno FR 1510; I-band.

Comment: Under the Defence Co-operation Programme Australia has provided 22 Pacific class patrol craft to Pacific islands. Training, operational and technical assistance is provided by the Royal Australian Navy. *Nafanua* ordered 3 October 1985. Refitted in 1995. Following the decision by the Australian government to extend the Pacific Patrol Boat programme, a life-extension refit was undertaken at Townsville in 2005.



NAFANUA

6/2005, Samoa Police / 1177871



Saudi Arabia

Country Overview

The Kingdom of Saudi Arabia occupies most of the Arabian Peninsula and is bordered to the north by Jordan, Iraq, and Kuwait, to the south by Oman and the Republic of Yemen and to the east by Qatar and the United Arab Emirates. With an area of 864, 869 square miles, it has coastlines with the Red Sea (972 n miles) and the Gulf (454 n miles). The capital and largest city is Riyadh while the principal ports are Jiddah and Yanbu al Bahr on the Red Sea, and the major oil-exporting ports of Al Jabsyl, Ad Dammam, and Ras Tanura on the Gulf. Territorial seas (12 n miles) are claimed. An EEZ has not been claimed.

Headquarters Appointments

Chief of Naval Staff
 H H Vice Admiral Prince Fahad Bin Abdulrah Bin Mohammed Al Saud
Commander Eastern Fleet
 Rear Admiral Mohammad Abdul Khalij Al Asseri
Commander Western Fleet
 Rear Admiral Dakheel Allah Ahmed Al-Wakdani
Director Frontier Force (Coast Guard)
 Lieutenant General Mujib bin Muhammad Al-Qahtani

Personnel

(a) 2009: 15,500 officers and men (including 3,000 marines)
 (b) Voluntary service

Bases

Naval HQ: Riyadh
 Main bases: Jiddah (HQ Western Fleet), Al Jubail (HQ Eastern Fleet), Aziziah (Coast Guard), Jizan (Red Sea)
 Minor bases (Naval and Coast Guard): Ras Tanura, Al Dammam, Yanbu Al Bahr, Ras al-Mishab, Al Wajh, Al Qatif, Haqi, Al Sharmah, Qizen, Duba

General

Funding for the Navy has the lowest defence service priority. New programmes are slow to come forward, and the operational status of existing ships is variable.

Command and Control

The USA provided an update of command and control capabilities during the period 1991–95, including a commercial datalink to improve interoperability.

Coast Defence

Truck-mounted Otomat batteries.

Coast Guard

Part of the Frontier Force under the Minister for Defence and Aviation. 5,500 officers and men. It is not always clear which ships belong to the Navy and which to the Coast Guard.

Strength of the Fleet

Type	Active	Building
Frigates	7	–
Corvettes—Missile	4	–
Fast Attack Craft—Missile	9	–
Patrol Craft	56	–
Minehunters	3	–
Minesweepers—Coastal	4	–
Replenishment Tankers	2	–

SUBMARINES

Notes: (1) Orders for patrol submarines are a low priority although training has been done in France and Pakistan.
 (2) Interest has been shown in the acquisition of Midget Submarines.

FRIGATES

Notes: The programme to replace the Madina-class frigates is expected to make progress in 2009. A requirement for up to six ships is reported. Principal contenders are likely to be French FREMM class and one of the US Littoral Combat Ship variants.

3 AL RIYADH (MODIFIED LA FAYETTE) CLASS (TYPE F-3000S) (FFGHM)

Name	No	Builders	Laid down	Launched	Commissioned
AL RIYADH	812	DCN, Lorient	29 Sep 1999	1 Aug 2000	26 July 2002
MAKKAH	814	DCN, Lorient	26 Aug 2000	20 July 2001	3 Apr 2004
AL DAMMAM	816	DCN, Lorient	26 Aug 2001	7 Sep 2002	23 Oct 2004

Displacement, tons: 4,650 full load
Dimensions, feet (metres): 438.43 × 56.4 × 13.5 (133.6 × 17.2 × 4.1)
Main machinery: CODAD; 4 SEMT-Pielstick 18 PA6 STC diesels; 28,000 hp (m) (20.58 MW) sustained; 2 shafts; LIPS cp props, bow thruster
Speed, knots: 25. **Range, n miles:** 7,000 at 15 kt
Complement: 181 (25 officers); accommodation for 190

Missiles: SSM, 8 Aerospatiale MM 40 Block II Exocat ●, inertial cruise; active radar homing to 70 km (40 n miles) at 0.8 Mach; warhead 165 kg; sea-skimmer
SAM: Eurosam SAAM ●; 2 octuple Sylver A43 VLS for Aster 15; command guidance active radar homing to 15 km (8.1 n miles) anti-missile, at 30 km (16.2 n miles) anti-aircraft, 16 missiles.

Guns: 1 OTO Melara 3 in (76 mm)/62 Super Rapid ●, 120 rds/min to 16 km (8.7 n miles); weight of shell 6 kg.
 2 Gat 158 20 mm ●; 800 rds/min to 3 km; weight of shell 0.1 kg.
 2–12.7 mm MGs

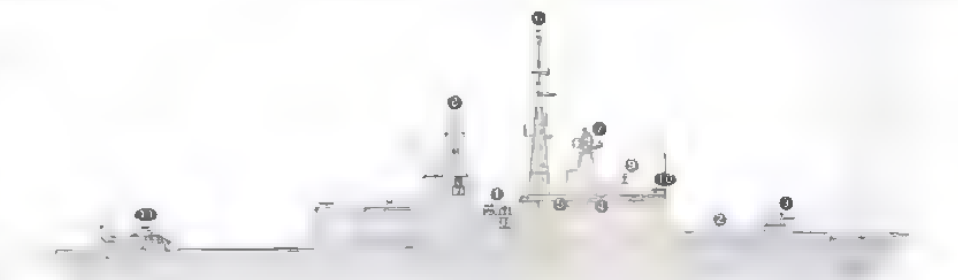
Torpedoes: 4–21 in (533 mm) tubes; ECAN F17P; anti-submarine; wire-guided active/passive homing to 20 km (10.8 n miles) at 40 kt; warhead 250 kg.

Countermeasures: Decoys: 2 Matra Degaie Mk 2 ●; 10-barrelled trainable launchers; chaff and IR flares. SLAT anti-wake homing torpedoes system (when available).
RESM: Thomson-CSF (DR 3000-S2) ●; intercept. Sagem Telegon 10.

CESM: Thales Altesse; intercept.
ECM: 2 Thales Salamandre, jammers.

Combat data systems: Thales Senit 7.

Weapons control: Thales Castor II radar/EO tracker
Radars: Air search: Thales DRBV 26C Jupiter II ●; D-band. Surveillance/Fire control: Thomson-CSF Arabel 3D ●; I/J-band.



AL RIYADH

(Scale 1 : 1,200), Ian Sturton / 1044430

Fire control: Thomson-CSF Castor II UJ ●; J-band; range 15 km (8 n miles) for 1 m² target.
Navigation: 2 Racal Decca 1226 ●; I-band A second set fitted for helicopter control.

Sonars: Thomson Marconi CAPTAS 20; active low frequency; towed array

Helicopters: 1 Dauphin 2 ●.

Programmes: A provisional order was made on 11 June 1989, but this was not finally confirmed until 19 November 1994 when a contract for two ships was authorised under the Sawari II programme. Thomson-CSF was the prime contractor. On 25 May 1997 an order for a third ship was placed together with a substantial enhancement of the weapon systems in all three. First steel cut 13 December 1997. Following handover, 812 started an eight month training programme

which concluded in March 2003. 814 started sea trials on 9 September 2002 and 816 in mid-2003. SAM successfully tested in 816 in April 2004.

Structure: The design is a development of the French La Fayette class. Some 10 m longer, space and weight included for two more octuple SAM launchers or A50 launcher for Aster 30. Provision is made for a larger NH 90 type helicopter in the future. DCN Samahe helo handling system STAF stabilisers. Originally planned to be fitted with a 100 mm gun, the contract was amended to incorporate a 76 mm mounting instead.

Operational: OTHT link for helicopters and Air Force F-15s. *Makkah* seriously damaged in a grounding incident 80 miles north of Jiddah in December 2004. The ship was refloated by the Tsaviris Salvage Group in early 2005 and was towed to Jiddah. However, in view of the severity of damage, the ship is unlikely to be repaired.



MAKKAH

3/2004, B Prézellin / 1044457



AL DAMMAM

5/2004, B Prézellin / 1044498



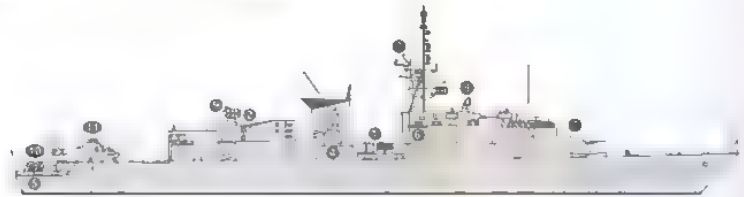
AL RIYADH

3/2006 / 1167506

4 MADINA (TYPE F 2000S) CLASS (FFGHM)

Name	No	Builders	Laid down	Launched	Commissioned
MADINA	702	Lorient (DTCN)	15 Oct 1981	23 Apr 1983	4 Jan 1985
HOFOUF	704	CNIM, Seyne-sur-Mer	14 June 1982	24 June 1983	31 Oct 1985
ABHA	706	CNIM, Seyne-sur-Mer	7 Dec 1982	23 Dec 1983	4 Apr 1986
TAIF	708	CNIM, Seyne-sur-Mer	1 Mar 1983	25 May 1984	29 Aug 1986

Displacement, tons: 2,000 standard; 2,870 full load
Dimensions, feet (metres): 377.3 × 41 × 16 (sonar) (115 × 12.5 × 4.9)
Main machinery: CODAD; 4 SEMT-Pielstick 16 PA6 280V BTC diesels; 38,400 hp/m (28 MW) sustained; 2 shafts
Speed, knots: 30
Range, n miles: 8,000 at 15 kt; 6,500 at 18 kt
Complement: 179 (15 officers)
Missiles: SSM: 8 OTO Melara/Metra Otomat Mk 2 (2 quad) ●; active radar homing to 160 km (86.4 n miles) at 0.9 Mach; warhead 210 kg; sea-skimmer for last 4 km (2.2 n miles). ERATO system allows mid-course guidance by ship's helicopter
SAM: Thomson-CSF Crotale Naval octuple launcher ●; command line of sight guidance; radar/IR homing to 13 km (7 n miles) at 2.4 Mach; warhead 14 kg, 26 missiles.
Guns: 1 Creusot-Loire 3.9 in (100 mm)/56 compact Mk 2 ●; 20/45/90 rds/min to 17 km (9.3 n miles) weight of shell 13.5 kg
 4 Breda 40 mm/70 (2 twin) ●; 300 rds/min to 12.5 km (6.8 n miles); weight of shell 0.96 kg.
Torpedoes: 4 – 21 in (533 mm) tubes ● ECAN F17P; anti-submarine; wire-guided; active/passive homing to 20 km (10.8 n miles) at 40 kt, warhead 250 kg
Countermeasures: Decoys: CSEE Dagaie double trainable mounting ●; IR flares and chaff; H/J-band
ESM: Thomson-CSF DR 4000; intercept, HF/DF
ECM: Thomson-CSF Janet; jammer.



(Scale 1 : 1,200), Ian Sturton, 0506097

MADINA

Combat data systems: Thomson-CSF TAVITAC action data automation, capability for Link W.
Weapons control: Vega system. 3 CSEE Neja optronic directors. Alcatel DLT for torpedoes.
Radars: Air/surface search/IFF: Thomson-CSF Sea Tiger (DRBV 15) ●; E/F-band; range 110 km (60 n miles) for 2 m² target
 Navigation: 2 Racal Decca TM 1226, I-band.
 Fire control: Thomson-CSF Castor IIB/C ●; I/J-band, range 15 km (8 n miles) for 1 m² target
 Thomson-CSF DRBC 32 ●; I/J-band (for SAM)
Sonars: Thomson Sintra Diodon TSM 2630, hull-mounted, active search and attack with integrated Soral VDS ●, 11, 12 or 13 kHz.

Helicopters: 1 SA 365F Dauphin 2 ●.

Programmes: Ordered in 1980, the major part of the Sawari I contract. Agreement for France to provide supplies and technical help

Modernisation: The class have been upgraded by DCN Toulon. Madina completed in April 1997. Hofouf in mid 1998. Abha in late 1999, and Taif in March 2000. Improvements included updating TAVITAC, Otomat missiles, both sonars and fitting a Samahé 110 helo handling system

Structure: Fitted with Snach/Saphir folding fin stabilisers.
Operational: Navigation: CSEE Syloset. Helicopter can provide mid-course guidance for SSM. All based at Jiddah. Only a few weeks a year are spent at sea.



TAIF

6/2002 / 05/6835



HOFOUF

3/2006 / 116707

CORVETTES

4 BADR CLASS

Name	No	Builders	Laid down	Launched	Commissioned
BADR	612	Tacoma Boatbuilding Co, Tacoma	6 Oct 1979	26 Jan 1980	30 Nov 1980
AL YARMOOK	614	Tacoma Boatbuilding Co, Tacoma	3 Jan 1980	13 May 1980	18 May 1981
HITTEEN	616	Tacoma Boatbuilding Co, Tacoma	19 May 1980	5 Sep 1980	3 Oct 1981
TABUK	618	Tacoma Boatbuilding Co, Tacoma	22 Sep 1980	18 June 1981	10 Jan 1983

Displacement, tons: 870 standard; 1,038 full load

Dimensions, feet (metres): 245 × 31.5 × 8.9
(74.7 × 9.6 × 2.7)

Main machinery: CODOG; 1 GE LM 2500 gas turbine; 23,000 hp (17.2 MW) sustained; 2 MTU 12V 652 TB91 diesels; 3,470 hp (im) (2.55 MW) sustained; 2 shafts, cp props

Speed, knots: 30 gas, 20 diesels

Range, n miles: 4,000 at 20 kt

Complement: 58 (7 officers)

Missiles: SSM 8 McDonnell Douglas Harpoon (2 quad) launchers; active radar homing to 130 km (70 n miles) at 0.9 Mach, warhead 227 kg

Guns: 1 FMC/OTO Melara 3 in (76 mm)/62 Mk 75 Mod 0

85 rds/min to 16 km (8.7 n miles); weight of shell 6 kg.

1 General Electric/General Dynamics 20 mm 6-barrelled Vulcan Phalanx; 3,000 rds/min combined to 2 km.

2 Oerlikon 20 mm/80

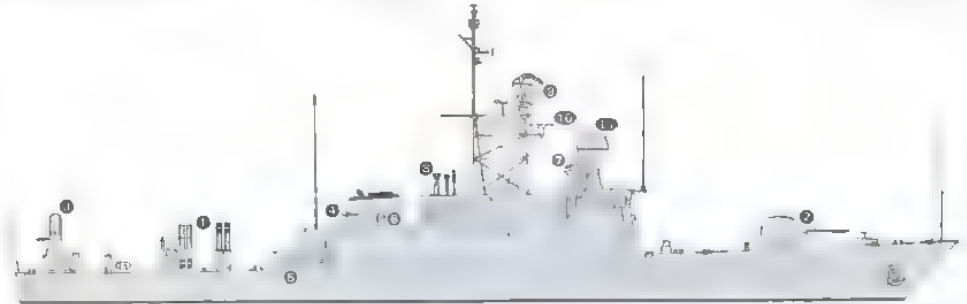
1—81 mm mortar. 2—40 mm Mk 19 grenade launchers.

Torpedoes: 6—324 mm US Mk 32 (2 triple) tubes

Honeywell Mk 46, anti-submarine; active/passive homing to 11 km (5.9 n miles) at 40 kt; warhead 44 kg.

Countermeasures: Decoys: 2 Loral Hycor SRBOC 6-barrelled fixed Mk 36; IR flares and chaff to 4 km (2.2 n miles)

ESM: SLC-32(V)1; intercept



BADR

(Scale 1 : 600), Ian Sturton / 0606250

Weapons control: Mk 24 optical director; Mk 309 for torpedoes. Mk 92 Mod 5 GFCS. FSI Safire FLIR

Radars: Air search: Lockheed SPS-40B; B-band; range 320 km (175 n miles).

Surface search: ISC Cardon SPS-55; I/J-band.

Fire control: Sperry Mk 92; I/J-band.

Sonars: Raytheon SQS-56 (DE 1164); hull-mounted; active search and attack; medium frequency.

Modernisation: Refitting done in Saudi Arabia with US assistance. FLIR being fitted from 1998.

Structure: Fitted with fin stabilisers.

Operational: All based at Al Jubail on the east coast and spend little time at sea.



AL YARMOOK

2/1997, van Ginderen Collection / 0019085

SHIPBORNE AIRCRAFT

Notes: Procurement of a new shipborne helicopter is under consideration. Up to 10 are required for deployment to the Al Riyadh class frigates and for other tasks.

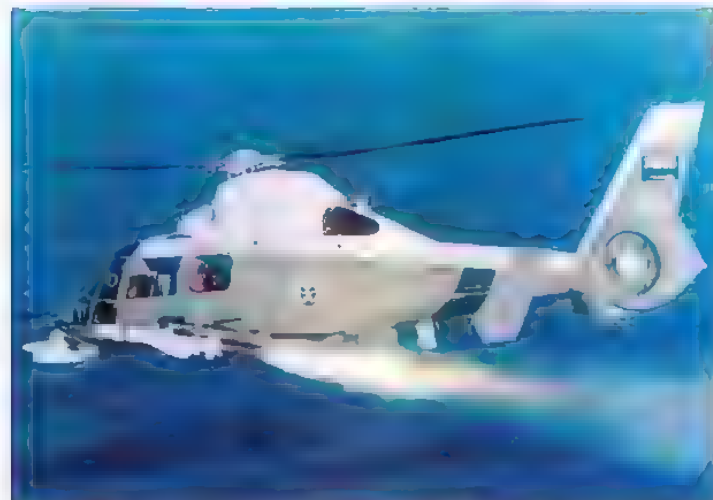
Numbers/Type: 15/6 Aerospatiale AS 565SA 2/365N Dauphin 2

Operational speed: 140 kt (260 km/h).

Service ceiling: 15,000 ft (4,575 m).

Range: 410 n miles (758 km).

Role/Weapon systems: AS 565SA is the ASV/ASW helicopter; procured for embarked naval aviation force; surface search/attack is the primary role. Sensors: Thomson-CSF Agrion 15 radar; Crouzet MAD. Weapons: ASV; four AS/15TT missiles; ASW; 2 Mk 46 torpedoes. AS 365N is for SAR and is operated by the Armed Forces Medical Services. Sensors: Omera DRB 32 search radar. Weapons: Unarmed.



DAUPHIN 2

4/2002, Aerospatiale / 0093197

LAND-BASED MARITIME AIRCRAFT

Notes: (1) Six P-3C Orion or CASA CN-235 patrol aircraft may be acquired in due course. (2) Five Boeing E3-A AEW aircraft in service with Air Force.

Numbers/Type: 12 Aerospatiale AS 532SC Cougar.

Operational speed: 150 kt (280 km/h).

Service ceiling: 15,090 ft (4,600 m).

Range: 335 n miles (620 km).

Role/Weapon systems: First pair delivered in August 1989. Total of 12 by the end of 1990. Shared with the Coast Guard. Sensors: Omera search radar; Safire AAO-22 FLIR from 1998. Weapons: ASV; Giat 20 mm cannon; AM39 Exocet or Sea Eagle ASM.



AS 532 Cougar

6/1990, Paul Jackson / 0062140

PATROL FORCES

9 AL SIDDIQ CLASS (PGGF)

Name	No	Builders	Launched	Commissioned
AL SIDDIQ	511	Peterson, WI	22 Sep 1979	15 Dec 1980
AL FAROUQ	513	Peterson, WI	17 May 1980	22 June 1981
ABDUL AZIZ	515	Peterson, WI	23 Aug 1980	3 Sep 1981
FAISAL	517	Peterson, WI	15 Nov 1980	23 Nov 1981
KHALID	519	Peterson, WI	23 Mar 1981	11 Jan 1982
AMYR	521	Peterson, WI	13 June 1981	21 June 1982
TARIQ	523	Peterson, WI	23 Sep 1981	11 Aug 1982
QOBAH	525	Peterson, WI	12 Dec 1981	18 Oct 1982
ABU OBAIDAH	527	Peterson, WI	3 Apr 1982	6 Dec 1982

Displacement, tons: 495 full load
Dimensions, feet (metres): 190.5 × 26.5 × 6.6
(58.1 × 8.1 × 2)

Main machinery: CODOG; 1 GE LM 2500 gas turbine; 23,000 hp (17.2 MW) sustained; 2 MTU 12V 652TB91 diesels; 3,470 hp (m) (2.55 MW) sustained; 2 shafts, cp props

Speed, knots: 38 gas; 25 diesel

Range, n miles: 2,900 at 14 kt

Complement: 38 (5 officers)

Missiles: SSM: 4 McDonnell Douglas Harpoon (2 twin) launchers; active radar homing to 130 km (70 n miles) at 0.9 Mach; warhead 227 kg.

Guns: 1 FMC/OTO Melara 3 in (76 mm)/62 Mk 75 Mod 0; 85 rds/min to 16 km (8.7 n miles); weight of shell 6 kg.

1 General Electric/General Dynamics 20 mm 6-barrelled Vulcan Phalanx; 3,000 rds/min combined to 2 km

2 Oerlikon 20 mm/80; 800 rds/min to 2 km anti-aircraft.

2—81 mm mortars. 2—40 mm Mk 19 grenade launchers.

Countermeasures: Decoys: 2 Lorel Hycor SRBOC

6-barrelled fixed Mk 36; IR flares and chaff to 4 km (2.2 n miles).

ESM SLQ-32(V)1; intercept

Weapons control: Mk 92 mod 5 GFCs. FSI Safire FLIR. Link W.

Radars: Surface search: ISC Cardion SPS-55; I/J-band. Fire control: Sperry Mk 92; I/J-band.

Modemisation: Safire FLIR and Link W being fitted. Operational: *Amyr* and *Tariq* operate from Jiddah, the remainder are based at Al Jubail. *Faisal* damaged in the Gulf War in 1991 but was operational again in 1994.



ABU OBAIDAH

6/2001, *Ships of the World*, 0126360

17 HALTERTYPE (COASTAL PATROL CRAFT) (PB)

52-68

Displacement, tons: 56 full load

Dimensions, feet (metres): 78 × 20 × 5.8 (23.8 × 6.1 × 1.8)

Main machinery: 2 Detroit 16V-92TA diesels; 1,380 hp (1.03 MW) sustained; 2 shafts

Speed, knots: 28 Range, n miles: 1,200 at 12 kt

Complement: 8 (2 officers)

Guns: 2—25 mm Mk 38. 2—7.62 mm MGs.

Radars: Surface search: Raytheon SPS-64; I-band.

Comment: Ordered from Halter Marine 17th February 1991. Aluminium construction. Last delivered in January 1993. Same type for Philippines



HALTER TYPE

8/1990, *Trinity Marine* / 0080563

39 SIMONNEAU 51 TYPE (INSHORE PATROL CRAFT) (PBI)

Displacement, tons: 22 full load

Dimensions, feet (metres): 51.8 × 15.7 × 5.9 (15.8 × 4.8 × 1.8)

Main machinery: 4 outboards; 2,400 hp (m) (1.76 MW)

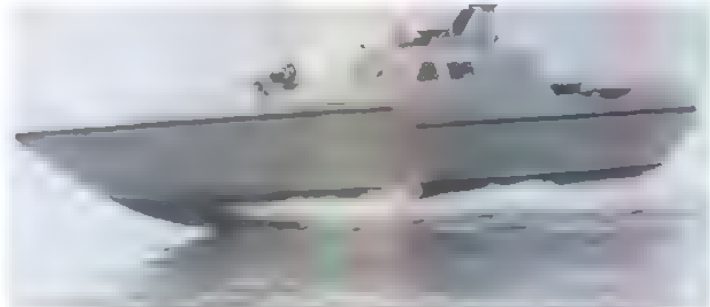
Speed, knots: 33

Range, n miles: 375 at 25 kt

Guns: 1—12.7 mm MG. 2—7.62 mm MGs.

Radars: Surface search: Furuno, I-band

Comment: First 20 ordered from France in June 1988 and delivered in 1989-90. A second batch of 20 ordered in 1991. Aluminium construction. Used by naval commandos. These craft were also reported as Panhards. One deleted so far



SIMONNEAU TYPE

1989, *Simonneau Marine* / 0506038

MINE WARFARE FORCES

**4 ADDRIYAH (MSC 322) CLASS
(MINESWEEPERS/HUNTERS—COASTAL) (MHSC)**

Name	No	Builders	Launched	Commissioned
ADDRIYAH	MSC 412	Peterson, WI	20 Dec 1976	6 July 1978
AL QUYSUMAH	MSC 414	Peterson, WI	26 May 1977	15 Aug 1978
AL WADEEHAH	MSC 416	Peterson, WI	6 Sep 1977	7 Sep 1979
SAFWA	MSC 418	Peterson, WI	7 Dec 1977	2 Oct 1979

Displacement, tons: 320 standard, 407 full load
 Dimensions, feet (metres): 153 x 26.9 x 8.2 (46.6 x 8.2 x 2.5)
 Main machinery: 2 Waukesha L1616 diesels; 1,200 hp (895 kW); 2 shafts
 Speed, knots: 13
 Complement: 39 (4 officers)
 Guns: 1 Oerlikon 20 mm.
 Radars: Surface search ISC Cardion SPS 66; I/J-band
 Sonars: GE SQQ-14, VDS, active minihunting, high frequency.

Comment: Ordered on 30 September 1975 under the International Logistics Programme. Wooden structure. Fitted with fin stabilisers, wire and magnetic sweeps and also for minihunting. *Addriyah* based at Jiddah, the remainder at Al Jubail. Expected to be replaced by arrival of Sandowns but all are still in service mostly as patrol craft.



AL QUYSUMAH 6/1996, van Ginderen Collection / 0019090

**3 AL JAWF (SANDOWN) CLASS
(MINEHUNTERS—COASTAL) (MHC)**

Name	No	Builders	Launched	Commissioned
AL JAWF	420	Vosper Thornycroft	2 Aug 1989	12 Dec 1991
SHAQRA	422	Vosper Thornycroft	15 May 1991	7 Feb 1993
AL KHARJ	424	Vosper Thornycroft	8 Feb 1993	7 Aug 1997

Displacement, tons: 450 standard; 480 full load
 Dimensions, feet (metres): 172.9 x 34.4 x 6.9 (52.7 x 10.5 x 2.1)
 Main machinery: 2 Paxman 6RP200E diesels; 1,500 hp (1.12 MW) sustained; Voith-Schneider propulsion; 2 shafts; 2 Schötel bow thrusters
 Speed, knots: 13 diesels; 6 electric drive
 Range, n miles: 3,000 at 12 kt
 Complement: 34 (7 officers) plus 6 spare berths
 Guns: 2 Electronics & Space Emerlec 30 mm (twin); 1,200 rds/min combined to 6 km (3.3 n miles); weight of shell 0.35 kg
 Countermeasures: Decoys. 2 Loral Hycor SRBOC Mk 36 Mod 1 6-barrelled chaff launchers
 ESM Thomson-CSF Shiploc, intercept
 MCM. ECA mine disposal system; 2 PAP 104 Mk 5.
 Combat data systems: Plessey Nautis M action data automation.
 Weapons control: Contraves TMEO optronic director (Seahawk Mk 2)
 Radars: Navigation: Kelvin Hughes Type 1007; I-band.
 Sonars: Plessey/MUSL Type 2093; VDS; high frequency.

Comment: Three ordered 2 November 1988 from Vosper Thornycroft. Option for three more appears to have been abandoned. GRP hulls. Combines vectored thrust units with bow thrusters and Remote Controlled Mine Disposal System (RCMDS). *Al Jawf* sailed for Saudi Arabia in November 1995, *Shaqra* in November 1996, and *Al Kharj* in August 1997. All based at Al Jubail.



SHAQRA 3/2008*, Guy Toremans / 1353363

AUXILIARIES

**2 BORAI DA (MOD DURANCE) CLASS
(REPLENISHMENT SHIPS) (AORH)**

Name	No	Builders	Launched	Commissioned
BORAI DA	902	La Ciotat, Marseilles	22 Jan 1983	29 Feb 1984
YUNBOU	904	La Ciotat, Marseilles	20 Oct 1984	29 Aug 1985

Displacement, tons: 11,200 full load
 Dimensions, feet (metres): 442.9 x 61.3 x 22.9 (135 x 18.7 x 7)
 Main machinery: 2 SEMT-Pielstick 14 PC2.5 V 400 diesels; 18,200 hp(m) (13.4 MW) sustained; 2 shafts, LIPS cp props
 Speed, knots: 20.5
 Range, n miles: 7,000 at 15 kt
 Complement: 129 plus 11 trainees
 Cargo capacity: 4,350 tons diesel; 350 tons AVCAT; 140 tons fresh water; 100 tons victuals; 100 tons ammunition; 70 tons spares
 Guns: 4 Breda Bofors 40 mm/70 (2 twin); 300 rds/min to 12.5 km (6.8 n miles); weight of shell 10.96 kg
 Weapons control: 2 CSEE Naja optronic directors. 2 CSEE Lynx optical sights.
 Radars: Navigation: 2 Decca, I-band.
 Helicopters: 2 SA 365F Dauphin or 1 AS 332SC Super Puma.

Comment: Contract signed October 1980 as part of Sawari I programme. Both upgraded by DCN at Toulon, *Boraida* in 1996/97, followed by *Yunbou*, in 1997/98. Refuelling positions: Two alongside, one astern. Also serve as training ships and as depot and maintenance ships. Helicopters can have ASM or ASW armament. Both based at Jiddah.



YUNBOU 1/1998 0016635



BORAI DA 9/2003, Hartmut Ehlers / 0561937

4 LCU 1610 CLASS (TRANSPORTS) (YFU)

AL QIAQ (ex-SA 310) 212	AL ULA (ex-SA 312) 216
AL SULAYEL (ex SA 311) 214	AFIF (ex-SA 313) 218

Displacement, tons: 375 full load
 Dimensions, feet (metres): 134.9 x 29 x 6.1 (41.1 x 8.8 x 1.9)
 Main machinery: 4 GM diesels; 1,000 hp (746 kW); 2 Kort nozzles
 Speed, knots: 11
 Range, n miles: 1,200 at 8 kt
 Complement: 14 (2 officers)
 Military lift: 170 tons, 20 troops
 Guns: 2—12.7 mm MGs
 Radars: Navigation: Marconi LN66; I-band.

Comment: Built by Newport Shipyard, Rhode Island. Transferred from US June/July 1976. Based at Al Jubail.



LCU 1610 (US colours) 9/1997, Hachiro Nakai / 0016483

716 Saudi Arabia/Auxiliaries — Coast guard

4 LCM 6 CLASS (TRANSPORTS) (YFU)

DHEBA 220 UMLUS 222 AL LEETH 224 AL QUONFETHA 226

Displacement, tons: 62 full load
Dimensions, feet (metres): 56.2 × 14 × 3.9 (17.1 × 4.3 × 1.2)
Main machinery: 2 GM diesels; 450 hp (336 kW); 2 shafts
Speed, knots: 9. **Range, n miles:** 130 at 9 kt
Complement: 5
Military lift: 34 tons or 80 troops
Guns: 2—40 mm Mk 19 grenade launchers.

Comment: Four transferred July 1977 and four in July 1980. The first four have been cannibalised for spares. Based at Jiddah.

ROYAL YACHTS

1 ROYAL YACHT (YACH)

Name	No	Builders	Commissioned
AL YAMAMA	—	Elsinore, Denmark	Feb 1981

Displacement, tons: 1,660 full load
Dimensions, feet (metres): 269 × 42.7 × 10.8 (82 × 13 × 3.3)
Main machinery: 2 MTU 12V 1163 TB82 diesels; 6,000 hp(m) (4.41 MW); 2 shafts; cp props, bow thruster; 300 hp(m) (221 kW)
Speed, knots: 19
Complement: 42 plus 56 spare
Helicopters: Platform for 1 medium

Comment: Ordered by Iraq but not delivered because of the war with Iran. Given to Saudi Arabia by Iraq in 1988. Based at Dammam.

1 PEGASUS CLASS (HYDROFOIL) (YAGJ)

AL AZIZIAH

Displacement, tons: 115 full load
Dimensions, feet (metres): 89.9 × 29.9 × 6.2 (27.4 × 9.1 × 1.9)
Main machinery: 2 Allison 501-KF20A gas turbines; 8,660 hp (6.45 MW) sustained; 2 waterjets (foilborne); 2 Detroit 8V92 diesels; 806 hp (452 kW) sustained; 2 shafts (hullborne)
Speed, knots: 46. **Range, n miles:** 890 at 42 kt
Guns: 2 General Electric 20 mm Sea Vulcan.
Weapons control: Kollmorgen GFCS; Mk 35 optronic director

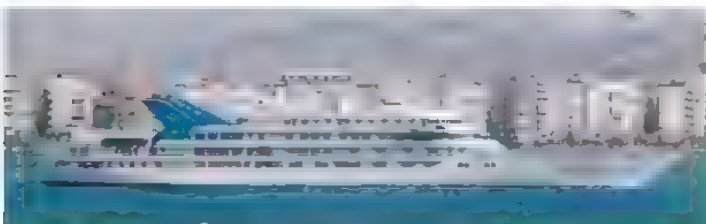
Comment: Ordered in 1984 from Lockheed and subcontracted to Boeing, Seattle; delivered in August 1985. Mostly used as a tender to the Royal Yacht.

1 ROYAL YACHT (YACH)

Name	No	Builders	Commissioned
ABDUL AZIZ	—	Helsingør Waerft, Denmark	12 June 1984

Displacement, tons: 5,200 full load
Measurement, tons: 1,450 dwt
Dimensions, feet (metres): 482.2 × 59.2 × 16.1 (147 × 18 × 4.9)
Main machinery: 2 Lindholmen-Pielstick 12 PC2 5 V diesels; 15,600 hp(m) (11.47 MW) sustained; 2 shafts
Speed, knots: 22
Complement: 65 plus 4 Royal berths and 60 spare
Helicopters: 1 Bell 206B JetRanger type.

Comment: Completed March 1983 for subsequent fitting out at Vosper's Ship Repairers, Southampton. Helicopter hangar set in hull forward of bridge—covers extend laterally to form pad. Swimming pool. Stern ramp leading to garage. Based at Jiddah. Operated by the Coast Guard.



ABDUL AZIZ

7/2008*, Selim San / 1353364

TUGS

13 COASTAL TUGS (YTBY/YTM)

RADHWA 1-6, 14-15	TUWAIG 113	DAREEN 111
RADHWA 12	RADHWA 18	RADHWA 17

Comment: Radhwa 12, 16 and 17 are 43 m YTM's built in 1982-83. Tuwaig and Dareen are ex-US YTB transferred in October 1975. These two are used to tow targets for weapons firing exercises and are based at Al Jubail and Dammam respectively. The remainder are all of about 35 m built in Singapore and the Netherlands between 1981 and 1983.



YTBY TYPE (US colours)

8/1992, Jörg Kürsener / 0080564

COAST GUARD

Notes: Three 32 m fireboats Jubail 1, Jubail 2 and Jubail 3, entered service in 1982

2 SEA GUARD CLASS (WPBF)

AL RIYADH 304 ZULURAB 305

Displacement, tons: 56 full load
Dimensions, feet (metres): 73.8 × 18.4 × 5.6 (22.5 × 5.6 × 1.7)
Main machinery: 2 MTU 12V 331 TC92 diesels; 2,920 hp(m) (21.46 MW); 2 shafts
Speed, knots: 35
Complement: 10
Guns: 2 G at 20 mm (twin). 2—762 mm MGs
Radars: Surface search Racal Decca, I-band.
Fire control: Thomson-CSF Agrion; J-band.

Comment: Built by Simonneau Marine and delivered by SOFREMA in April 1992. Aluminium construction. Both based at Jiddah. The SSM launcher shown in the picture is not fitted.



ZULURAB

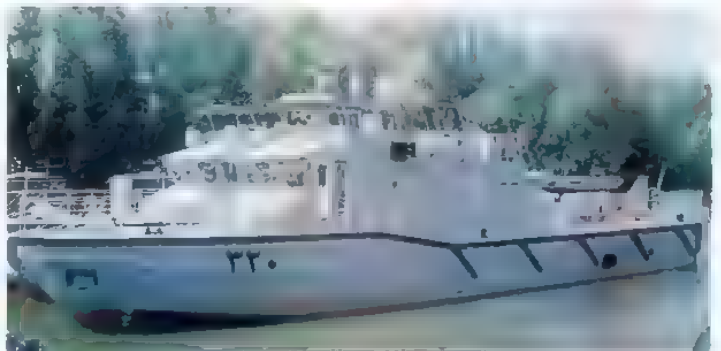
1892, Simonneau Marine / 0080565

4 STAN PATROL 2606 CRAFT (COASTAL PATROL CRAFT) (WPB)

ASSIR 317 ALDHAHRAN 318 ALKAHRJ 319 ARAR 320

Displacement, tons: 55 (approx) full load
Dimensions, feet (metres): 87.0 × 20.3 × 6.1 (26.5 × 6.2 × 1.8)
Main machinery: 2 MTU 12V 396 TE94 diesels; 4,429 hp (3.3 MW); 2 shafts
Speed, knots: 28

Comment: Built by Damen Shipyards, Gorinchem and delivered 2002-03



ARAR

7/2002, A A de Kruiff / 0533301

4 AL JOUF CLASS (WPBF)

AL JOUF 351 TURAIF 352 HAIL 353 NAJLAN 354

Displacement, tons: 210 full load
Dimensions, feet (metres): 126.6 × 26.2 × 6.2 (38.6 × 8 × 1.9)
Main machinery: 3 MTU 16 V 538 TB93 diesels; 11,265 hp(m) (8.28 MW) sustained; 3 shafts
Speed, knots: 38. **Range, n miles:** 1,700 at 15 kt
Complement: 20 (4 officers)
Guns: 2 Oerlikon GAM-BO1 20 mm, 2—12.7 mm MGs
Radars: Surface search Racal S 1690 ARPA; I-band.
Navigation: Racal Decca RM 1290A; I-band.

Comment: Ordered on 18 October 1987 from Blohm + Voss. First two completed 15 June 1989, second pair 20 August 1989. Steel hulls with aluminium superstructures. Hail and Najran based at Jiddah in the Red Sea and the others at Aziziah.



AL JOUF

6/1989, Blohm + Voss / 0080566

2 AL JUBATEL CLASS (WPB)**AL JUBATEL SALWA**

Displacement, tons: 95 full load
Dimensions, feet (metres): 86 × 19 × 6.9 (26.2 × 5.8 × 2.1)
Main machinery: 2 MTU 16V 396 TB94 diesels; 5,800 hp(m) (4.26 MW) sustained; 2 shafts
Speed, knots: 34
Range, n miles: 1,100 at 25 kt
Complement: 12 (4 officers)
Guns: 1 Oerlikon/GAM-BO1 20 mm, 2—12.7 mm MGs.
Radars: Surface search: Racal Decca AC 1290; I-band.

Comment: Built by Abeking & Rasmussen, completed in April 1987. Smaller version of Turkish SAR 33 Type. Steel construction. One based at Jizan and one at Al Wajh



AL JUBATEL 1987, Abeking & Rasmussen / 0080567

3 SLINGSBY SAH 2200 HOVERCRAFT (UCAC)

Dimensions, feet (metres): 34.8 × 13.8 (10.6 × 4.2)
Main machinery: 1 Deutz BF6L913C diesel; 192 hp(m) (141 kW) sustained; lift and propulsion
Speed, knots: 40
Range, n miles: 500 at 40 kt
Complement: 2
Military lift: 2.2 tons or 16 troops
Guns: 1 - 7.62 mm MG.

Comment: Supplied by Slingsby Amphibious Hovercraft, York in December 1990. Have Kevlar armour. These craft have replaced the SRN type.



SAH 2200 1990, Slingsby / 0080568

1 TRAINING SHIP (AXL)**TABBOUK**

Displacement, tons: 585 full load
Dimensions, feet (metres): 196.8 × 32.8 × 5.8 (60 × 10 × 1.8)
Main machinery: 2 MTU MD 16V 538 T880 diesels; 5,000 hp(m) (3.68 MW) sustained, 2 shafts
Speed, knots: 20
Range, n miles: 3,500 at 12 kt
Complement: 26 (6 officers) plus 70 trainees
Guns: 1 Oerlikon GAM-BO1 20 mm
Radars: Surface search: Racal Decca TM 1226; I-band.
Navigation: Racal Decca 2690BT; I-band.

Comment: Built by Bayerische, Germany and commissioned 1 December 1977. Based at Jiddah.

5 GRIFFON 8000 TD(M) CLASS (HOVERCRAFT) (LCAC)

Displacement, tons: 18.2; 24.6 full load
Dimensions, feet (metres): 69.5 × 36.1 × 1 (21.15 × 11 × 0.32)
Main machinery: 2 MTU 12V 183 TB32 V12 diesels; 1,600 hp (1.2 MW)
Speed, knots: 50
Range, n miles: 400 at 45 kt
Complement: 4 (2 officers) (accommodation for further 16)
Guns: 1 - 12.7 mm MG
Radars: Raytheon R-80; I-band.

Comment: Five hovercraft ordered from Griffon in 2000 for delivery in 2001. Payload of about 8 tonnes. Similar to those supplied to Indian Coast Guard but with different superstructure. Three based on west coast and two on east coast.



GRIFFON 8000 (Indian colours) 9/2000, Indian Coast Guard / 0104592

INSHORE PATROL CRAFT (PBI)

Numbers	Type	Date	Speed
12	Rapier 15.2 m	1978	28
2	Enforcer, USA, 9.4 m	1980s	30
30	Simonneau SM 331, 9.3 m	1992	40
40	Simonneau Naja 12	1990	50
60	Boston Whalers, 8.3 m	1980s	30

Comment: About 150 mostly Task Force Boats. Many are based at Jiddah with the rest spread around the other bases. Most are armed with MGs and the larger craft have I-band radars.



SIMONNEAU SM 331 6/1992, Simonneau Marine / 0080569

3 SMALL TANKERS (YO)**AL FORAT DAJLAH AL NIL**

Displacement, tons: 233 full load
Dimensions, feet (metres): 94.2 × 21.3 × 6.9 (28.7 × 6.5 × 2.1)
Main machinery: 2 Caterpillar D343 diesels; 2 shafts
Speed, knots: 12
Range, n miles: 500 at 12 kt
Radars: Navigation: Decca 110; I-band.

Comment: Al Nil based at Aziziah, the others at Jiddah

Senegal

MARINE SÉNÉGALAISE

**Country Overview**

The Republic of Senegal was a French colony until 1960 when it gained independence. Situated in western Africa, it has an area of 75,750 square miles and is bordered to the north by Mauritania and to the south by Guinea and Guinea-Bissau. Its 286 n mile coastline with the Atlantic Ocean is divided in two by the coast of Gambia with which the country was united to form the confederation

of Senegambia between 1981-89. The capital, largest city and principal port is Dakar. Territorial seas (12 n miles) are claimed. A 200 n mile Exclusive Economic Zone (EEZ) has been declared but its limits have only been partially defined by boundary agreements.

Headquarters Appointments

Head of Navy: Captain Ousmane Oumar Baïa Kane

Personnel

- (a) 2009 900 officers and men
 (b) 2 years' conscript service

Bases

Dakar, Elinkine (Casamance)

PATROL FORCES

Notes: Four RAIDCO 12 m RIBs (*Ibra Faye* P 16, *Ousmane Diop Coumba Pathe* P 17, *El Hadji Mbor Diagne* P 18, *Aliou Codou N'Doye* P 19) with waterjet propulsion, are operated by the Fishery Protection Directorate. They were procured in 2005.

1 IMPROVED OSPREY 55 CLASS (LARGE PATROL CRAFT) (PBO)

Name	No	Builders	Commissioned
FOUTA		Danyard A/S, Fredrikshavn	1 June 1987

Displacement, tons: 470 full load
Dimensions, feet (metres): 180.5 × 33.8 × 8.5 (55 × 10.3 × 2.6)
Main machinery: 2 MAN Burmeister & Wain Alpha 12V23/30-DVO diesels; 4,400 hp(m) (3.23 MW) sustained; 2 shafts; cp props
Speed, knots: 20. **Range, n miles:** 4,000 at 16 kt
Complement: 38 (4 officers) plus 8 spare
Guns: 1 Hispano Suiza 30 mm, 1 Giat 20 mm.
Radars: Surface search: Furuno FR 1411; I-band.
Navigation: Furuno FR 1221; I-band

Comment: Ordered in 1985. Intended for patrolling the EEZ rather than as a warship, hence the modest armament. A 25 kt rigid inflatable boat can be launched from a stern ramp which has a protective hinged door. Similar vessels built for Morocco.



FOUTA 5/2008*, B Prézélin / 1335793

1 PR 72M CLASS (PBO)

Name	No	Builders	Commissioned
NJAMBUUR	P 773	SFCN, Villeneuve-la-Garenne	Feb 1983

Displacement, tons: 451 full load
Dimensions, feet (metres): 191.0 × 26.9 × 7.2 (58.2 × 8.2 × 2.2)
Main machinery: 2 UD 33V16M6D diesels, 5,470 hp (4.08 MW) sustained; 2 shafts
Speed, knots: 16. **Range, n miles:** 2,160 at 15 kt
Complement: 46
Guns: 2 OTO Molar 3 in (76 mm)/62 compact; 85 rds/min to 16 km (8.7 n miles); weight of shell 6 kg
 2—20 mm Oerlikon 2—12.7 mm MGs
Weapons control: 2 CSEE Naja optical directors.
Radars: Surface search: FR 7112 and FR 2105; I-band

Comment: Ordered in 1979 and launched 23 December 1980. Completed September 1981 for shipping of armament at Lorient. Underwent overhaul at Lorient 2001–2002.



NJAMBUUR 5/2008*, B Prézélin / 1335296

2 PR 48 CLASS (LARGE PATROL CRAFT) (PBO)

Name	No	Builders	Launched	Commissioned
POPONGUINE	—	SFCN, Villeneuve-la-Garenne	22 Mar 1974	10 Aug 1974
PODOR	—	SFCN, Villeneuve-la-Garenne	20 July 1976	13 July 1977

Displacement, tons: 250 full load
Dimensions, feet (metres): 156 × 23.3 × 8.1 (47.5 × 7.1 × 2.5)
Main machinery: 2 SACM AGO V12 CZSHR diesels; 4,340 hp(m) (3.2 MW); 2 shafts
Speed, knots: 23. **Range, n miles:** 2,000 at 16 kt
Complement: 33 (3 officers)
Guns: 2 Bofors 40 mm/70 2—7.62 mm MGs
Radars: Surface search: Furuno; I-band

Comment: Ordered in 1973 and 1975. *Saint-Louis* decommissioned in 2003 and the operational status of the remaining two is doubtful.



PODOR 5/2008*, B Prézélin / 1335294

1 INTERCEPTOR CLASS (COASTAL PATROL CRAFT) (PB)

Name	No	Builders	Commissioned
SÉNÉGAL II	—	Los Bateaux Turbec Ltd, Sainte Catherine, Canada	Feb 1979

Displacement, tons: 62 full load
Dimensions, feet (metres): 86.9 × 19.3 × 5.2 (26.5 × 5.8 × 1.6)
Main machinery: 2 diesels; 2,700 hp (2.01 MW); 2 shafts
Speed, knots: 32.5
Guns: 1—20 mm Giat
Radars: Surface search: Furuno; I-band

Comment: Used for EEZ patrol. *Sine-Saloum II* and *Casamance II* were decommissioned in 2004.



SÉNÉGAL II 5/2008*, B Prézélin / 1335795

2 PETERSON MK 4 CLASS (PB)

Name	No	Builders	Commissioned
MATELOT ALIOUNE SAMB	—	Peterson Builders Inc	28 Oct 1993
MATELOT OUMAR NDOYE	—	Peterson Builders Inc	4 Nov 1993

Displacement, tons: 22 full load
Dimensions, feet (metres): 51.3 × 14.8 × 4.3 (15.6 × 4.5 × 1.3)
Main machinery: 2 Detroit 6V-92TA diesels, 520 hp (388 kW); 2 shafts
Speed, knots: 24
Range, n miles: 500 at 20 kt
Complement: 6
Guns: 2—12.7 mm (twin) MGs 2—7.62 mm (twin) MGs
Radars: Surface search: Furuno; I-band

Comment: Ordered in September 1992. Same type delivered to Cape Verde, Gambia and Guinea-Bissau (since deleted) under FMS. Carries an RIB on the stern.



OUMAR NDOYE 5/2008*, B Prézélin / 1335201

2 VCSM CLASS (PB)

Name	No	Builders	Commissioned
ALPHONSE FAYE	—	RAIDCO Marine	July 2004
BAYE SOGUI	—	RAIDCO Marine	May 2005

Displacement, tons: 42
Dimensions, feet (metres): 85.8 × 17.1 × 4.9 (26.0 × 5.2 × 1.5)
Main machinery: 2 MAN V12 diesels; 2,000 hp (1.47 MW); 2 shafts
Speed, knots: 25. **Range, n miles:** 530 at 15 kt
Complement: 5
Guns: 1—7.62 mm MG
Radars: Navigation: Furuno; I-band

Comment: Two Raidco Marine RPB 20 class were procured in July 2004 and May 2005 respectively. Similar to French VCSM class. Operated by the Fishery Protection Directorate. Two others are operated by the Customs service.



BAYE SOGUI 6/2008*, Senegal Navy / 1335302

LAND-BASED MARITIME AIRCRAFT

Numbers/Type: 1 De Havilland Canada DHC-8 Twin Otter.
Operational speed: 168 kt (311 km/h).
Service ceiling: 23,200 ft (7,070 m).
Range: 1,480 n miles (2,705 km).
Role/Weapon systems: Procured in 1982. Used for coastal surveillance but effectiveness limited. Backed up by a French Navy Breguet Atlantique based at Dakar. Sensors: Search radar. Weapons: Unarmed.

AMPHIBIOUS FORCES

1 CTM (LCM)

CTM (ex-CTM 2, ex-CTM 5)

Displacement, tons: 150 full load
Dimensions, feet (metres): 78 × 21 × 4.2 (23.8 × 6.4 × 1.3)
Main machinery: 2 Poyaud 520 V8 diesels, 225 hp(m) (165 kW); 2 shafts
Speed, knots: 9.5
Range, n miles: 350 at 8 kt
Complement: 6
Military lift: 90 tons

Comment: Transferred from French Navy in September 1999. Has a bow ramp.



CTM 12/2001, 0525011

1 EDIC CLASS (LCT)

FALEMÉ II (ex-Javeline L 9070)

Displacement, tons: 710 full load
Dimensions, feet (metres): 194.9 × 39 × 5.9 (59.4 × 11.9 × 1.8)
Main machinery: 2 SACM Urt Diesel UD 30 V12 M1 diesels, 1,200 hp(m) (882 kW) sustained; 2 shafts
Speed, knots: 10.5
Range, n miles: 1,000 at 10 kt
Complement: 12
Military lift: 336 tons
Guns: Fitted for 2 Giat 20F2 20 mm.
Radars: Navigation: Racal Decca 1229; I-band.

Comment: Ex-Javeline was the first of the second series of EDICs. Originally commissioned in 1967, it was loaned to Senegal on 18 October 1995 and was formally transferred on 12 January 2000. The craft replaced a first series EDIC.



FALEMÉ II 5/2008*, B Prézelin / 1335299

1 EDIC 700 CLASS (LCT)

Name	No	Builders	Launched	Commissioned
KARABANE	841	SFCN, Villeneuve-la-Garenne	6 Mar 1986	30 Jan 1987

Displacement, tons: 736 full load
Dimensions, feet (metres): 193.5 × 39 × 5.8 (59 × 11.9 × 1.7)
Main machinery: 2 SACM MGO 176 V12 ASH diesels, 1,200 hp(m) (882 kW) sustained; 2 shafts
Speed, knots: 12
Range, n miles: 1,800 at 10 kt
Complement: 18 (33 spare billets)
Military lift: 12 trucks; 340 tons equipment
Guns: Fitted for 2 Giat 20 mm.
Radars: Navigation: Racal Decca 1226; I-band.

Comment: Ordered May 1985, delivered 23 June 1986 from France. Second of class from France in 1995 and returned again in 1998.



KARABANE 5/2008*, B Prézelin / 1335300

AUXILIARIES

Notes: There is also a 44 m buoy tender *Samba Laoba Fall*. Built by Océa des Sabes d'Olonne in 2007, it is civilian operated.

1 HARBOUR TUG (YTM)

CHEIKH OUMAR FALL (ex-Olivier)

Displacement, tons: 105
Dimensions, feet (metres): 68.9 × 22.6 × 10.5 (21.0 × 6.9 × 3.2)
Main machinery: 1 SACM-Wärtsilä UD 30 V12 diesel; 700 hp (515 kW); 1 shaft
Speed, knots: 10
Complement: 6
Radars: Navigation: Raytheon; I-band.

Comment: Former French navy tug, completed at St Nazaire in 1965, donated in 1999.



CHEIKH OUMAR FALL 5/2008*, B Prézelin / 1335298

1 FISHERIES RESEARCH VESSEL (AG)

ITAF DEME

Displacement, tons: 318
Dimensions, feet (metres): 124.7 × 26.2 × 11.2 (38.0 × 8.0 × 3.4)
Main machinery: 1 Yanmar diesel; 1,000 hp (810 kW); 1 shaft
Speed, knots: 12
Complement: 18
Radars: Navigation: Furuno; I-band.

Comment: Modified purse-seiner converted to a fishery research role. Operated by the navy.



ITAF DEME 5/2008*, B Prézelin / 1335291



Serbia

Country Overview

The Republic of Serbia was formed following a referendum on 21 May 2006 in which the people of Montenegro voted for independence and for the dissolution of the Federal Republic of Serbia and Montenegro; this itself was the rump of the former Yugoslavia. On 5 June 2006 the Serbian National Assembly decreed Serbia to be the continuing international personality of Serbia and Montenegro. With an area of 34,116 square miles, it is located in south-eastern Europe in the Balkan Peninsula and is bordered to the west by Montenegro, Bosnia and Croatia, to the north by Hungary, to the east by Romania and Bulgaria

and to the south by Albania and Macedonia. A land-locked country, the principal river is the Danube which enters the country from the north and after passing through the capital Belgrade goes on to form part of the eastern border. Other rivers include the Sava and Tisza.

The provisions of the Union Constitution were that, in the event of dissolution, the armed forces of Serbia and Montenegro would be split in such a way that each state keeps the assets in its territory. The former navy of Serbia and Montenegro transferred to Montenegro in June 2006, except for the former Danube Flotilla, which is now subordinate to the Serbian land forces as the River Detachment. While the future of the detachment is unclear,

it is likely to be reduced and reshaped to undertake civil authority missions, the responsibility for which may be transferred to the police.

Headquarters Appointments

Commander, Riverine Flotilla:
Captain Nebojša Joksimovic

Bases

Novi Sad and Pancevo.

PATROL FORCES

6 TYPE 20 BISCAYA CLASS (RIVER PATROL CRAFT) (PBR)

PC 211–216

Displacement, tons: 55 standard
Dimensions, feet (metres): 71.5 × 17 × 3.9 (21.8 × 5.3 × 1.2)
Main machinery: 2 diesels; 1,156 hp(m) (850 kW); 2 shafts
Speed, knots: 16. **Range, n miles:** 200 at 15 kt
Complement: 10
Guns: 2 Oerlikon 20 mm.
Radars: Surface search: Decca 110; I-band.

Comment: Completed in the late 1980s. Steel hull with GRP superstructure. All active with the Riverine Flotilla.



PC 215

1988, Yugoslav Navy / 0094261

1 RIVER PATROL BOAT (PBR)

PC 111

Displacement, tons: 29 full load
Dimensions, feet (metres): 79.1 × 13.5 × 2.9 (24.1 × 4.1 × 0.9)
Main machinery: 2 diesels; 652 hp(m) (486 kW); 2 shafts
Speed, knots: 17. **Range, n miles:** 720 at 17 kt
Complement: 6
Guns: 2–20 mm

Comment: Built for US Navy's Rhine River patrol and transferred in the 1950s.



PC 111

6/2008*, Freivogel Collection / 1335423

1 BOTICA CLASS (TYPE 16) (RIVER PATROL CRAFT) (PBR)

PC 302

Displacement, tons: 23 full load
Dimensions, feet (metres): 55.8 × 11.8 × 2.8 (17.0 × 3.6 × 0.8)
Main machinery: 2 diesels; 464 hp(m) (340 kW); 2 shafts
Speed, knots: 15. **Range, n miles:** 340 at 14 kt
Complement: 7
Guns: 1 Oerlikon 20 mm (fitted for). 2–7.62 mm MGs.

Comment: Built in about 1970 and reactivated having been decommissioned in the 1990s. Used for riverine patrols. Can carry up to 30 troops.



PC 302

5/2004, Sieche Collection / 0583300

MINE WARFARE FORCES

4 NESTIN CLASS (RIVER MINESWEEPERS) (MSR)

Name	No	Builders	Commissioned
MOTAJICA	M 332	Brodotehnika, Belgrade	18 Dec 1976
VUCEDOL	M 335	Brodotehnika, Belgrade	1979
DJERDAP	M 336	Brodotehnika, Belgrade	1980
NOVI SAD	M 341	Brodotehnika, Belgrade	8 June 1996

Displacement, tons: 65 full load
Dimensions, feet (metres): 88.6 × 21.7 × 5.2 (27 × 6.3 × 1.6)
Main machinery: 2 diesels; 520 hp(m) (382 kW); 2 shafts
Speed, knots: 15
Range, n miles: 860 at 11 kt
Complement: 17
Guns: 6 Hispano 20 mm (quad fwd, 2 single aft). Some may still have a 40 mm gun forward.
8–20 mm (quad fwd and aft) (M 341)
Mines: 24 can be carried
Countermeasures: MCMV: Magnetic, acoustic and explosive sweeping gear.
Radars: Surface search: Recal Decca 1226; I-band.

Comment: Some transferred to Hungary and Iraq. One more completed in 1996. The class is based at Novi Sad as part of the Riverine Flotilla. One deleted in 1997 and a further three in 2007. M 341, which replaced the previously deleted M 337, is to a modified design which includes different armament.



DJERDAP

6/2008*, Freivogel Collection / 1335444

AUXILIARIES

1 KOZARA CLASS (HEADQUARTERS SHIP) (PBR)

KOZARA (ex-Oregon, ex-Kriemhild) RPB 30

Displacement, tons: 695 full load
Dimensions, feet (metres): 219.8 × 31.2 × 4.6 (67 × 9.5 × 1.4)
Main machinery: 2 Deutz RV6M545 diesels; 800 hp(m) (588 kW); 2 shafts
Speed, knots: 12
Guns: 9 Hispano Suiza 20 mm (3 triple).

Comment: Former Presidential Yacht on Danube. Built in Austria in 1940. Acts as Flagship of the Riverine Flotilla. A similar ship served in the Russian Black Sea Fleet before being transferred to Ukraine. Although previously believed to have been decommissioned, continues to be used to accommodate Riverine Flotilla Staff.



KOZARA

6/2003, Serbian Navy / 0572439

1 SABAC CLASS (DEGAUSSING VESSEL) (YDG)

SABAC RSRB 36

Displacement, tons: 110 standard
 Dimensions, feet (metres): 105.6 x 23.3 x 3.9 (32.2 x 7.1 x 1.2)
 Main machinery: 1 diesel; 528 hp(m) (388 kW); 1 shaft
 Speed, knots: 10
 Range, n miles: 660 at 10 kt
 Complement: 20
 Guns: 2 - 20 mm M71
 Radars: Navigation: Decca 101, I-band

Comment: Built in 1985. Used to degauss River vessels up to a length of 50 m.



SABAC

6/2008*, Freivogel Collection / 1335422

Seychelles



Country Overview

A former British colony, the Republic of the Seychelles became independent in 1976. Situated in the western Indian Ocean, northeast of Madagascar, the archipelago consists of some 90 islands, disposed over 13,000 square miles in two groups. The 40 islands of the northern group include the principal islands: Mahé (the largest), Praslin, Silhouette and La Digue. The 50 or so low-lying coral islands in the south are mostly uninhabited. Victoria (Mahé) is the capital,

largest town and principal port. Territorial seas (12 n miles) are claimed. A 200 n mile Exclusive Economic Zone (EEZ) has been declared but the limits have not been fully defined by boundary agreements.

Bases

Port Victoria, Mahé

Headquarters Appointments

Commander of the Coast Guard:
 Lieutenant Colonel D Gertrude

Personnel

2009: 300 including 80 air wing and 100 marines

LAND-BASED MARITIME AIRCRAFT

Numbers/Type: 1 Britten-Norman BN-2A21 Maritime Defender.
 Operational speed: 150 kt (280 km/h).
 Service ceiling: 18,900 ft (5,760 m).
 Range: 1,500 n miles (2,775 km).
 Role/Weapon systems: Coastal surveillance and surface search aircraft delivered in 1980.
 Sensors: Search radar. Weapons: Provision for rockets or guns.



BN2T-4S (Irish Police colours)

8/1997 / 0016662

1 COASTAL PATROL CRAFT (PB)

JUNON 602

Displacement, tons: 40 full load
 Dimensions, feet (metres): 60.0 x 16.7 x 5.9 (18.3 x 5.1 x 1.8)
 Speed, knots: 20
 Complement: 5
 Radars: Surface search. Furuno; I-band

Comment: Former Port and Marine Services patrol boat reintegrated into the Coast Guard in 2003.



JUNON

9/2003, Seychelles Coast Guard / 0568333

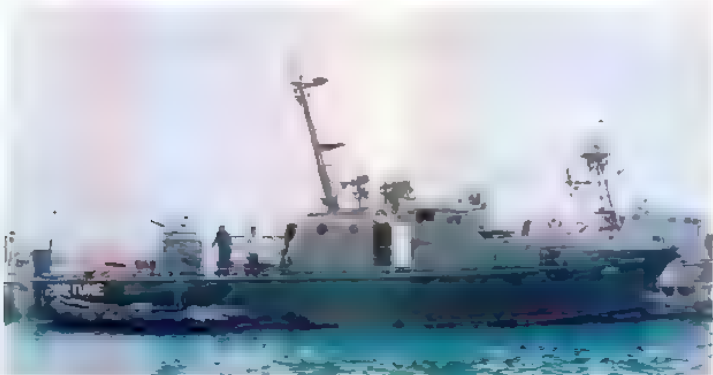
COAST GUARD

1 ZHUK (PROJECT 1400M) CLASS (COASTAL PATROL CRAFT) (PB)

Name	No	Builders	Commissioned
FORTUNE	604	USSR	6 Nov 1982

Displacement, tons: 39 full load
 Dimensions, feet (metres): 78.7 x 16.4 x 3.9 (24 x 5 x 1.2)
 Main machinery: 2 Type M 401B diesels; 2,200 hp (1.6 MW) sustained; 2 shafts
 Speed, knots: 30
 Range, n miles: 1,100 at 15 kt
 Complement: 12 (3 officers)
 Guns: 4 - 14.5 mm (2 twin) MGs
 Radars: Surface search. Furuno; I-band.

Comment: Two transferred from USSR. Second of class paid off in 1996 and used for spares.



FORTUNE

6/1998, Seychelles Coast Guard / 0050097

5 PATROL CRAFT (PB)

ARIES VIRGO LIBRA TAURUS PISCES

Displacement, tons: 17.7 full load
 Dimensions, feet (metres): 44.0 x 12.5 x 3.9 (13.4 x 3.8 x 1.2)
 Main machinery: 2 General Motors Detroit 6V53 diesels, 2 shafts
 Speed, knots: 13. Range, n miles: 200 at 11 kt
 Complement: 3
 Radars: Surface search: Furuno; I-band

Comment: Former US Coast Guard lifeboats (MLB) constructed in the 1960s. Three were transported to the Seychelles onboard USS *Anchorage* in October 2000 and a further two onboard USS *Tarawa* in December 2000



MLBs

9/2003, Seychelles Coast Guard / 0568334

1 TYPE FPB 42 (LARGE PATROL CRAFT) (PB)

Name	No	Builders	Commissioned
ANDROMACHE	605	Picchiotti, Viareggio	10 Jan 1983

Displacement, tons: 268 full load
Dimensions, feet (metres): 137.8 × 26 × 8.2 (41.8 × 8 × 2.5)
Main machinery: 2 Paxman Valenta 16 CM diesels; 6,650 hp (5 MW) sustained; 2 shafts
Speed, knots: 26
Range, n miles: 3,000 at 16 kt
Complement: 22 (3 officers)
Guns: 1 Derlikon 25 mm. 2 – 7.62 mm MGs
Radars: Surface search: 2 Furuno; I-band

Comment: Ordered from Inma, La Spezia in November 1981. A second of class reported ordered in 1991 but the order was not confirmed.

**1 SDB MK 5 CLASS (LARGE PATROL CRAFT) (PBO)**

Name	No	Builders	Commissioned
TOPAZ (ex-Tarmugli) 606 (ex-T 64)			

Displacement, tons: 260 full load
Dimensions, feet (metres): 151.0 × 24.6 × 8.2 (46.0 × 7.5 × 2.5)
Main machinery: 2 MTU 16V 538 TB92 diesels; 6,820 hp (m) (5 MW) sustained; 2 shafts
Speed, knots: 30
Range, n miles: 2,000 at 12 kt
Complement: 34 (4 officers)
Guns: 1 Medak 30 mm 2A42
Radars: Surface search: Bharat 1245; I-band

Comment: Built at Garden Reach and first commissioned in 2002. Transferred from the Indian Navy and recommissioned on 23 February 2005.



SDB MK 5 CLASS

5/2002 / 0534083

ANDROMACHE
3/1997
0019096

Sierra Leone

Country Overview

A former British colony, Sierra Leone became independent in 1961. Located in west Africa, the country has an area of 27,699 square miles, a 217 n mile coastline with the Atlantic Ocean and is bordered to the north by Guinea and to the south by Liberia. The capital, largest city and principal port is Freetown. Territorial seas (12 n miles) and an EEZ (200 n miles) are claimed.

Headquarters Appointments

Commander Maritime Wing
Captain Daniel Mansaray

Personnel

(a) 2009: 270 (38 officers)
 (b) Voluntary service

Bases

Freetown (Murray Town) HQ and Training Base.
 Freetown (Government wharf) Main Base.
 Forward operating bases at Yeliboys, Tombo, Bonthe (Sherbo la) and Sulima.

PATROL FORCES

Notes: (1) Five small inshore patrol craft have been acquired to operate from Murray Town and the forward operating bases.
 (2) Acquisition of a surveillance aircraft and of further patrol craft is under consideration.

1 SHANGHAI III (TYPE 062/1) CLASS (PB)

Name	No	Builders	Commissioned
SIR MILTON PB 105			

Displacement, tons: 170 full load
Dimensions, feet (metres): 134.5 × 17.4 × 5.9 (41.0 × 5.3 × 1.8)
Main machinery: 4 Chinese L12-180A diesels; 4,400 hp (m) (3.22 MW) sustained; 4 shafts
Speed, knots: 25
Range, n miles: 750 at 17 kt
Complement: 43
Guns: 4 China 37 mm/63 (2 twin), 180 rds/min to 8.5 km (4.6 n miles); weight of shell 1.42 kg
 4 China 25 mm (2 twin)
Radars: Surface search: Pot Head or Anritsu 726; I-band

Comment: Transferred from China on 10 March 2006 to replace *Alimany Rassin*. Fully operational.



SIR MILTON

6/2006, RSLAF (MW) / 1164270

3 SEA ARK 32 ft CUTTERS (PB)

Name	No	Builders	Commissioned
SEA ARK 01			

Displacement, tons: 5.5 full load
Dimensions, feet (metres): 32.0 × 12.0 × 3.2 (9.8 × 3.6 × 1.0)
Main machinery: 2 Yanmar 6LYAM-STP diesels; 740 hp (550 kW); 2 Konrad drives
Speed, knots: 34
Complement: 4
Radars: Nav gation. Furuno; I-band

Comment: Sea Ark Dauntless RAM design donated by the US on 26 May 2006. Although not permanently fitted with weapons, always patrol with light weapons. Fully operational.



SEA ARK 01

6/2006, RSLAF (MW) / 1164269

Singapore



Country Overview

Formerly under British rule, the Republic of Singapore became self-governing in 1959. It joined Malaysia in 1963, but separated from the Federation in 1965 to become a sovereign state. With an area of 247 square miles and a coastline of 104 n miles, the main island is separated from the southern tip of Malaysia by the narrow Johore Strait. There are 59 small adjacent islets. To the south the Singapore Strait, an important shipping channel linking the Indian Ocean with the South China Sea, separates the island from the Riau archipelago of Indonesia. Territorial seas (3 n miles) are claimed. An EEZ is not claimed.

Headquarters Appointments

Chief of the Navy:

Rear Admiral Chew Men Leong

Chief of Staff:

Rear Admiral Tan Kai Hoe

Fleet Commander:

Rear Admiral Ng Chee Peng

Commander Police Coast Guard:

Deputy Assistant Commissioner Teo Kian Teck

Personnel

- (a) 2009: 4,500 officers and men including 1,800 conscripts
 (b) National Service: two and a half years for Corporals and above, two years for the remainder
 (c) 5,000 reservists (operationally trained)

Bases

Tuas (Jurong), Changi, Sembawang

Organisation

Five Commands: Fleet, Naval Diving Unit, Coastal, Naval Logistics and Training

Fleet: First Flotilla (six Victory, six Sea Wolf)

Third Flotilla (four LSTs, Fast Craft at Civil Squadron)

Coastal Command: (11 Fearless, four Bedok, 12 PBs)

Coastal Command operates five unmanned Giraffe 100 air/surface surveillance radar sites at Changi, Pedra Branca, St John's Island, Sultan Shoal Lighthouse and Raffles Lighthouse. Air and surface track data is passed to HQ RSN.

Prefix to Ships' Names

RSS

Special Forces

Singapore's special forces include the Naval Diving Unit, Singapore Army Special Operations Force and Singapore Police Special Tactics and Rescue unit.

Police Coast Guard

The Police Coast Guard is a unit of the Singapore Police Force and was first established in 1924. Its role is to maintain coastal security within Singapore territorial waters and to support the Singapore Armed Forces in emergencies. Its four regional commands are Brani (SE sector), Gul (SW sector), Seletar (NE sector) and Lim Chu Kang (NW sector). The PCG HQ moved to a new site at Brani (near Sentosa) on 20 March 2006. The Coastal Patrol Squadron and Special Task Squadron operate under central control. All vessels have Police Coast Guard on the superstructure and a white-red-white diagonal stripe on the hull except for interceptor craft which have dark blue hulls with grey superstructures. Personnel numbers are about 1,000.

Strength of the Fleet

Type	Active	Building (Projected)
Submarines	4	2
Frigates	6	-
Missile Corvettes	6	-
Offshore Patrol Vessels	11	-
Inshore Patrol Craft	12	-
Minehunters	4	-
LSU/LPD	4	-
LCMs	4	-

SUBMARINES

0 + 2 VÄSTERGÖTLAND (A 17) CLASS (SSK)

Name	No	Builders	Laid down	Launched	Commissioned
— (ex-Västergötland)	—	Kockums, Malmö	10 Jan 1983	17 Sep 1986	27 Nov 1987
— (ex-Hälsingland)	—	Kockums, Malmö	1 Jan 1984	31 Aug 1987	20 Oct 1988

Displacement, tons: 1,500 surfaced; 1,600 dived

Dimensions, feet (metres): 198.5 × 20 × 18.4

(60.5 × 6.1 × 5.6)

Main machinery: Diesel Stirling-electric; 2 Hedemora V12A15 diesels; 2,200 hp(m) (1.62 MW); 2 Kockums Stirling Mk III AIP; 204 hp (150 kW); 1 Jeumont Schneider motor; 1,800 hp(m) (1.32 MW); 1 shaft, LIPS prop

Speed, knots: 10 surfaced; 20 dived

Complement: 27 (5 officers)

Torpedoes: 6—21 in (533 mm) tubes, 12 WASS Black Shark; wire (fibre-optic cable) guided, active/passive homing to 50 km (27 n miles) at 50 kt; warhead 250 kg; swim-out discharge

3—15.75 in (400 mm) tubes, 8 FFV Type 431/451; anti-submarine; wire-guided; active/passive homing to 20 km (10.8 n miles) at 25 kt; warhead 45 kg shaped charge or a small charge anti-intruder version is available

Mines: 12 Type 47 swim-out mines in lieu of torpedoes.

Countermeasures: ESM: Argo AR-700-S5; or Condor CS 3701; intercept

Weapons control: Ericsson IPS-17 (Sesub 900A) TFCS.

Radars: Navigation: Terma, I-band

Sonars: Atlas Elektronik CSU 83; hull-mounted, passive search and attack; medium frequency.

Flank array; passive search, low frequency.

Programmes: Original design contract awarded by the Swedish Navy to Kockums, Malmö on 17 April 1978. Contract for construction signed 8 December 1981. Following discussions between the governments of Sweden and Singapore in 2005, both submarines are to be transferred to the Singapore Navy as part of a package that includes modernisation refits to incorporate Air-Independent Propulsion (AIP) systems prior to delivery. On entry into Singapore service in about 2010, the boats are likely to replace two of the Challenger class, also procured from Sweden, that entered service from 2000.

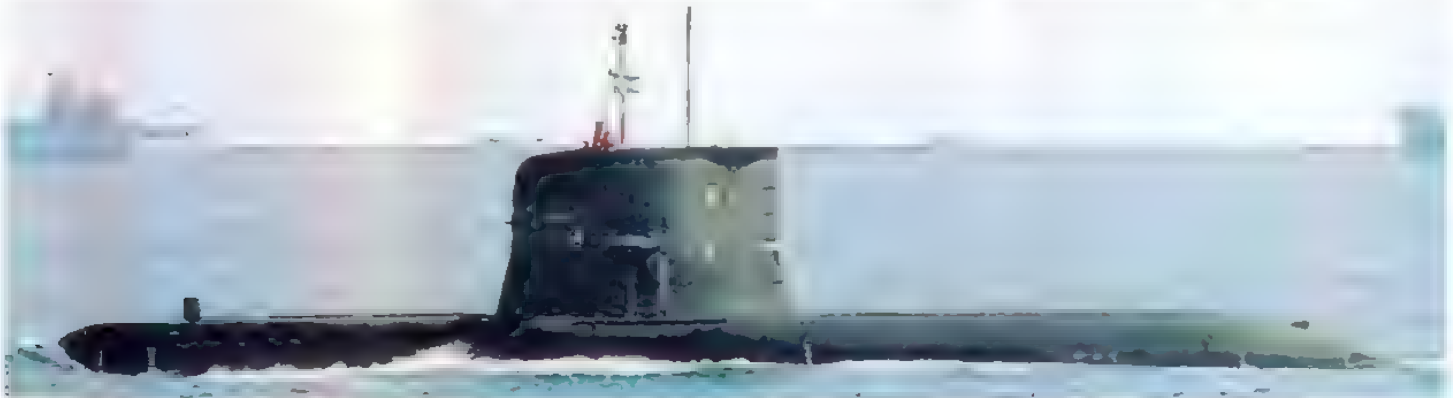
Modernisation: The modernisation package is expected to be similar to those given to the Södermanland class. This included the installation of Air Independent Propulsion (Stirling Mk 3 AIP) by the insertion of a 12 m plug in the

pressure hull. Other work included the installation of a pressurised diver's lock-out in the base of the sail to facilitate special forces operations and a new climate control system. The Thales Optronics CK 038 periscope was upgraded with a thermal imaging camera and an improved image intensifier. A new active sonar suite, Subac, may also be installed.

Structure: Single hulled with an X-type rudder/after hydroplane design. Diving depth 300 m (984 ft). Anechoic coating

Operational: See trials of the first boat are likely to start in 2009

Opinion: The A 14 submarines transferred to Singapore in the mid-1990s under projects Riken I and Riken II gave the Singapore Navy its first experience of submarine operations. The procurement of *Västergötland* and *Hälsingland* will offer a significant improvement in capability but may again serve as a stepping-stone towards procuring a class of next-generation submarines. In this respect, further collaboration with Sweden in its A 26 submarine programme is a possibility.



VÄSTERGÖTLAND CLASS

3/2004, John Brodie / 1343x/0



CONQUEROR

3/2000, Per Körnefeldt / 0084A34

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4 CHALLENGER (SJÖORMEN) CLASS (SSK)

Name	Builders	Laid down	Launched	Commissioned
CHALLENGER (ex-Sjöbjörnen)	Karlskronavarvet	1967	6 Aug 1968	28 Feb 1969
CENTURION (ex-Sjöormen)	Kockums	1965	25 Jan 1967	31 July 1968
CONQUEROR (ex-Sjölejonet)	Kockums	1966	29 June 1967	16 Dec 1968
CHIEFTAIN (ex-Sjöhunden)	Kockums	1966	21 Mar 1968	25 June 1969

Displacement, tons: 1,130 surfaced; 1,210 dived

Dimensions, feet (metres): 167.3 x 20 x 19
(51 x 6.1 x 5.8)

Main machinery: Diesel-electric; 2 Hedemora-Pielstick V12A/A2/15 diesels; 2,200 hp(m) (1.62 MW); 1 ASEA motor; 1,500 hp(m) (1.1 MW); 1 shaft

Speed, knots: 12 surfaced; 20 dived

Complement: 23 (7 officers)

Torpedoes: 4–21 in (533 mm) bow tubes. 10 FFV Type 613; anti-surface; wire-guided; passive homing to 15 km (8.2 n miles) at 45 kt; warhead 250 kg.

2–16 in (400 mm) tubes: 4 FFV Type 431; anti-submarine; wire-guided; active/passive homing to 20 km (10.8 n miles) at 25 kt; warhead 45 kg shaped charge.

Mines: Minelaying capability

Weapons control: UDS SUBTICS.

Radars: Navigation Terma; I-band.

Sonars: Plessey Hydra, hull-mounted; passive search and attack; medium frequency.

Programmes: It was announced on 23 September 1995 that a submarine would be acquired from Sweden for training purposes only. Three more of the same class acquired in July 1997 for conversion plus one more for spares.

Modernisation: A contract for new periscope systems was awarded to Koilmorgen Electro Optical in January 2005. Options include Model 76 and Model 90

Structure: Albacore hull. Twin-decked. Diving depth, 150 m (492 ft). Air conditioning added for tropical service, together with battery cooling

Operational: Challenger re-launched on 28 September 1997, Conqueror and Centurion on 28 May 1999 and Chieftain on 22 May 2001. Conqueror was recommissioned in Singapore on 24 July 2000 and Chieftain on 24 August 2002. Challenger and Centurion remained in Sweden to support training until January 2004 when they were transported to Singapore. Ex-Sjöhasten was also shipped as a source of spares. Centurion was recommissioned on 26 June 2004. The four submarines form 171 squadron. Based at Changi



CONQUEROR

9/2000, Sattler/Steel / 0105592



CONQUEROR

8/2006, Jürg Kürsener, 1164545

FRIGATES

6 FORMIDABLE (PROJECT DELTA) CLASS (FFGHM)

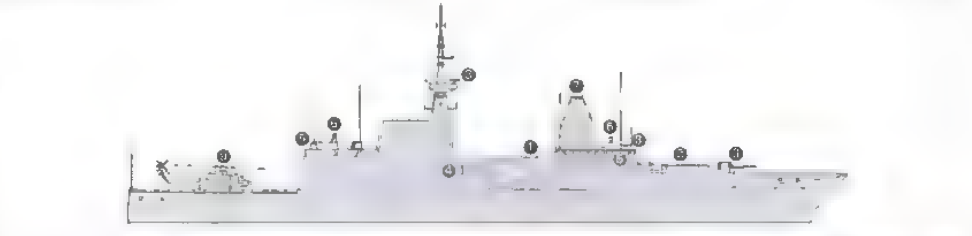
Name	No	Builders	Laid down	Launched	Commissioned
FORMIDABLE	68	DCN, Lorient	14 Nov 2002	7 Jan 2004	5 May 2007
INTREPID	69	Singapore SB and Marine	8 Mar 2003	3 July 2004	5 Feb 2008
STEADFAST	70	Singapore SB and Marine	15 Nov 2003	28 Jan 2005	5 Feb 2008
TENACIOUS	71	Singapore SB and Marine	22 May 2004	16 July 2005	5 Feb 2008
STALWART	72	Singapore SB and Marine	12 Nov 2005	9 Dec 2005	16 Jan 2009
SUPREME	73	Singapore SB and Marine	17 May 2005	9 May 2006	16 Jan 2009

Displacement, tons: 3,200 full load
 Dimensions, feet (metres): 374.0 x 52.5 x 16.4
 (114 x 16.0 x 5.0)
 Main machinery: CODAD; 4 MTU 20V 8000 M90 diesels;
 48,276 hp (36 kW); 2 shafts; cp props; bow thruster
 Speed, knots: 27. Range, n miles: 4,000 at 15 kt
 Complement: 71 + 15 aircrew

Missiles: SSM: 8 Boeing Harpoon ●, active radar homing to 130 km (70 n miles) at 0.9 Mach, warhead 227 kg.
 SAM Eurosam SAAAM, 2 octuple Sylver A 43VLS, 2 octuple Sylver A 50VLS ● for MBDA Aster 15; command guidance active radar homing to 15 km (8.1 n miles) anti-missile and to 30 km (16.2 n miles) anti-aircraft. 32 missiles
 Guns: 1 OTO Melara 3 in (76 mm) 62 Super rapid ●, 120 rds/ min to 16 km (8.7 n miles); weight of shell 6 kg. 2—20 mm. 2—12.7 mm MGs.

Torpedoes: 6—324 mm (2 triple (recessed)) ● tubes. Eurotorp A 244/S Mod 3; anti-submarine; active/passive homing to 7 km (3.8 n miles) at 33 kt; warhead 34 kg (shaped charge).
 Countermeasures: Decoys: 3 EADS NGDS 8-barrelled chaff ●, IR and anti-torpedo decoy launchers.
 ESM RAFAEL C-PEARL-M, intercept
 Combat data systems: DSTA/ST Electronics system
 Weapons Control: 2 EADS Nagir 2000 optronic directors ●.
 Radars: Air/search: Thales Herakles 3-D radar multifunction ●, E/F-band.
 Surface search/Navigation: 2 Terma Scanter 2001 ●, I-band.
 Sonars: EDO 980 ALOFTS VDS; low frequency (2 kHz).
 Helicopters: 1 S-70B Seahawk ●.

Programmes: Ordered from DCN International on 6 March 2000. First steel cut for hulls two and three on 2 October 2002. Prime Contractor is Singapore's Defence Science and Technology Agency (DSTA) who are also leading combat system integration in partnership with ST Electronics.



FORMIDABLE (Scale 1 : 1,200), Ian Sturton / 1153482



FORMIDABLE 5/2005, B Prézélin / 1133566

Structure: Derived from La Fayette class but there are notable differences to accommodate the weapon and sensor fit. Two of the four VLS modules are reported to be Sylver A 50, capable of launching the longer Aster 30 area-defence missile. Aster 15 successfully launched from Intrepid on 3 April 2008.
 Operational: The ships form 185 Squadron based at Changi.



STEADFAST 8/2006, Michael Nitz / 1353365



FORMIDABLE 10/2004, B Prézélin / 1044523

CORVETTES

6 VICTORY CLASS (FSGM)

Name	No	Builders	Launched	Commissioned
VICTORY	P 88	Lürssen Werft, Bremen	8 June 1988	18 Aug 1990
VALOUR	P 89	Singapore SB and Marine	10 Dec 1988	18 Aug 1990
VIGILANCE	P 90	Singapore SB and Marine	27 Apr 1989	18 Aug 1990
VALIANT	P 91	Singapore SB and Marine	22 July 1989	25 May 1991
VIGOUR	P 92	Singapore SB and Marine	1 Dec 1989	25 May 1991
VENGEANCE	P 93	Singapore SB and Marine	23 Feb 1990	25 May 1991

Displacement, tons: 595 full load

Dimensions, feet (metres): 204.7 oa; 190.3 wl × 27.9 × 10.2 (62.4; 58 × 8.5 × 3.1)

Main machinery: 4 MTU 16V 538 TB93 diesels, 15,020 hp (11 MW) sustained; 4 shafts

Speed, knots: 35

Range, n miles: 2,000 at 22 kt

Complement: 49 (8 officers)

Missiles: SSM: 8 McDonnell Douglas Harpoon ●; active radar homing to 130 km (70 n miles) at 0.9 Mach; warhead 227 kg

SAM: 2 Octuple (AI/Rafael Barak 1 ● radar or optical guidance to 10 km (5.5 m) at 2 Mach; warhead 22 kg

Guns: 1 OTO Melara 3 in (76 mm)/62 Super Rapid ●; 120 rds/min to 16 km (8.7 n miles); weight of shell 6 kg. 4 CIS 50 12.7 mm MGs

Torpedoes: 6—324 mm Whitehead B 515 (2 triple tubes ●. Whitehead A 244S; anti-submarine; active/passive homing to 7 km (3.8 n miles) at 33 kt; warhead 34 kg (shaped charge).

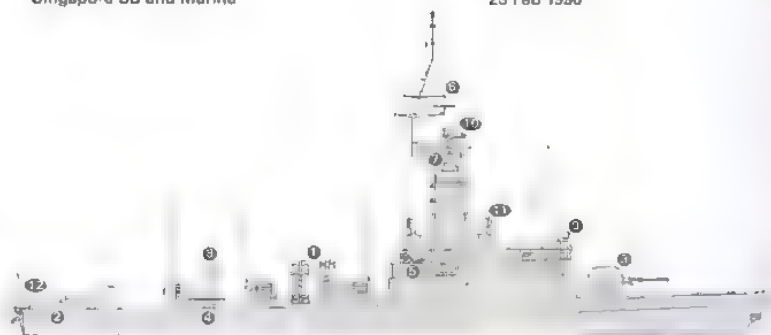
Countermeasures: Decoys: 2 Plessey Shield 9-barrelled chaff launchers ●. 4 Rafael (2 twin) long-range chaff launchers to be fitted below the bridge wings.

ESM: Elisra SEWS ●; intercept.

ECM: Rafael RAN 1101; ● jammer.

Combat data systems: Elbit command system. SATCOM ●.

Weapons control: Elbit MSIS optronic director ●.



VICTORY

(Scale 1 : 600), Ian Sturton / 011480Z

Radars: Surface search: Ericsson/Radamec Sea Giraffe 150HC ●; G/H-band.

Navigation: Kelvin Hughes 1007; I-band.

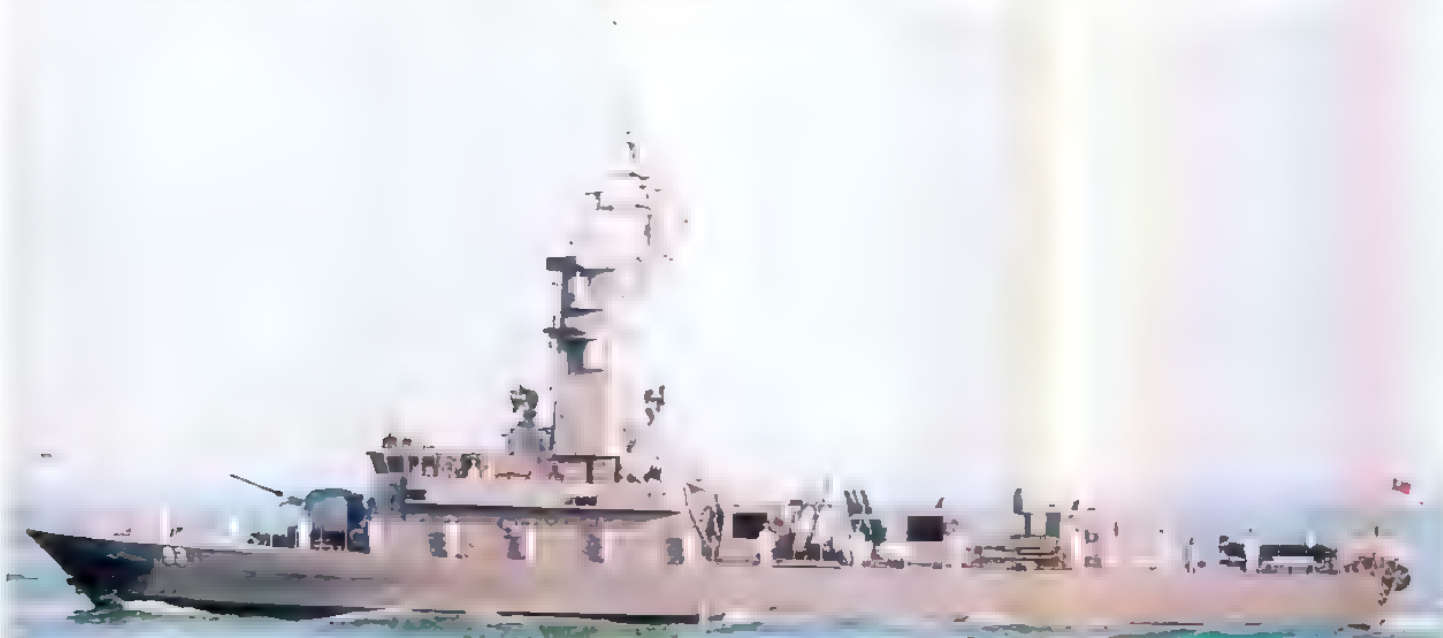
Fire control: 2 Elta EL/M-2221(X) ●; I/J/K band

Sonars: Thomson Sintra TSM 2064; VDS ●; active search and attack.

Programmes: Ordered in June 1986 to a Lürssen MGB 62 design similar to Bahrain and UAE vessels.

Modernisation: Barak launchers fitted on either side of the VDS, together with a second fire-control radar on the platform aft of the mast and an optronic director on the bridge roof. Rudder roll stabilisation retrofitted to improve sea-keeping qualities. Unidentified EW antennae have been installed below RAN 1101

Operational: Form 188 Squadron, part of the First Flotilla Designated Missile Corvettes (MCI). First live Barak firing in September 1997.



VENGEANCE

5/2004, David Boey / 1044608



VENGEANCE

7/2008, John Mortimer / 1353366

SHIPBORNE AIRCRAFT

Numbers/Type: 6 Sikorsky S-70B Seahawk.
Operational speed: 135 kt (250 km/h).
Service ceiling: 10,000 ft (3,050 m).
Range: 600 n miles (1,110 km).

Role/Weapon systems: Contract placed 21 January 2005 for six new helicopters for operation from Formidable class frigates. Delivery by 2010. Roles ASW, ASV and surveillance. Weapons and sensors to be announced.

LAND-BASED MARITIME AIRCRAFT

Notes: (1) The Air Force also has 40 F-16D Block 52-, 28 F-5 S/T Tiger II and 20 F-16C. (2) There are also six CH-47D used for maritime tasks and 20 AH-64D Apache Longbow. (3) Plans to replace E-2C Hawkeye aircraft with four Gulfstream 550 (G 550) AEW aircraft were announced in May 2007.

Numbers/Type: 4 Northrop Grumman E-2C Hawkeye.
Operational speed: 323 kt (598 km/h).
Service ceiling: 30,800 ft (9,390 m).
Range: 1,000 n miles (1,850 km).

Role/Weapon systems: Delivered in 1987 for air control and surveillance of shipping in sea areas around Singapore. Form 111 Squadron. Sensors: APS-138 radar; datalink for SSM targeting. Weapons: Unarmed.



HAWKEYE 9/2003, David Booy / 056/531

Numbers/Type: 5 Fokker F50 Mk 2S Enforcer.
Operational speed: 220 kt (463 km/h).
Service ceiling: 29,500 ft (8,990 m).
Range: 2,700 n miles (5,000 km).

Role/Weapon systems: In service from September 1995. Part of Air Force 121 Squadron but with mixed crews and under naval op con. One possibly modified for Sigint. Sensors: Texas Instruments APS-134(V)7 radar; GEC FLIR; Elta ESM. Jammer fitted under wing-tip. Weapons: Harpoon ASM, mines, A-244S torpedoes.



FOKKER F 50 9/2003, David Booy / 056/532

PATROL FORCES

2 RAFAEL PROTECTOR UNMANNED SURFACE VEHICLES (USV)

Displacement, tons: To be announced
Dimensions, feet (metres): 29.5 x 7 x 7 (9.0 x 7 x 7)
Main machinery: 1 diesel; 1 waterjet propulsor
Speed, knots: 30
Guns: 1 Mini-Typhoon stabilised 12.7 mm MG.
Weapons control: Toplite EO sensor pod.

Comment: Developed jointly by Rafael and Aeronautics Defense Systems, Protector was first revealed in June 2003. It is an unmanned patrol craft based on an 9 m Rigid Inflatable Boat (RIB) with composite-materials superstructure that encloses the sensor pod, navigation radar, GPS antenna and gyro-stabilised inertial navigation system. Five video channels are used to transmit the outputs from the Toplite and two deck-mounted cameras back to a remote operator. The vessel also carries microphones and loudspeakers, allowing the operator to hail the crew of a suspicious vessel. With an endurance of about eight hours, it can be controlled by line-of-sight communications from ship or shore for various missions such as force protection, anti-terror surveillance and reconnaissance, mine warfare and electronic warfare. An unconfirmed number procured by the Singapore Navy in 2004 to support maritime security and interdiction operations in the Northern Arabian Gulf. They were operated by RSS *Resolution* during a deployment that ended in March 2005. The Singapore Navy also participates in the US Navy's Spartan technology demonstrator programme.



PROTECTOR 5/2005, Guy Toremans / 117/050

11 FEARLESS CLASS (PCM/PGM)

Name	No	Builders	Launched	Commissioned
FEARLESS	94	Singapore STEC	18 Feb 1995	5 Oct 1996
BRAVE	95	Singapore STEC	9 Sep 1995	5 Oct 1996
GALLANT	97	Singapore STEC	27 Apr 1996	3 May 1997
DARING	98	Singapore STEC	27 Apr 1996	3 May 1997
DAUNTLESS	99	Singapore STEC	23 Nov 1996	3 May 1997
RESILIENCE	82	Singapore STEC	23 Nov 1996	7 Feb 1998
UNITY	83	Singapore STEC	19 July 1997	7 Feb 1998
SOVEREIGNTY	84	Singapore STEC	19 July 1997	7 Feb 1998
JUSTICE	85	Singapore STEC	18 Oct 1997	7 Feb 1998
FREEDOM	86	Singapore STEC	18 Oct 1997	22 Aug 1998
INDEPENDENCE	87	Singapore STEC	18 Apr 1998	22 Aug 1998

Displacement, tons: 500 full load
Dimensions, feet (metres): 180.4 x 28.2 x 8.9 (55 x 8.6 x 2.7)
Main machinery: 2 MTU 12V 596 TE90 diesels; 8,564 hp(m) (6.29 MW) sustained, 2 Kamewa water-jets
Speed, knots: 20
Range, n miles: 1,800 at 15 kt
Complement: 32 (5 officers)

Missiles: SAM: Matra Simbad twin launcher; Mistral, IR homing to 4 km (2.2 n miles); warhead 3 kg
Guns: 1 OTO Melara 3 in (76 mm)/62 Super Rapid; 120 rds/min to 16 km (8.7 n miles); weight of shell 6 kg 4 CIS 50 12.7 mm MGs. 1—25 mm Bushmaster (B2).
Torpedoes: 6—324 mm Whitehead B515 (triple) tubes; (94-99) Whitehead A244S; active/passive homing to 7 km (3.8 m) at 33 kt; warhead 34 kg (shaped charge).
Countermeasures: Decoys: 2 GEC Marine Shield III 102 mm sextuple fixed chaff launchers
ESM: Elisra NS-9010C; intercept
Weapons control: ST 3100 WCS. Elbit MSIS optronic director.
Raders: Surface search and fire control, Elta EL/M-2228(X); I-band Navigation. Kelvin Hughes 1007; I-band.
Sonars: Thomson Sintra TSM 2362 Gudgeon; hull-mounted; active attack; medium frequency (94-99 only). Towed array fitted in *Brave*.

Programmes: Contract awarded on 27 February 1993 for 12 patrol vessels to Singapore Shipbuilding and Engineering.
Structure: First six are ASW specialist ships. All have water-jet propulsion. Second batch were to have been fitted with Gabriel II SSMs but this plan has been shelved. MSIS director being fitted. *Fearless* modified with new EW radome on mainmast. Simbad SAM in *Brave* replaced by towed array and in *Resilience* by 25 mm Bushmaster. *Sovereignty* has deck crane to facilitate special forces operations.
Operational: All serve with Coastal Command. The first five form 189 Squadron and the second six 182 Squadron. *Unity* is to be used as a test bed for new technologies including an Indep 21 combat system. *Courageous* badly damaged in collision on 3 January 2003 and unlikely to be repaired.



SOVEREIGNTY 5/2004, David Booy / 1044510



BRAVE (with VDS) 3/2004, Bob Fildes / 1044509



RESILIENCE 8/2007, Bob Fildes / 1353357

12 INSHORE PATROL CRAFT (PB)

FB 31-42

Displacement, tons: 20 full load
 Dimensions, feet (metres): 47.6 x 13.8 x 3.6 (14.5 x 4.2 x 1.1)
 Main machinery: 2 MAN D2848 LE 401 diesels; 1,341 hp(m) (1 MW); 2 Hamilton 362 water-jets
 Speed, knots: 30
 Complement: 5
 Guns: 1—40 mm grenade launcher, 1—12.7 mm MG, 2—7.62 mm MGs
 Radars: Surface search Racal Decca; I-band

Comment: Built by Singapore SBEC and delivered in 1990-91. Based at Tuas. Designated Fast Boats (FB). Some are kept in storage at Tuas. Similar to Police PT 1-19 class.



FB 35

5/2007, Guy Toremans / 115/601

100 LANDING CRAFT (LCVP/FCEP)

Displacement, tons: 4 full load
 Dimensions, feet (metres): 44.6 x 12.1 x 2 (13.6 x 3.7 x 0.6)
 Main machinery: 2 MAN D2866 LE diesels; 816 hp(m) (600 kW); sustained; 2 Hamilton 362 water-jets
 Speed, knots: 20. Range, n miles: 100 at 20 kt
 Complement: 3
 Military lift: 4 tons or 30 troops

Comment: Fast Craft, Equipment and Personnel (FCEP), built by Singapore SBEC from 1989 and are used to transport troops around the Singapore archipelago. They have a single bow ramp and can carry a rifle platoon. More than 25 are in service and the rest in storage. Have numbers in the 500 and 800 series except for those carried in LSTs.



LCVPs

8/2003, David Boey / 0567534

4 RPL TYPE (LCU)

RPL 60-63

Displacement, tons: 151 standard
 Dimensions, feet (metres): 120.4 x 28 x 5.9 (36.7 x 8.5 x 1.8)
 Main machinery: 2 MAN D2540MLE diesels, 860 hp(m) (632 kW); 2 Schottel props
 Speed, knots: 10.7
 Complement: 6
 Military lift: 2 tanks or 450 troops or 110 tons cargo (fuel or stores)

Comment: First pair built at North Shipyard Point, second pair by Singapore SBEC. First two launched August 1985, next two in October 1985. Cargo deck 86.9 x 21.6 ft (26.5 x 6.6 m). Bow ramp suitable for beaching



RPL 60

6/2001, John Mortimer / 0125301

AMPHIBIOUS FORCES

Notes: (1) The Tiger 40 hovercraft acquired in 1997 is beyond repair but the design may be used again for a repeat order
 (2) Trials of at least one hovercraft ACVI were reported in early 2005

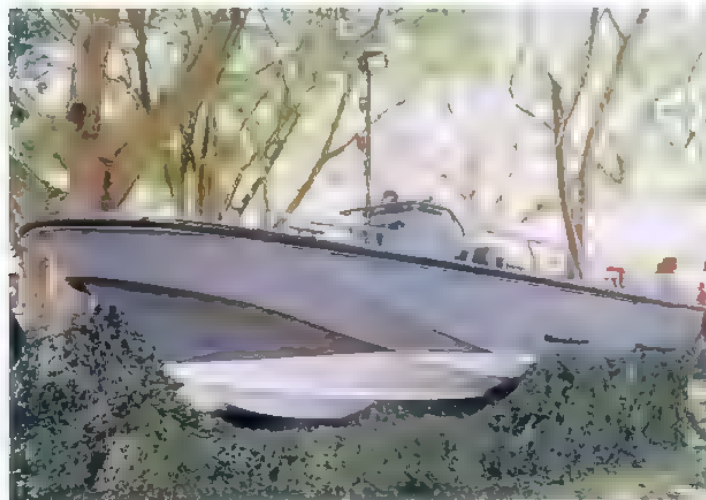


ACVI

5/2005, Guy Toremans / 117/051

10 DIVING SUPPORT CRAFT (YTB)

Comment: Boston Whalers used by the Naval Diving Unit. Armed with 7.62 mm MGs and 40 mm grenade launchers.



BOSTON WHALER

8/2000, David Boey / 0105601

6 FAST INTERCEPT CRAFT (HSIC)

Displacement, tons: 12.5 full load
 Dimensions, feet (metres): 47.6 x 9.4 x 4.4 (14.5 x 2.85 x 1.35)
 Main machinery: Triple Seatek diesels coupled to Trimax drives
 Speed, knots: 55
 Guns: 2 CIS 40 mm AGL
 2 CIS 50 12.7 mm MGs
 1—7.62 mm GPMG
 Radars: Raytheon SL 72.

Comment: Details are of craft used by Naval Diving Unit. The multistep planing hull design is similar to that in UK service. At least five other planning and wave-piercing craft are reported to be in service with special forces units.

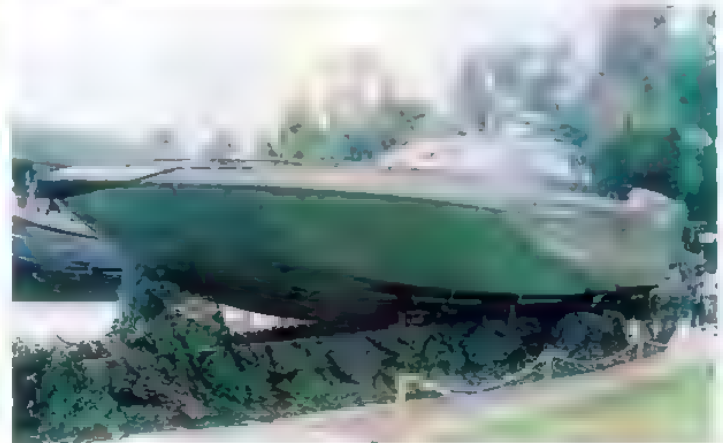


FIG 145

9/2002, David Boey / 0554779

450 ASSAULT CRAFT (LCA)

Dimensions, feet (metres): 17.7 x 5.9 x 2.3 (5.4 x 1.8 x 0.7)
Main machinery: 1 outboard, 50 hp(m) (37 kW)
Speed, knots: 12
Military lift: 12 troops
Guns: 1—7.62 mm MG or 40 mm grenade launcher.

Comment: Built by Singapore SBEC. Man-portable craft which can carry a section of troops in the rivers and creeks surrounding Singapore island. Numbers are approximate.



ASSAULT CRAFT

9/1995, David Booy / 0080598

30 LANDING CRAFT UTILITY (LCU)

300 series

Dimensions, feet (metres): 75.4 x 19.7 x 2.6 (23 x 6 x 0.8)
Main machinery: 2 MAN 2842 LZE diesels; 4,400 hp(m) (3.23 MW); 2 Kamewa water-jets
Speed, knots: 20. **Range, n miles:** 180 at 16 kt
Complement: 4
Military lift: 18 tons
Guns: 2—12.7 mm MGs or 40 mm grenade launchers.

Comment: This is a larger and much faster version of the LCVPs. Construction started in 1993. Designated Fast Craft Utility (FCU).



LCU 394

12/2007, Chris Sattler / 1353370

4 ENDURANCE CLASS (LPDM)

Name	No	Builders	Laid down	Launched	Commissioned
ENDURANCE	207	Singapore Technologies Marine, Banoi	26 Mar 1997	14 Mar 1998	18 Mar 2000
RESOLUTION	208	Singapore Technologies Marine, Banoi	22 Oct 1997	1 Aug 1998	18 Mar 2000
PERSISTENCE	209	Singapore Technologies Marine, Banoi	3 Apr 1998	13 Mar 1999	7 Apr 2001
ENDEAVOUR	210	Singapore Technologies Marine, Banoi	15 Oct 1998	12 Feb 2000	7 Apr 2001

Displacement, tons: 8,500 full load
Dimensions, feet (metres): 462.6 pp x 68.9 x 16.4 (141 x 21 x 5)
Main machinery: 2 Ruston 16RK 270 diesels, 12,000 hp(m) (8.82 MW); 2 shafts; Kamewa cp props; bow thruster
Speed, knots: 15
Range, n miles: 10,400 at 12 kt
Complement: 65 (8 officers)
Military lift: 350 troops, 18 tanks; 20 vehicles; 4 LCPV

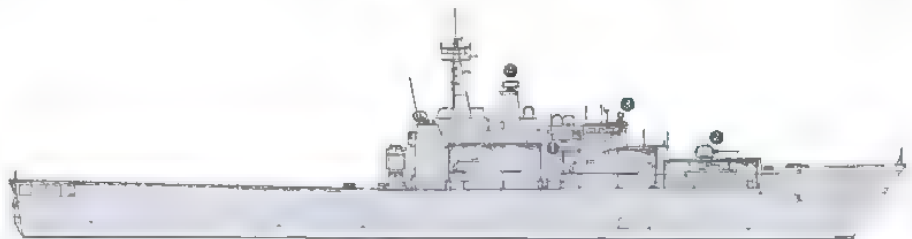
Missiles: SAM. 2 Matra Simbad twin launchers for Mistral ; IR homing to 4 km (2.2 n miles); warhead 3 kg. 2 Barak octuple launchers may be fitted in due course
Guns: 1 Otobrada 76 mm/62 Super Rapid ; 120 rds/min to 16 km (8.7 n miles); weight of shell 6 kg. 1—26 mm Bushmaster (can be fitted). 5—12.7 mm MGs.

Weapons control: CS Defense NAJIR 2000 optronic director
Radars: Air/surface search: Elta EL/M-2238 , E/F-band. Navigation: Kelvin Hughes Type 1007; I-band.
Helicopters: 2 Super Pumas.

Programmes: Ordered in September 1994 and confirmed in mid-1996.

Structure: US drive through design with bow and stern ramps. Single intermediate deck with three hydraulic ramps. Helicopter platform aft. Indal ASIST helo handling system. Dockwell for four LCUs and davits for four LCVPs. Two 25 ton cranes. Four 36 m self-propelled pontoons can be secured to winching points on the ships' sides. Protector unmanned surface vehicles were operated from *Resolution* in 2005.

Operations: *Endurance* completed the RSN's first round-the-world deployment in late 2000. *Resolution* deployed in November 2004 as part of coalition forces in northern Gulf. Based at Changi. Form 191 Squadron.



RESOLUTION

(Scale 1 : 1,200), Ian Sturton / 1153491



RESOLUTION

12/2007, Chris Sattler / 1353368



PERSISTENCE

10/2008, Michael Nitz / 1353369

MINE WARFARE FORCES

4 BEDOK (LANDSORT) CLASS (MINEHUNTERS) (MHC)

Name	No	Builders	Launched	Commissioned
BEDOK	M 105	Kockums/Karlskrona	24 June 1993	7 Oct 1995
KALLANG	M 106	Singapore Sh pbuilding	28 Jan 1994	7 Oct 1995
KATONG	M 107	Singapore Shipbuilding	8 Apr 1994	7 Oct 1995
PUNGGOL	M 108	Singapore Sh pbuilding	16 July 1994	7 Oct 1995

Displacement, tons: 360 full load
 Dimensions, feet (metres): 155.8 × 31.5 × 7.5 (47.5 × 9.6 × 2.3)
 Main machinery: 4 Saab Scania diesels; 1,592 hp(m) (1.17 MW); coupled in pairs to 2 Voith Schneider props
 Speed, knots: 15
 Range, n miles: 2,000 at 10 kt
 Complement: 31 (5 officers)

Guns: 1 Bofors 40 mm/70 4—12.7 mm MGs.
 Mines: 2 raia
 Weapons control: Thomson CSF TSM 2061 Mk II minehunting and mine disposal system. Signal WM20 director.
 Radars: Navigation, Norcontrol DB 2000; I-band
 Sonars: Thomson-CSFTSM 2022; hull-mounted; minehunting; high frequency.

Programmes: Kockums/Karlskrona design ordered in February 1991. *Bedok* started trials in Sweden in December 1993, and was shipped to Singapore in early 1994 to complete. Prefabrication work done for the other three in Sweden with assembly and fitting out in Singapore at Bonoi Basin.

Structure: GRP hulls. Two PAP 104 Mk V ROVs embarked. Recal Precision Navigation system. Two sets of Swedish SAM minesweeping system. Magnavox GPS

Operational: Form 194 Squadron, based at Tuas.



PUNGGOL 4/2004, John Mortimer / 1133564



BEDOK 2/2005, Chris Sattler / 1133563

AUXILIARIES

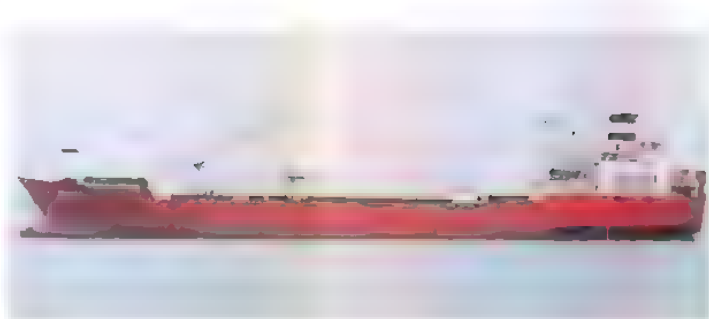
Notes: (1) There is one Floating Dock with a lift of 600 tons. *FD 2* at Changi.
 (2) A 2,700 ton oil rig supply ship *MV Kendrick*, built in Poland in 1985, is chartered to support submarine rescue operations. Additional roles include acting as a target ship for submarine torpedo firings and torpedo recovery
 (3) *MV Avatar*, a Ro-Ro vessel, is leased to support submarine rescue operations.
 (4) It was announced on 14 March 2007 that ST Marine had been awarded a contract to provide a new Submarine Support and Rescue Vessel (SSRV) to replace *Kendrick* and *Avatar* in mid-2009. The new ship is to act as mothership for a DSAR-5 submarine rescue vehicle



SSRV (indicative design) (Scale 1 : 1,200), Ian Sturton / 1166671



KENDRICK 8/2005, David Booy / 1164538



AVATAR 3/2005, David Booy / 1164537

POLICE COAST GUARD

12 SHARK CLASS (WPB)

HAMMERHEAD SHARK (ex-Swift Archer) PH 50 (ex-P 16)
 MAKO SHARK (ex-Swift Lancer) PH 51 (ex-P 12)
 WHITE SHARK (ex-Swift Swordsman) PH 52 (ex-P 14)
 BLUE SHARK (ex-Swift Combatant) PH 53 (ex-P 18)
 TIGER SHARK (ex-Swift Knight) PH 54 (ex-P 11)
 BASKING SHARK (ex-Swift Warrior) PH 55 (ex-P 15)
 SANDBAR SHARK (ex-Swift Chieftain) PH 56 (ex-P 23)
 THRESHER SHARK (ex-Swift Conqueror) PH 57 (ex-P 21)
 WHITETIP SHARK (ex-Swift Warlord) PH 58 (ex-P 17)
 BLACKTIP SHARK (ex-Swift Challenger) PH 59 (ex-P 19)
 GOBLIN SHARK (ex-Swift Cavalier) PH 60 (ex-P 20)
 SCHOOL SHARK (ex-Swift Centurion) PH 61 (ex-P 22)

Displacement, tons: 45.7 full load
 Dimensions, feet (metres): 74.5 × 20.3 × 5.2 (22.7 × 6.2 × 1.6)
 Main machinery: 2 Deutz BA16M816 diesels, 2,680 hp(m) (1.96 MW) sustained; 2 shafts
 Speed, knots: 32
 Range, n miles: 550 at 20 kt; 900 at 10 kt
 Complement: 15
 Guns: 1 Derlikon 20 mm GAM-801, 2 CIS 90 12.7 mm MGs.
 Radars: Surface search: Decca 1226; I-band.

Comment: Built by Singapore SBEC and all completed 20 October 1981 for the Navy. First four transferred from the Navy on 15 February 1993, second four on 8 April 1994, last four on 7 November 1996. All to be fitted with ARPA radar in due course. Employed on territorial waters patrol



HAMMERHEAD SHARK 4/2004, Bob Flides / 1044518

2 COMMAND CRAFT (WPB)

MANTA RAY PT 20 EAGLE RAY PT 30

Dimensions, feet (metres): 65.6 × 19.7 × 3.3 (20.0 × 6.0 × 1.0)
 Main machinery: 2 MTU 16V 2000 M90 diesels; 2 Hamilton 521 water-jets
 Speed, knots: 30
 Complement: 5
 Guns: 2—7.62 mm MGs.

Comment: Built by Asia-Pacific Geraldton, Singapore to a Geraldton, Australia design. These command craft are larger versions of the 18 m patrol craft



MANTA RAY 4/2002, David Booy / 0554731

25 PATROL CRAFT (WPB)

PT 21-29 PT 31-39 PT 61-67

Dimensions, feet (metres) 69.1 x 17.7 x 3 (18 x 5.4 x 0.9)

Main machinery: 2 MTU 16V 2000M 90 diesels; 2 Hamilton 521 waterjets

Speed, knots: 40

Complement: 5

Guns: 2-762 mm MGs.

Comment: 18 patrol craft built by Geraldton Boats, Australia in 1999. A further seven patrol craft delivered late 2000.



PT 34

8/2007, Bob Fildes / 13533/1

19 PATROL CRAFT (WPB)

PT 1-19

Displacement, tons: 20 full load

Dimensions, feet (metres) 47.6 x 13.8 x 3.9 (14.5 x 4.2 x 1.2)

Main machinery: 2 MAN D2542MLE diesels, 1,076 hp(m) (791 kW); or MTU 12V 183 TC91 diesels; 1,200 hp(m) (882 kW) maximum; 2 shafts

Speed, knots: 30. **Range, n miles:** 310 at 22 kt

Complement: 4 plus 8 spare berths

Guns: 1-762 mm MG

Radars: Surface search: Furuno or Racal Decca Bridgemaster; I-band.

Comment: First 13 completed by Singapore SBEC between January and August 1984, two more completed February 1987 and eight more (including two Command Boats) in 1989. Of aluminium construction. Four are operated by Customs and Excise. There are differences in the deckhouses between earlier and later vessels. Employed on patrol duties in southern territorial waters.



PT 12

7/2007, Bob Fildes / 13533/2

11 INTERCEPTOR CRAFT (PBF)

SAILFISH PK 10

SPEARFISH PK 20

WHITE MARLIN PK 21

SILVER MARLIN PK 22

STRIPED MARLIN PK 23

BLACK MARLIN PK 24

BLUE MARLIN PK 25

JUMPING MARLIN PK 26

BILLFISH PK 30

SWORDFISH PK 40

SPIKEFISH PK 50

Dimensions, feet (metres): 42 x 10.5 x 1.6 (12.8 x 3.2 x 0.5)

Main machinery: 3 Mercruiser 502 Magnum diesels; 3 shafts

Speed, knots: 50

Complement: 5

Guns: 1-762 mm MG

Comment: First five built locally and delivered in 1995. Colours have been changed to dark blue hulls and grey superstructures, to make the craft less visible at sea. Six more ordered from Pro Marine/North Shipyard in 1999 to a slightly different design, with twin outboard motors.



SWORDFISH

4/2002, David Boey / 0554733



WHITE MARLIN

1/2000, David Boey / 0105606

HARBOUR CRAFT

Comment: There are large numbers of harbour craft, many of them armed, with PC numbers. These include four RH:Bs with Yamaha 200 hp outboards capable of 43 kt, and with pennant numbers PJ 1-4.



RH: B

8/2002, David Boey / 1044506

0 + 10 DAMEN STAN PATROL 3507 (PATROL CRAFT) (WPB)

Displacement, tons: 140 full load

Dimensions, feet (metres): 114.8 x 24.3 x 5.7 (35.0 x 7.4 x 1.75)

Main machinery: 3 MTU 16V 4000 M71 diesels; 3 Hamilton waterjets

Speed, knots: 38

Range, n miles: 900 at 15 kt

Complement: 14 (plus 20 passengers)

Guns: 1-25 mm, 2-12.7 mm MGs.

Comment: Following initiation of the bid process in December 2004, five bids had been received by 18 April 2005. Contract for ten new craft, to replace the Shark class, awarded to Damen Shipyards, Singapore, on 20 June 2006. The craft are of aluminium monohull construction. The contract includes the provision of training, spares and other services. The first of class is to enter service in 2009 with the completion of the programme by 2011. The craft are to be equipped with night-vision equipment.



DAMEN 3507

6/2006, Damen Shipyards / 1164497

32 FAST RESPONSE CRAFT (PBF)

PC 201-232

Dimensions, feet (metres) 37.7 × 10.8 × 1.6 (11.5 × 3.3 × 0.5)
 Main machinery: 3 Mercury outboard motors; 750 hp (560 kW)
 Speed, knots: 40

Comment: Order placed August 2000 with Asia Pac Geraldton for 20 craft delivered in 2002. A further twelve craft were later added



PC 209

4/2002, David Boey / 0554734

CUSTOMS

Notes: Customs Craft include CE 1-4 and CE 5-8, the latter being sisters to PT 1 Police Craft.



CE 8

10/2002, Mick Prendergast / 0533877



Slovenia

Country Overview

Formerly a constituent republic of Yugoslavia, the Republic of Slovenia proclaimed its independence in 1991. Situated in south-eastern Europe, it is bordered to the north by Austria and Hungary, to the south by Croatia and to the west by Italy. With an area of 7,820 square miles, it has a short 25 n mile coastline with

the Adriatic Sea on which the port of Koper is located. The capital and largest city is Ljubljana. Territorial waters (12 n miles) are claimed.

Headquarters Appointments

Chief of General Staff
 Lieutenant General Albin Gutman

Headquarters Appointments—continued

Chief of Navy Detachment:
 Commander Ivan Zidar

Personnel

2009: 56

General

Navy formed in January 1993.

Bases

Koper

PATROL FORCES

1 SUPER DVORA MK II (PBF)

Name	No	Builders	Commissioned
ANKARAN	HPL 21	IAI Ramta	Aug 1996

Displacement, tons: 58 full load
 Dimensions, feet (metres): 82 × 18.4 × 3.6 (26.9 × 5.6 × 1.1)
 Main machinery: 2 MTU 12V 396TE94 diesels; 4,570 hp(m) (3.36 MW); 2 ASD 15 surface drives
 Speed, knots: 45. Range, n miles: 700 at 30 kt
 Complement: 10 (5 officers)
 Guns: 2 Oerlikon 20 mm; 2—7.62 mm MGs
 Weapons control: Elop MSIS optronic director.
 Radars: Surface search: Raytheon; I-band

Comment: Delivered in August 1996 at Isola base. Plans for a second craft have been cancelled.



ANKARAN

6/1999, Slovenian Navy / 0080597

0 + 1 SVETLYAK (PROJECT 1041Z) CLASS (PATROL SHIP) (PBO)

Displacement, tons: 375 full load
 Dimensions, feet (metres): 159.1 × 30.2 × 11.5 (48.5 × 9.2 × 3.5)
 Main machinery: 3 diesels; 14,400 hp(m) (10.58 MW); 3 shafts
 Speed, knots: 31. Range, n miles: 2,200 at 13 kt
 Complement: 36 (4 officers)
 Missiles: SAM: SA-N-10 Igla quad launcher; manual aiming, IR homing to 6 km (3.2 n miles) at 15 Mach; warhead 1.5 kg.
 Guns: 1—30 mm/65 AK 306, 6 barrels; 3,000 rds/min combined to 2 km; 12 missiles, 2—14.5 mm.
 Radars: Surface search: To be announced.
 Navigation: To be announced

Comment: It was announced on 18 July 2008 that one Svetlyak patrol ship is to be acquired from Russia, reportedly as part of a deal to recover Yugoslav war debt. The ships are based on those in service in the Russian Border Guard. Similar craft have been exported Vietnam.

POLICE

Notes: In addition there is a 40 kt cabin cruiser *Sinji Galeb* (P 101) and two RIBs.

1 HARBOUR PATROL CRAFT (PBF)

Name	No	Builders	Commissioned
LADSE	P 111	Aviotechnica	21 June 1995

Displacement, tons: 44 full load
 Dimensions, feet (metres): 65.3 × 16.4 × 3 (19.9 × 5 × 0.9)
 Main machinery: 2 MTU 8V 396TE84 diesels; 2,400 hp(m) (1.76 MW); 2 shafts
 Speed, knots: 40
 Range, n miles: 270 at 38 kt
 Complement: 10
 Guns: 1—7.62 mm MG.
 Radars: Surface search: I-band

Comment: Acquired from Italy in 1995



LADSE

10/1997 / 0080598

Solomon Islands



Country Overview

Formerly a British protectorate, the Solomon Islands gained independence in 1978. Its head of state is the British sovereign, who is represented by a Governor-General. Situated in the southwest Pacific Ocean, east of New Guinea, the country comprises more than 35 islands and numerous atolls which extend some 650 n miles from east to west and includes most of the Solomon

Islands group. The six main islands are: Guadalcanal, Malaita, New Georgia, San Cristobal (now Makira), Santa Isabel and Choiseul. Vella Lavella, Ontong Java, Rennell, Bellona and the Santa Cruz islands are also part of the group, together with the Florida, Russell, Reef and Duff island groups. Honiara, on Guadalcanal, is the capital and principal port. An archipelagic state, territorial seas (12 n miles) are claimed. An Exclusive Economic Zone (EEZ)

(200 n miles) is also claimed but limits have not been fully defined by boundary agreements. Patrol boats are operated by the National Surveillance and Reconnaissance Force (NSRF)

Headquarters Appointments

Director of Maritime forces:
Chief Superintendent Eddie Tokuru

Honiara (HQ NSRF)

Personnel

2009. 60 (14 officers)

Prefix to Ships' Names

RSIPV

POLICE

2 PACIFIC CLASS (LARGE PATROL CRAFT) (PB)

Name	No	Builders	Commissioned
LATA	03	Australian Shipbuilding Industries	3 Sep 1988
AUKI	04	Australian Shipbuilding Industries	2 Nov 1991

Displacement, tons: 162 full load
Dimensions, feet (metres): 103.3 x 28.6 x 7.5 (31.5 x 8.1 x 2.3)
Main machinery: 2 Caterpillar 3516TA diesels; 4,400 hp (3.28 MW) sustained; 2 shafts
Speed, knots: 20
Range, n miles: 2,230 at 12 kt
Complement: 14 (1 officer)
Guns: 3–12.7 mm MGs.
Radars: Surface search: Furuno 8100-D; I-band.

Comment: Built under the Australian Defence Co-operation Programme. Training, operational and technical assistance provided by the Royal Australian Navy. Aluminium construction. Nominal endurance of 10 days. The Australian government has extended the Pacific Patrol Boat programme but, following suspension of most of support of the Solomon Islands' craft in 2001, an overdue half-life refit was not completed for *Auki* until 2002. Life-extension refit for *Lata* completed at Townsville in 2005. *Auki* is due for a similar refit in 2010



AUKI

6/2006, Chris Sattler / 1164971



LATA

6/2006, Chris Sattler / 1164970

1 INSHORE PATROL CRAFT (PBR)

JACKPOT

Comment: Details are not known.



JACKPOT

4/2007, Chris Sattler / 1335712

South Africa



Country Overview

The Republic of South Africa is bordered to the north by Namibia, Botswana, Zimbabwe, Mozambique and Swaziland. With an area of 472,731 square miles, it has a 1,512 n mile coastline with the south Atlantic and Indian Oceans. South Africa also has sovereignty over the Prince Edward Islands which lie some 950 n miles south-east of Port Elizabeth. The independent country of Lesotho forms an enclave in the eastern part of the country. The administrative capital of South Africa is Pretoria and the judicial capital is Bloemfontein. Cape Town is the legislative capital and a prominent port. There are further ports at Mossel Bay, Port Elizabeth, East London, Durban, Saldanha, and Richards Bay. Territorial seas (12 n miles) are claimed. It also claims a 200 n mile EEZ but its limits have not been fully defined.

Headquarters Appointments

Chief of the Navy:
Vice Admiral J Mudimu
Chief of Naval Staff:
Rear Admiral M Magalefa
Flag Officer Fleet:
Rear Admiral RW Higgs

Personnel

(a) 2009: 4,728 naval
 (b) 2,266 (Public Service Act Personnel)

Prefix to Ships' Names

SAS (South African Ship)

Bases

Simon's Town (main); Durban (naval station); Port Elizabeth (naval station); Saldanha Bay (ratings' training), Gordon's Bay (officer training).

DELETIONS

Patrol Forces

2007 *Makhanda*

SUBMARINES

3 TYPE 209/1400 MOD (SA) CLASS (SSK)

Name	No	Builders	Laid down	Launched	Commissioned
MANTHATSI	S 101	Howaldswerke, Kiel	22 May 2001	15 June 2004	3 Nov 2005
CHARLOTTE MAXEKE	S 102	Thyssen Nordseewerke, Emden	12 Nov 2003	4 May 2005	14 Mar 2007
QUEEN MODJADJI I	S 103	Thyssen Nordseewerke, Emden	Nov 2004	14 Mar 2007	30 Jan 2008

Displacement, tons: 1,454 surfaced; 1,594 dived
Dimensions, feet (metres) 201.5 x 24.7 x 18.8
(62 x 7.6 x 5.8)

Main machinery: Diesel electric: 4 MTU 12V 396 diesels,
3,800 hp(m) (2.8 MW); 4 alternators; 1 Siemens motor;
5,032 hp(m) (3.7 MW); 1 shaft
Speed, knots: 10 surfaced; 21.5 dived

Complement: 30

Torpedoes: 8 – 21 in (533 mm) bow tubes. 14 torpedoes
Countermeasures: ESM Grintek Avtronics, intercept.

Weapons control: STN Atlas ISUS 90 TFCS.

Radars: Surface search: I band

Sonars: STN Atlas CSU 90; hull mounted and flank
arrays.

Programmes. Being acquired from the German Submarine Consortium. Final approval given on 15 September 1999. Contract signed on 7 July 2000. *Manthatsi* arrived at Simon's Town on 7 April 2006, *Charlotte Maxeke* on 26 April 2007 and *Queen Modjadji I* on 22 May 2008
Structure: Diving depth 250 m (820 ft). Zeiss optronic mast



QUEEN MODJADJI I

4/2008*, Michael Nitz / 1335825



CHARLOTTE MAXEKE

3/2008*, M Declerck / 1335824



MANTHATSI

2/2006, Michael Nitz / 1158714

FRIGATES

4 VALOUR CLASS (MEKO A-200 SAN) (FFGHM)

Name	No	Builders	Laid down	Launched	Commissioned
AMATOLA	F 145	Blohm + Voss, Hamburg	2 Aug 2001	8 June 2002	16 Feb 2006
ISANDLWANA	F 146	Howaldswerke, Kiel	26 Oct 2001	5 Dec 2002	27 July 2006
SPOENKOP	F 147	Blohm + Voss, Hamburg	28 Feb 2002	6 June 2003	16 Feb 2007
MENDI	F 148	Howaldswerke, Kiel	28 June 2002	15 June 2004	20 Mar 2007

Displacement, tons: 3,590 full load
 Dimensions, feet (metres): 397 x 53.8 x 20.3
 (121 x 16.4 x 6.2)

Main machinery: CODAG; 1 GE LM 2500 gas turbine 26,820 hp(m) (20 MW); 2 MTU 16V 1163 TB93 diesels 16,102 hp(m) (11.84 MW); 2 shafts; LIPS cp props; 1 LIPS LJ210E waterjet (centreline)

Speed, knots: 28
 Range, n miles: 7,700 at 15 kt
 Complement: 100 plus 20 spare

Missiles: SSM 8 MBDA Exocet MM 40 Block 2 (inertial cruise, active radar homing to 70 km (40 n miles) at 0.9 Mach, warhead 165 kg

SAM: Denel Umkhonto 16 cell VLS inertial guidance with mid-course guidance and IR homing to 12 km (6.5 n miles) at 2.4 Mach, warhead 23 kg

Guns: 1 Otobreda 76 mm/62 compact 2 LIW DPG 35 mm (twin) 2 Oerlikon 20 mm Mk 1. 2 Reutech 12.7 mm MGs

Countermasures: Decoys: 2 Super Barricade chaff launchers

CESM Grintek EWASION
 RESM Avtronics/Sysdel

Combat data systems: ADS CMS.

Weapons control: 2 Reutech RTS 6400 optronic trackers.

Radars: Air/surface search: Thales MRR 3D; G-band.

Fire control: 2 Reutech RTS 6400, I/J-band.

Navigation/helo control: 2 Racal Bridgemaster E, I-band.

Sonars: Thomson Marconi 4132 Kingkip; hull mounted, active search; medium frequency.

Helicopters: 1 Super Lynx from 2007

Programmes: Contract for four ships, with option for one further, signed on 3 December 1999 with ESACC which includes Blohm + Voss, HDW, TRT, African Defence Systems and Thomson-CSF Contract effective 28 April 2000 *Amatola* arrived at Simon's Town on 4 November 2003 for weapon systems integration by African Defence Systems. The fourth ship, *Mendi*, was commissioned

AMATOLA



(Scale 1 : 1,200), Ian Sturton / 1159221

ISANDLWANA

in early 2007. An option for a fifth ship is unlikely to be exercised

Structure: The design includes radar and IR signature reduction measures. Exhaust gases are expelled just above the water line.

Modernisation: Exocet MM 40 Block 2 to be replaced by Block 3 missiles. Installation of a bow-thruster to improve low-speed manoeuvring is under consideration. The 76 mm gun may be replaced by a 127 mm or navalised 155 mm gun.

5/2008*, Guy Toremans / 1335823



AMATOLA

5/2008*, M Declerck / 1335822



SPOENKOP

9/2009*, Michael Nitz / 1335821

SHIPBORNE AIRCRAFT

Numbers/Type: 4 Agusta-Westland Super Lynx 300.

Operational speed: 120 kt (222 km/h).

Service ceiling: 10,000 ft (3,048 m).

Range: 320 n miles (593 km).

Role/Weapon systems: Ordered on 14 August 2003 for delivery in 2007. Surveillance. Sensors: Telephonics APS-143 B(V)3 radar, ESM: Sea Raven 118; Cumulus Leo Mk II FLIR. Weapons: Unarmed (torpedoes and ASM may be fitted in future upgrades).



SUPER LYNX

3/2008*, Guy Toremans / 1335820

Numbers/Type: 8 Aerospatiale SA 330E/H/J Oryx.

Operational speed: 139 kt (258 km/h).

Service ceiling: 15,750 ft (4,800 m).

Range: 297 n miles (550 km).

Role/Weapon systems: Support helicopter; allocated by SAAF for naval duties and can be embarked in *Drakensberg*. Sensors: Doppler navigation with search radar. Weapons: Unarmed but can mount Armscor 30 mm Rattler.



ORYX

9/2008*, Michael Nitz / 1335819

LAND-BASED MARITIME AIRCRAFT

Notes: Alouette utility helicopters have been replaced by Agusta A-109

Numbers/Type: 5 Douglas Turbodaks.

Operational speed: 161 kt (298 km/h).

Service ceiling: 24,000 ft (7,315 m).

Range: 1,390 n miles (2,575 km).

Role/Weapon systems: A number of Dakotas has been converted for MR/SAR and other tasks. Additional fuel tanks extend the range to 2,620 n miles (4,800 km). Sensors: Elta M-2022 search radar and FLIR; Sysdel ESM; sonobuoy acoustic processor. Weapons: Unarmed.



DOUGLAS DC-3

6/2003, South African Navy / 0568890

PATROL FORCES

Notes: (1) It is planned to acquire an initial batch of six 80-95 m offshore patrol vessels to replace the *Warrior* and *River* classes. The ships are to be built between 2011-16 in a South African shipyard. To be armed with a 76 mm gun, and possibly a short-range air-defence system, the ships are to be capable of operating helicopters. (2) As a result of experience in peacekeeping operations, an Operational Boat Squadron has been established to support the Army in peacekeeping, in other operations on lakes and rivers and in coastal security operations. Fifteen new 10 m craft are to be acquired to replace or supplement the current inventory of *Namacurra* craft.

2 WARRIOR (EX-MINISTER) CLASS (PATROL SHIP) (PG)

Name	No	Builders	Commissioned
ISAAC DYOBHA (ex-Frans Erasmus)	P 1565	Sandock Austral, Durban	27 July 1979
GALESHEWE (ex-Hendrik Mentz)	P 1567	Sandock Austral, Durban	11 Feb 1983
Displacement, tons: 430 full load	Countermeasures: Decoys: 4 ACDS launchers for chaff.	The last of the class was finally christened in March 1992. Pennant numbers restored to the ships side and stern in 1994.	
Dimensions, feet (metres): 204 x 25 x 8 (62.2 x 7.6 x 2.4)	ESM: Delcon (ADS/Sysdel) EW system.	Modernisation: Ship life extension programme included a new communications fit, improvements to EW sensors, a third-generation target designation assembly, a computer-assisted action information system served by datalinks, improvements to fire control, and a new engine room monitoring system. P 1565 completed upgrade in April 1999, P 1567 in March 2000 and P 1569 in mid-2000.	
Main machinery: 4 Maybach MTU 16V 965 TB91 diesels, 15,000 hp(m) (11 MW) sustained; 4 shafts	ECM: Elta Rattler; jammer	Operational: All are based at Simon's Town. Likely to be decommissioned in 2009. Skerpioen missiles have been removed.	
Speed, knots: 32	Combat data systems: Air/surface search, ADS Diamant (after upgrade), Mini action data automation with Link.		
Range, n miles: 1,500 at 30 kt, 3,600+ at economical speed	Radars: Elta EL/M 2208, E/F-band.		
Complement: 52 (7 officers)	Fire control: Selenia RTN 10X; I/J-band.		
Guns: 2 OTO Melara 3 in (76 mm)/62 compact, 85 rds/min to 16 km (8.7 n miles); weight of shell 6 kg, 500 rounds per gun	Programmes: Contract signed with Israel in late 1974 for this class, similar to Saar 4 class. Three built in Haifa and reached South Africa in July 1978. The ninth craft launched late March 1986. Three more improved vessels of this class were ordered but subsequently cancelled.		
2 LIW Mk 1 20 mm 2-12.7 mm MGs.			



GALESHEWE

9/2008*, Michael Nitz / 1335818

3T CRAFT CLASS (PB)

Name	No	Builders	Commissioned
TOBIE	P 1552	T Craft International, Cape Town	18 July 2003
TERN	P 1553	T Craft International, Cape Town	18 July 2003
TEKWANE	P 1554	T Craft International, Cape Town	22 July 2003

Displacement, tons: 36 full load
Dimensions, feet (metres): 72.2 x 23 x 3 (22 x 7 x 0.9)
Main machinery: 2 ADE 444TI 12V diesels; 2,000 hp (1.5 MW); 2 Hamilton waterjets
Speed, knots: 32. **Range, n miles:** 530 at 22 kt
Complement: 16 (1 officer)
Guns: 1—12.7 mm MG
Weapons control: Hesis optical director.
Radars: Surface search: Racal Decca; I-band.

Comment: Twin hulled catamarans of GRP sandwich construction. Capable of carrying up to 15 people. Originally ordered in mid-1991 but not fully commissioned until 2003. Carries an RIB in the stern well. Three of this type built for Israel in 1997 *Tekwane* based at Durban, and the other two at Simon's Town.



TOBIE 9/2008*, Michael Nitz / 1335877

21 NAMACURRA CLASS (INSHORE PATROL CRAFT) (PB)

Y 1500 series

Displacement, tons: 5 full load
Dimensions, feet (metres): 29.5 x 8 x 2.8 (9 x 2.7 x 0.8)
Main machinery: 2 Yamaha outboards; 380 hp (279 kW)
Speed, knots: 32. **Range, n miles:** 180 at 20 kt
Complement: 4
Guns: 1—12.7 mm MG. 2—7.62 mm MGs
Depth charges: 1 rack
Radars: Surface search. Furuno, I-band.

Comment: Built in South Africa in 1980–81. Can be transported by road. Two transferred to Malawi in 1988 and 2008 and Y 1506 has sunk at sea. Y 1501 and Y 1510 donated to Namibia on 29 November 2002 and Y 1507 and Y 1530 donated to Mozambique in 2004. Two further craft donated to the Angolan Navy in 2006. Based at Simon's Town, Durban, Cape Town, Saldanha Bay, Gordon's Bay, Port Elizabeth and East London. Three are operated on Lake Tanganyika as part of a peace-keeping force in Burundi.



NAMACURRA 2/2008*, Guy Toremans / 1335816

MINE WARFARE FORCES

Notes: Mine countermeasures capability is likely to be replaced by autonomous underwater vehicles rather than by specialist ships.

3 RIVER CLASS (COASTAL MINEHUNTERS) (MHC)

Name	No	Builders	Commissioned
UMKOMAAS (ex-Navors I)	M 1498	Abeking & Rasmussen/Sandock Austral	13 Jan 1981
UMZIMKULU (ex-Navors III)	M 1142	Sandock Austral	30 Oct 1981
UMHLOTI (ex-Navors IV)	M 1212	Sandock Austral	15 Dec 1981

Displacement, tons: 380 full load
Dimensions, feet (metres): 157.5 x 27.9 x 8.2 (48 x 8.5 x 2.5)
Main machinery: 2 MTU 12V 652 TB81 diesels; 4,515 hp (3.32 MW); 2 Voith Schneider props
Speed, knots: 16. **Range, n miles:** 2,000 at 13 kt
Complement: 40 (7 officers)
Guns: 1 Derlikon 20 mm GAM-801 2—12.7 mm MGs. 2—7.62 mm MGs
Countermeasures: MCM: 2 PAP 104 remote-controlled submersibles.
Radars: Navigation; Decca; I-band.
Sonars: Klein VDS, side scan, high frequency

Comment: Ordered in 1978 as Research Vessels to be operated by the Navy for the Department of Transport. The lead ship *Navors I* was shipped to Durban from Germany in the heavy lift ship *Uhenfels* in June 1980 for fitting out, shortly followed by the second. The last pair were built in Durban. The vessels were painted blue with white upperworks and formed the First Research Squadron. Painted grey and renamed in 1982 but continued to fly the national flag and not the naval ensign. The prefix RV was only changed to SAS on 3 February 1988 when they were formally accepted as naval ships. Minehunting capability could be enhanced by substituting the diving container on the after deck with lightweight mechanical and acoustic sweeping gear. Carry an RIB and a decompression chamber. M1499 refitted in 2002. M 1213 placed in reserve in 2005 and unlikely to be re-activated. The remaining three are to continue in service until 2010.



UMKOMAAS

9/2008*, Michael Nitz / 1335815

SURVEY AND RESEARCH SHIPS

Notes: It is planned to acquire a new hydrographic survey ship to replace *Protea*. The ship is likely to be built in South Africa, in parallel with but distinct from the offshore patrol ship project, and is planned to enter service in about 2015.

1 HECLA CLASS (AGSH)

Name	No	Builders	Commissioned
PROTEA	A 324	Yarrow (Shipbuilders) Ltd	23 May 1972

Displacement, tons: 2,733 full load
Dimensions, feet (metres): 280.1 x 49.1 x 15.6 (79.3 x 15 x 4.7)
Main machinery: Diesel-electric; 3 MTU diesels; 3,840 hp (2.68 MW) sustained; 3 generators; 1 motor; 2,000 hp (1.49 MW); 1 shaft; cp prop; bow thruster
Speed, knots: 14
Range, n miles: 12,000 at 11 kt
Complement: 124 (10 officers)
Guns: 2—12.7 mm MGs
Radars: Navigation Racal Decca; I-band.
Helicopters: 1 Alouette III.

Comment: Laid down 20 July 1970. Launched 14 July 1971. Equipped for hydrographic survey with limited facilities for the collection of oceanographical data and for this purpose fitted with special communications equipment, Polaris survey system, survey launches *Malgas* and *Seemeeu* and facilities for helicopter operations. Hull strengthened for navigation in ice and fitted with a passive roll stabilisation system. New engines and full overhaul in 1995–96. Carries EGNW sidescan sonar and two survey boats. Fitted for two 20 mm guns.



PROTEA

3/2008*, Frank Findler / 1335810

1 ANTARCTIC SURVEY AND SUPPLY VESSEL (AGOBH)

Name	Builders	Launched	Commissioned
S A AGULHAS	Mitsubishi, Shimonoseki	30 Sep 1977	31 Jan 1978

Measurement, tons: 5,353 gross
Dimensions, feet (metres): 358.3 x 59 x 19 (109.2 x 18 x 5.8)
Main machinery: 2 Miralles-Blackstone K6 major diesels, 6,600 hp (4.49 MW); 1 shaft, bow and stern thrusters
Speed, knots: 14
Range, n miles: 8,200 at 14 kt
Complement: 40 plus 92 spare berths
Radars: Navigation; Racal Decca; I-band
Helicopters: 2 SA 330J Puma.

Comment: Red hull and white superstructure. A Department of Environmental Affairs vessel, civilian manned and operated by Smit Pentow Marine. Major refit March to October 1992, 25 ton crane moved forward, transverse thrusters and roll damping fitted, improved navigation and communications equipment. A hinged hatch has been fitted at the stern to recover towed equipment.



AGULHAS

5/2008*, M Declerck / 1335814

AUXILIARIES

Notes: It is planned to acquire two Strategic Support Ships to enter service from about 2014. The primary function is to transport, land and support some 1,500 troops with up to 350 vehicles either by sealift or by a combination of helicopters and landing craft. An LHD design is likely to be required to fulfil this and wider missions of disaster relief and logistic support. A third ship, configured as a replenishment ship, is planned to replace *Drakensberg* in about 2017.

1 FLEET REPLENISHMENT SHIP (AORH)

Name	No	Builders	Launched	Commissioned
DRAKENSBERG	A 301	Sandock Austral, Durban	24 Apr 1986	11 Nov 1987

Displacement, tons: 6,000 light; 12,500 full load
Dimensions, feet (metres): 482.3 × 64 × 25.9 (147 × 19.5 × 7.9)
Main machinery: 2 diesels; 16,320 hp(m) (12 MW); 1 shaft; cp prop; bow thruster
Speed, knots: 20+
Range, n miles: 8,000 at 15 kt
Complement: 96 (10 officers) plus 10 aircrew plus 22 spare
Cargo capacity: 5,500 tons fuel; 750 tons ammunition and dry stores; 2 Lima LCU's
Guns: 4 Oerlikon 20 mm GAM BO1 8—12.7 mm MGs.
Helicopters: 2 SA 330H/J Oryx.

Comment: The largest ship built in South Africa and the first naval vessel to be completely designed in that country. In addition to her replenishment role she is employed on SAR, patrol and surveillance with a considerable potential for disaster relief. There are two 10-ton cranes to lower/recover LCUs or Namacurra craft. Two abeam positions and astern fuelling, jackstay and vertrep. Two helicopter landing spots, one forward and one astern. Main secondary role is the transport of consumables, but can also be used to support small craft and transport a limited number of troops.



DRAKENSBERG

5/2008*, M Declerck / 1335R13

6 LIMA CLASS (LCU)

Displacement, tons: 7.3 full load
Dimensions, feet (metres): 29.8 × 11.6 × 2.3 (9.1 × 3.55 × 0.7)
Main machinery: 2 outboards; 400 hp (298 kW)
Speed, knots: 38
Range, n miles: 120 at 26 kt
Complement: 3

Comment: Built in 2003 by Stingray Marine, Cape Town. GRP construction. Capable of carrying 24 troops or 2.5 tons of cargo. Two craft can be carried in *Drakensberg*.



L 27

8/2003, Helmoed-Römer Heitman / 0630610

TUGS

Notes: There is also a harbour tug *De Neys*.

1 COASTAL TUG (YTB)

DE MIST

Displacement, tons: 275 full load
Dimensions, feet (metres): 112.6 × 25.6 × 11.1 (34.3 × 7.8 × 3.4)
Main machinery: 2 Mirlees-Blackstone diesels; 2,440 hp (1.82 MW); 2 Voith-Schneider props
Speed, knots: 12
Complement: 11

Comment: Completed by Dorbyl Long, Durban on 23 December 1978.



DE MIST

7/2006, Robert Pabst / 1305213

1 COASTAL TUG (YTB)

UMALUSI (ex-Golden Energy)

Displacement, tons: 315 full load
Dimensions, feet (metres): 98.5 × 32.8 × 17.1 (30 × 10 × 5.2)
Main machinery: 2 Caterpillar V6 diesels
Speed, knots: 10
Complement: 10

Comment: Completed in 1995 by Jaya Holding Ltd. Acquired from Taikong Trading Company in January 1997.



UMALUSI

3/2008*, M Declerck / 1335R12

2 HARBOUR TUGS (YAG/YTB)

INDLOVU TSHUKUDU

Displacement, tons: 110 full load
Dimensions, feet (metres): 67.3 × 19.8 × 8.9 (20.5 × 6.04 × 2.7)
Main machinery: 2 Cummins KTA19M4 diesels; 1,400 hp (1.05 MW); fixed props with Kort nozzles
Speed, knots: 11
Complement: 6

Comment: Built by Farocean Marine, Cape Town and delivered in April 2006. Principal role to assist submarine berthing but also employed as multirole tenders.



INDLOVU

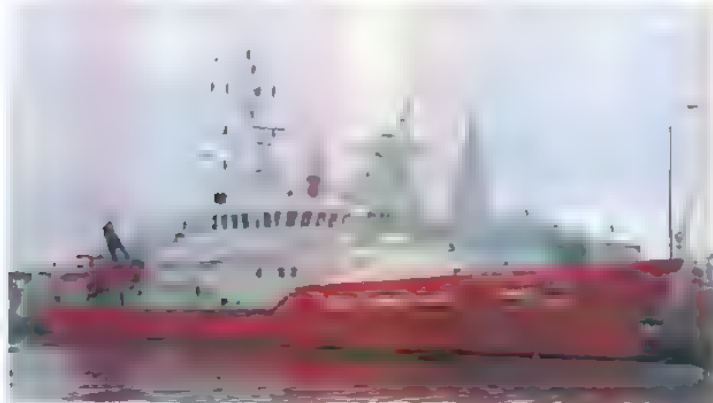
5/2008*, Guy Toremans / 1335R11

GOVERNMENT MARITIME FORCES

Notes: (1) The Department of Environmental Affairs has three research vessels: *Ellen Khuzwayo* (600 grt, delivered in September 2007), *Africana* of 2 471 grt and *Algoa* of 760 grt. There are also three fishery protection vessels: *Patella*, *Polagus* and *Jasus*. A contract was signed in 2003 with Damen Shipyards, Gorinchem for the construction of one offshore and three inshore Fishery

and Environmental Protection vessels. *Sarah Baartman* is an 83 m offshore patrol vessel whose design is based on the Dutch fishery patrol vessel *Barend Bicsheuve*. Built at Damen Shipyards, Okean (Ukraine) and outfitted at Royal Schelde Yard, Vlissingen, delivery was made in June 2004. *Lilian Ngoyi*, *Ruth First* and *Victoria Mxenge* are three 47 m inshore patrol vessels whose design is based on

the Damen Stan Patrol 4207 in service with UK Customs and the Jamaican Coast Guard. Built by Farocean Marine, Cape Town, deliveries were made in November 2004, February 2005 and May 2005 respectively. There is also a 14 m interception craft *Florence Mkhize*. (2) A 60 m trawler, *Eagle Star*, is used as a training ship for the Department of Environmental Affairs.



RUTH FIRST

3/2008, M Declerck / 1335826

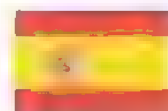


ELLEN KHUZWAYO

8/2007, Robert Pabst / 1305212

Spain

ARMADA ESPAÑOLA



Country Overview

The Kingdom of Spain is a constitutional monarchy that occupies the greater part of the Iberian Peninsula in southwest Europe. It is bordered to the north by France and Andorra and to the west by Portugal. It has a 2,678 n mile coastline with the Atlantic Ocean and Mediterranean Sea. With a total area of 194,897 square miles, the country comprises the mainland, the Balearic Islands in the Mediterranean and the Canary Islands in the Atlantic Ocean. There are also two small exclaves in Morocco, Ceuta and Melilla and three island groups near the Moroccan coast, Peñón de Vélez de la Gomera, the Alhucemas and the Chafarinas. The British dependency of Gibraltar is situated at the southern extremity of Spain. Madrid is the capital and largest city while Barcelona, Algeciras, Valencia and Bilbao are the principal ports. Territorial seas (12 n miles) and an EEZ (200 n miles) are claimed.

Headquarters Appointments

Chief of the Naval Staff:
Admiral Sebastián Zaragoza Soto
Second Chief of the Naval Staff:
Vice Admiral Manuel Rebollo García
Chief of Fleet Support:
Admiral Miguel Ángel Beltrán Bengoechea
Chief of Naval Personnel:
Admiral Emilio José Nieto Manzo

Commands

Commander-in-Chief of the Fleet (ALFLOT):
Admiral Fernando Armada Vadillo
Commander-in-Chief, Maritime Action (ALMART):
Admiral Juan Carlos Muñoz Delgado Díaz del Río
Commander, Spanish Maritime Forces (SPMARFOR):
Vice Admiral José Francisco Palomino Ulla
Commander, Logistic Support (Cartagena):
Vice Admiral Manuel Otero Penelas
Commander, Logistic Support (Cádiz):
Vice Admiral Juan Francisco Serón Martínez
Commander, Logistic Support (Ferrol):
Vice Admiral Francisco Cañete Muñoz
Commander-in-Chief, Canary Islands Zone (ALCANAR):
Vice Admiral Juan Tortosa Saavedra
Marines General Commander (COMGEIM):
Mayor General Juan Antonio Chicharro Ortega
Commander, Fleet Task Group (COMGRUFLOT):
Rear Admiral Santiago Bolívar Piñeiro
Commander, Northern Forces (AMARFER):
Rear Admiral Gonzalo Sirvent Zaragoza
Commander, Straits Forces (AMARDIZ):
Rear Admiral Fernando Hermánderx Morono

Diplomatic Representation

Naval Attaché in Brasilia:
Captain Francisco Avilés Benguistain
Naval Attaché in Lisbon:
Captain Juan Pablo Estrada Madariaga
Naval Attaché in London and Dublin:
Captain José Joaquín Crespo Páramo
Naval Attaché in Paris:
Commander Luis Fernando Soriano Huici
Naval Attaché in Rabat:
Commander Manuel Caridad Villaverde
Naval Attaché in Rome:
Commander Antonio González Llanos López
Naval Attaché in Santiago, Lima and La Paz:
Captain Antonio Manuel Pérez Fernández

Diplomatic Representation — continued

Naval Attaché in Washington:
Captain Juan Carlos San Martín Naya
Naval Attaché in Oslo, Stockholm and Helsinki:
Captain Ricardo Galán Moreno
Naval Attaché in Bangkok, Manila and Singapore:
Captain José Manuel Verdugo Páez
Naval Attaché in Pretoria:
Colonel (Marines) Juan Ángel López Díaz
Naval Attaché in Athens:
Captain Angel Cabrera Juega
Naval Attaché in Kuala Lumpur:
Captain Felipe Juste Pérez

Personnel

2009 Navy: 14,093 (2,594 officers)
Marines: 5,098 (497 officers)

Bases

Naval Zones are being re-organised into a single Area. Headquarters are to be in Cartagena with subordinate commands in Ferrol, Cádiz and Las Palmas. Ferrol: Cantabrian Zone HQ-Ferrol arsenal, support centre at La Graña, naval school at Marín, Pontevedra. Cádiz: Straits Zone HQ-La Carraca arsenal, fleet command HQ and naval air base at Rota, amphibious base at Puntales, Marines Brigade (TEAR) HQ at San Fernando, Cádiz. Cartagena: Maritime Action, HQ-Cartagena arsenal, underwater weapons and divers school at La Algameca; support base at Mahón, Minorca and at Soller and Porto Pi, Majorca, submarine weapons schools at La Algameca and Porto Pi base, Majorca. Naval Infantry school at Cartagena. Las Palmas: Canaries Zone HQ-Las Palmas arsenal.

Naval Air Service

The Naval Air Arm Flotilla is based at Rota.

Type	Escuadrilla
AB 212	3
Cessna Citation II	4
Sikorsky SH-3D/G Sea King	5
Sikorsky SH-3E Sea King (AEW)	6
Hughes 500M (Training)	9
EAV 8B Harrier II/Harrier Plus	6
Sikorsky SH-60B Seahawk	10

Guardia Civil del Mar

Started operations in 1992. For details, see end of section.

Fleet Deployment

- (1) Fleet (under Commander-in-Chief, Fleet)
- (a) *Príncipe de Asturias* (based at Rota)
- (b) *Escuadrillas de Escoltas:*
31st Squadron; 1 Baleares class plus 4 Álvaro de Bazan class (based at Ferrol)
41st Squadron; 6 Santa María class (based at Rota)
- (c) Amphibious Forces: (1 LST and 2 LPD at Rota, small units at Puntales, Cádiz)
Naval Infantry at San Fernando
- (d) *Fuerza de Medidas contra Minas:* (based at Cartagena)
6 MSCs, 1 MCCS

Fleet Deployment — continued

- (e) Flotilla de Submarinos: (based at Cartagena)
All submarines
- (2) Flotilla de Aeronaves: (based at Rota)
- (a) Maritime Action units (under Commander-in-Chief, Maritime Action)
- (b) Cantabrian Zone:
1 Ocean Tug, 8 Tugs, 4 Patrol Ships, 5 Large Patrol Craft, 7 Coastal Patrol Craft, 1 Logistics Support Ship, 4 Sail Training Ships, 5 Training Craft
- (c) Straits Zone:
1 oiler, 6 Oceanographic Ships, 1 Sail Training Ship, 4 Fast Attack Craft, 1 Transport, 1 Ocean Tug, 7 Tugs, 1 Water-boat
- (d) Mediterranean Zone:
4 Fast Attack Craft, 4 Patrol Ships, 1 Water-boat, 7 Tugs, 1 Frogman Support Ship
- (e) Canaries Zone
4 Patrol Ships, 2 Tugs
- (f) Minor auxiliaries. Identified by 'Y' pennant numbers and form Tren Naval

Prefix to Ships' Names

SPS (Spanish Ship)

Strength of the Fleet

Type	Active	Building (Planned)
Submarines — Petrol	4	4 (4)
Aircraft Carriers	1	—
Frigates	10	1 (1)
Offshore Patrol Vessels	13	4 (6)
Coastal Patrol Craft	20	—
Inshore Patrol Craft	3	—
LHD	—	1
LPDs	2	—
LSTs	2	—
Minerhunters	6	—
MCM support ship	1	—
Survey and Research Ships	7	—
Replenishment Tankers	2	1
Tankers	8	—
Transport Ships	4	—
Training Ships	16	—
Ocean Tugs	2	—
Submarine Rescue	1	(1)

DELETIONS

Submarines

2006 *Marsopa*

Frigates

2008 *Andalucía, Extremadura*
2009 *Asturias*

Amphibious Warfare Forces

2006 L 072

PENNANT LIST

Submarines		P 16	Cándido Pérez	P 82	Formentor	Auxiliaries	
S 71	Galerna	P 21	Anaga	P 201	Cabo Fradera	A 01	Contramaestre Casado
S 72	Sirocco	P 22	Tagomago	Amphibious Forces		A 04	Martin Posadillo
S 73	Mistral	P 23	Marola	L 41	Hernán Cortés	A 05	El Camino Español
S 74	Tramontana	P 24	Mouro	L 42	Pizarro	A 11	Marqués de la Ensenada
Aircraft Carriers		P 25	Grota	L 51	Galicia	A 14	Patino
R 11	Príncipe de Asturias	P 26	Medas	L 52	Castilla	A 15	Cantabria (bldg)
Frigates		P 27	Izaro	L 61	Roy Juan Carlos I (bldg)	A 20	Neptuno
F 81	Santa María	P 28	Tabarca	Mine Warfare Forces		A 51	Mañón
F 82	Victoria	P 30	Bergantín	M 11	Diana	A 53	La Graña
F 83	Numancia	P 31	Conejera	M 31	Segura	A 65	Marinero Jarano
F 84	Reina Sofia	P 32	Dragonera	M 32	Sella	A 66	Condestable Zaragoza
F 85	Navarra	P 33	Espalmador	M 33	Tambre	A 71	Juan Sebastian de Elcano
F 86	Canarias	P 34	Alcanada	M 34	Turia	A 72	Arosa
F 101	Alvaro de Bazán	P 41	Meteco (bldg)	M 35	Duero	A 74	La Graciosa
F 102	Almirante Don Juan de Borbón	P 42	Rayo (bldg)	M 36	Toja	A 75	Sisargas
F 103	Bías de Lezo	P 43	Relámpago (bldg)	Survey Ships		A 76	Giraldia
F 104	Mendez Nuñez	P 44	Torna (bldg)	A 23	Antares	A 77	Sálvora
F 105	Roger de Lauria (bldg)	P 61	Chilrau	A 24	Rigel	A 78	Peregrina
Patrol Forces		P 62	Alboran	A 31	Malaspina	A 82	Contramaestre Navarrete
P 11	Barcaló	P 63	Arnómendil	A 32	Tofiño	A 83	Contramaestre Sánchez
P 12	Laya	P 64	Tarifa	A 33	Hespérides	A 84	Contramaestre Antero
P 14	Ordóñez	P 71	Serviola	A 52	Las Palmas	A 85	Contramaestre Lamadrid
P 15	Acevedo	P 72	Centinola	A 91	Astrolabio	A 101	Mar Caribe
		P 73	Vigia	A 92	Escandallo	A 121	Guardiamarina Barrutia
		P 74	Atalaya	A 111	Alerta	A 122	Guardiamarina Cheraquini
		P 75	Descubierta			A 123	Guardiamarina Rull
		P 76	Infanta Elena			A 124	Guardiamarina Salas
		P 77	Infanta Cristina				
		P 78	Cazadora				
		P 79	Vencedora				
		P 81	Toralla				

SUBMARINES

0 + 4 (4) S 80A CLASS (SSK)

Name	No	Builders	Laid down	Launched	Commissioned
--	S 81	Navantia, Cartagena	13 Dec 2007	2011	2013
--	S 82	Navantia, Cartagena	2008	2012	2014
--	S 83	Navantia, Cartagena	2009	2013	2014
--	S 84	Navantia, Cartagena	2010	2014	2015

Displacement, tons: 2,198 surfaced, 2,426 dived

Dimensions, feet (metres): 233.0 × 23.9 × 20.3

(71.0 × 7.3 × 6.2)

Main machinery: Diesel electric; 3 MTU 16V 396 SE 84L diesels; 4,825 hp (3.6 MW); 1 motor; 3,500 hp (2.6 MW); 1 shaft; AIP (UTC ethanol reformer fuel cell) system; 300 kW

Speed, knots: 12 surfaced, 20 dived

Complement: 32 plus 8

Missiles: SLCM. Raytheon Tomahawk Block IV; land attack.

SSM: Boeing Sub Harpoon.

Torpedoes: 6 – 21 in (533 mm) bow tubes. Atlas Elektronik DM2A4 torpedoes.

Countermeasures: FSM: To be announced.

Decoys: 20 ejectors.

Weapons control: Lockheed Martin/Navantia system.

Radars: Indra Aries-S, I-band.

Sonars: SAES Solarsub towed passive array. Lockheed-Martin integrated sonar suite including cylindrical, passive ranging, flank, acoustic intercept and mine-detection arrays.

Programmes. Approval for the procurement of four submarines was given by the Spanish Cabinet on 5 September 2003. Contract awarded on 25 March 2004. Navantia (55 per cent) and Lockheed Martin contracted to develop core combat system in July 2005. This includes

the sonar suite and command and control module. A second batch of four boats may follow. Steel for the first-of-class cut in June 2006 and for the second on 13 December 2006.

Structure: The design includes Air-Independent Propulsion (AIP) accommodated in a 7.9 m section. Single hull construction. There is an attack periscope (with thermal imager) and a surveillance periscope (comprising HDTV, colour camera, thermal imager and laser rangefinder). There is a lock-in/lock-out hatch for special forces.

Operational. Endurance of 15 days at 4 kt on AIP propulsion is required.



S 80 (artist's impression)

12/2007, Navantia / 1794752

4 GALERNA (AGOSTA) (S 70) CLASS (SSK)

Name	No	Builders	Laid down	Launched	Commissioned
GALERNA	S 71	Bazán, Cartagena	5 Sep 1977	5 Dec 1981	22 Jan 1983
SIROCO	S 72	Bazán, Cartagena	27 Nov 1978	13 Nov 1982	5 Dec 1983
MISTRAL	S 73	Bazán, Cartagena	30 May 1980	14 Nov 1983	6 June 1985
TRAMONTANA	S 74	Bazán, Cartagena	10 Dec 1981	30 Nov 1984	27 Jan 1986

Displacement, tons: 1,490 surfaced; 1,740 dived
Dimensions, feet (metres): 221.7 × 22.3 × 17.7
 (676 × 6.8 × 5.4)

Main machinery: Diesel-electric; 2 SEMT-Pielstick 16 PA4 V 185 VG diesels; 3,800 hp(m) (2.7 MW); 2 Jeumont Schneider alternators; 1.7 MW; 1 motor; 4,600 hp(m) (3.4 MW); 1 cruising motor; 32 hp(m) (23 kW); 1 shaft
Speed, knots: 12 surfaced; 20 dived; 17.5 sustained
Range, n miles: 8,500 snorting at 9 kt; 350 dived on cruising motor at 3.5 kt
Complement: 54 (6 officers)

Torpedoes: 4—21 in (533 mm) tubes. 20 combination of (a) ECAN L5 Mod 3/4, dual purpose; active/passive homing to 8.6 km (5.1 n miles) at 35 kt; warhead 150 kg; depth to 550 m (1,800 ft).

(b) ECAN F17 Mod 2; wire-guided; active/passive homing to 20 km (10.8 n miles) at 40 kt; warhead 250 kg; depth 600 m (1,970 ft).

Mines: 19 can be carried if torpedo load is reduced to 9.
Countermeasures: ESM; THORN EMU/Insel Manta E; radar warning.

Weapons control: DLA-2ATFCS

Radars: Surface search: Thomson-CSF DRUA 33C, 1 band.

Sonars: Thomson Sintra DSUV 22; passive search and attack; medium frequency Thomson Sintra DUUA 2A/2B; active search and attack; 8 or 8.4 kHz active DUUX 2A/5; passive; rangefinding. Etedone; intercept. SAES Solarsub towed passive array; low frequency.

Programmes: First two ordered 9 May 1975 and second pair 29 June 1977. Built with some French advice. About 57 per cent of equipment and structure from Spanish sources.

Modernisation: Modernised with improved torpedo fire control, new ESM and IR enhanced periscopes. New main batteries installed with central control monitoring. *Galerne* started in April 1993 and completed in late 1994, *Siroco* in mid-1995, *Tramontana* in early 1997, and *Mistral* in 2000. The plan to fit SSM has been shelved. Solarsub towed arrays are being fitted to all of the class during overhauls. At least one submarine capable of being fitted with Dry Dock Shelter.

Structure: Diving depth, 300 m (984 ft).

Operational: Endurance, 45 days. Based at Cartagena.



MISTRAL

4/2008*, B Präzelin / 1335827



GALERNA

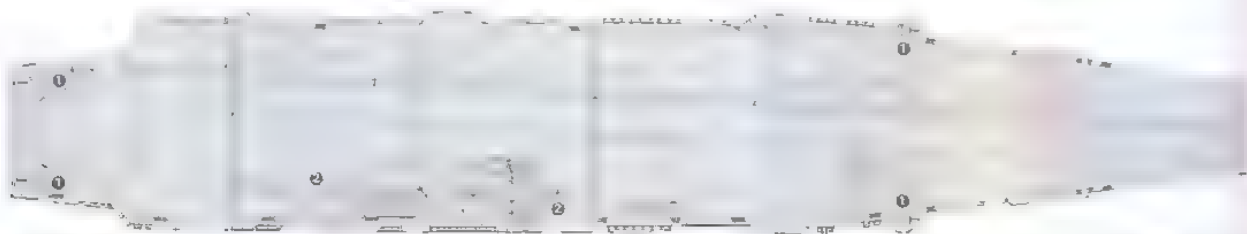
8/2004, E & M Laurson / 1044545

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AIRCRAFT CARRIERS

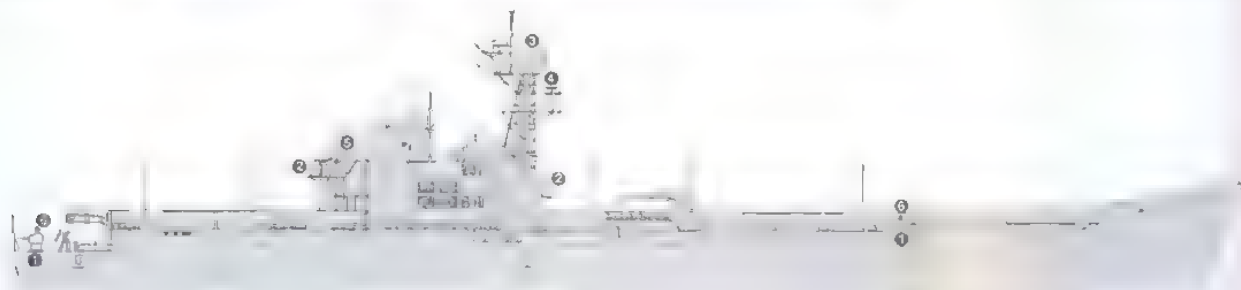
1 PRINCIPE DE ASTURIAS CLASS (CV)

Name	No	Builders	Laid down	Launched	Commissioned
PRÍNCIPE DE ASTURIAS (ex- <i>Almirante Carrero Blanco</i>)	R 11	Bazán, Ferro.	8 Oct 1979	22 May 1982	30 May 1988
Displacement, tons: 17,188 full load Dimensions, feet (metres): 642.7 oa; 615.2 pp × 79.7 × 30.8 (195.9; 187.5 × 24.3 × 9.4) Flight deck, feet (metres): 575.1 × 95.1 (175.3 × 29) Main machinery: 2 GE LM 2500 gas turbines; 46,400 hp (34.61 MW) sustained; 1 shaft; LIPS cp prop; 2 motors; 1,600 hp/m (1.18 MW); retractable prop Speed, knots: 25 (4.5 on motors) Range, n miles: 6,500 at 20 kt Complement: 555 (90 officers) plus 208 (Flag Staff (7 officers) and Air Group)		Combat data systems: Tritan Digital Command and Control System NTDS; Links 11 and 14. Marconi Matra SCOT 3 Secomsat ● SSR-1, WSC-3 (UHF). Weapons control: 4 Selenia directors (for Meroka). Radamec 2000 series. Radars: Air search: Hughes SPS-52C/D ●; 3D; E/F-band; range 439 km (240 n miles). Surface search: ISC Cardion SPS-55 ●; I/J-band. Aircraft control: ITT SPN-35A ●; J-band Fire control: 4 Sperry/Lockheed VPS 2 ●; I-band (for Meroka) RTN 11L/X; I/J-band; missile warning. Selenia RAN 12L (target designation); I/J-band. Tacan. URN 25.		to command and control systems and the addition of a Flag Bridge. Modernisation: After two years' service some modifications were made to the port after side of the island, to improve briefing rooms and provide sheltered parking space for FD vehicles. Also improved accommodation has been added on for six officers and 60 specialist ratings. A mid-life refit is expected when the Strategic Projection ship enters service. Structure: Based on US Navy Sea Control Ship design. 12° ski-jump of 46.5 m. Two flight deck lifts, one right aft. Two LCVPs carried. Two pairs of fin stabilisers. The hangar is 24,748 sq ft (2,300 m ²). The Battle Group Commander occupies the lower bridge. Two saluting guns have been mounted on the port quarter. Operational: Three Sea Kings have Searchwater AEW radar. Aircraft complement could be increased to 37 (parking on deck) in an emergency but maximum operational number is 29 (17 in hangar, 12 on deck). A typical air wing includes eight/ten AV-8B/AV-8B Plus, five SH-3 (including two AEW) and three/four AB-212. Based at Rota Sales: Modified design built for Thailand.	
Guns: 4 Bazán Meroka Mod 2A/2B 12-barrelled 20 mm/120 ●; 3,600 rds/min combined to 2 km. 2 Rheinmetall 37 mm saluting guns. Countermeasures: Decoys: 4 Loreal Hycor SR80C 6-barrelled fixed Mk 36; IR flares and chaff to 4 km (2.2 n miles). SLO-25 Nixie; towed torpedo decoy. US Prairie/Masker; hull noise/blade rate suppression. ESM/ECM: Electronica Netunel; intercept and jammers.		Fixed-wing aircraft: 6-12 AV-8B Harrier II/Harrier Plus. Helicopters: 6-10 SH-3 Sea Kings; 2-4 AB 212EW		Programmes. Ordered on 29 June 1977. Associated US firms were Gibbs and Cox, Dixencast, Bath Iron Works and Sperry SM. Commissioning delays caused by changes	



PRÍNCIPE DE ASTURIAS

(Scale 1 : 1,200), Ian Sturton / 0130391



PRÍNCIPE DE ASTURIAS

(Scale 1 : 1,200), Ian Sturton / 0506330



PRÍNCIPE DE ASTURIAS

6/2006, B Przewin / 1040726



PRÍNCIPE DE ASTURIAS

6/2005, Per Körnefeldt / 1153450



PRÍNCIPE DE ASTURIAS

6/2003, Spanish Navy / 05/0378

FRIGATES

Notes: Studies for a new frigate class, to replace the Santa Maria class from about 2020, are in progress.

4 + 1 (1) ALVARO DE BAZÁN CLASS (FFGHM)

Name	No	Builders	Laid down	Launched	Commissioned
ALVARO DE BAZÁN	F 101	Navantia, Ferrol	14 June 1999	31 Oct 2000	19 Sep 2002
ALMIRANTE DON JUAN DE BORBÓN	F 102	Navantia, Ferrol	27 Oct 2000	28 Feb 2002	3 Dec 2003
BLAS DE LEZO	F 103	Navantia, Ferrol	28 Feb 2002	16 May 2003	16 Dec 2004
MENDEZ NUÑEZ	F 104	Navantia, Ferrol	16 May 2003	12 Nov 2004	21 Mar 2006
ROGER DE LAURIA	F 105	Navantia, Ferrol	Feb 2009	Nov 2010	July 2012

Displacement, tons: 5,853 full load
Dimensions, feet (metres): 480.3 oa; 437 pp × 61 × 23.6 (146.4; 133.2 × 18.6 × 7.2)
Flight deck, feet (metres): 86.8 × 56 (26.4 × 17)
Main machinery: CODAG; 2 GE LM 2500 gas turbines; 47,328 hp(m) (34.8 MW) sustained; 2 Bazán/Caterpillar diesels; 12,240 hp(m) (9 MW) sustained; 2 shafts; LIPS cp props
Speed, knots: 28
Range, n miles: 4,500 at 18 kt
Complement: 200 (35 officers)

Missiles: SSM: 8 Boeing Harpoon Block 2 (H); active radar homing to 124 km (67 n miles) at 0.9 Mach; warhead 227 kg.

SAM: Mk 41 VLS (48 cells) (H) 32 Raytheon SM-2MR (Block IIIA/IIIB); command/inertial guidance; semi-active radar homing to 167 km (90 n miles) at 2.5 Mach. 64 Evolved Sea Sparrow RIM 162 B (in quadpacks); semi-active radar homing to 18 km (9.7 n miles) at 3.6 Mach; warhead 39 kg.

Guns: 1 FMC 5 in (127 mm)/54 Mk 45 Mod 2 (ex-US), 20 rds/min to 23 km (12.6 n miles); weight of shell 32 kg (fitted for but not with) 2 Oerlikon 20 mm.

Torpedoes: 4–323 mm (2 twin) Mk 32 Mod 9 fixed launchers (H) Honeywell Mk 46 Mod 5, anti-submarine, active/passive homing to 11 km (5.9 n miles) at 40 kt; warhead 44 kg.

A/S mortars: 2 ABCAS/SSTDS launchers.

Countermeasures: Decoys: 4 SRBOC Mk 36 Mod 2 chaff launchers (H) SLQ-25A Nixie torpedo decoy.

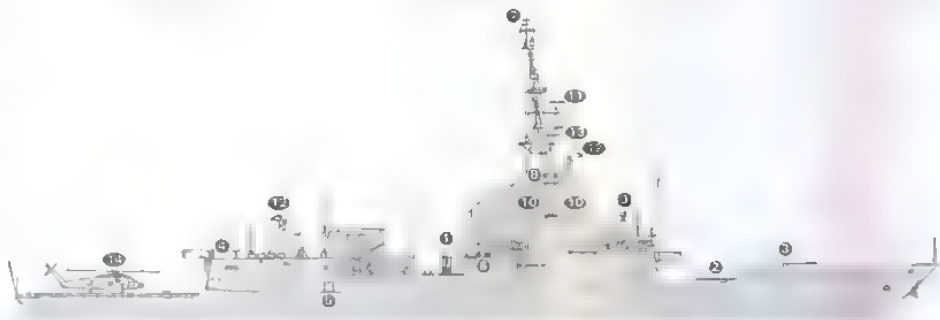
ESM: Regulus Mk-9500; (H) intercept.

ECM: Caselva Aldebaran (H); jammer.

Combat data systems: Lockheed Aegis Baseline 5 Phase III (DANCS); Link 11/16. SCOT 3, SATURN 3S

Weapons control: Sirius optronic director (H); FABA Dorna GFCS Sainsel DLT 309TFCS. SQR-4 helo datalink.

Radars: Air/surface search: Aegis SPY-1D (H) E/F-band
 Surface search: DRS SPS-67 (RAN 12S) (H) G-band.



BLAS DE LEZO

(Scale 1 : 1,200), Ian Sturton / 1153003

Fire control: 2 Raytheon SPG-62 Mk 99 (for SAM) (H), I, J-band

Navigation: 1 Raytheon SPS-73(v) (H), I-band.

Sonars: Raytheon DE 1180 LF; hull-mounted; active search and attack; medium frequency. Possible ATAS active towed sonar

Helicopters: 1 SH-60B Seahawk Lamps III (H)

Programmes: Project definition from September 1992 to July 1995, and then extended to July 1996 to incorporate Aegis. Design collaboration with German and Netherlands shipyards started 27 January 1994. Spain withdrew from the APAR air defence radar project in June 1995 and decided to incorporate Aegis SPY-1D into the design. Production order for four Flight I ships agreed on 21 October 1996 and building approved 24 January 1997. FSC in November 1997. The acquisition of a fifth ship was authorised by the Spanish government

on 27 May 2005 and a contract was signed in July 2006. A sixth ship may be procured. These modified ships are likely to be fitted with SPY-1D(V) radar and are to be known as Flight II.

Modernisation: Flight I ships are to be upgraded to Baseline S-2 Standard in 2008–09. This may include a ballistic missile detect and track capability and possibly Tomahawk land-attack missiles. SM-2 Block IIIA missiles are likely to be replaced by Block IIIB.

Structure: The inclusion of SPY-1D radar increased the original size of the ship and caused major changes to the shape of the superstructure. Stealth technology incorporated. Indel RAST helicopter system. Hangar for one helicopter. 127 mm gun for gunfire support to land forces, taken from USN *Tarawa* class. RAM may be fitted vice Meroka.

Operational: All based at Ferrol as the 31st Squadron. F 101 operated as part of USS *Roosevelt* carrier strike group in 2005 and completed round the world deployment in 2007.



ALMIRANTE DON JUAN DE BORBÓN

6/2008*, B Prézalin / 1335828



BLAS DE LEZO

5/2008*, Michael Nitz / 1335966

6 SANTA MARÍA CLASS (FFGHM)

Name	No	Builders	Laid down	Launched	Commissioned
SANTA MARÍA	F 81	Bazán, Ferrol	23 May 1982	24 Nov 1984	12 Oct 1986
VICTORIA	F 82	Bazán, Ferrol	16 Aug 1983	23 July 1986	11 Nov 1987
NUMANCIA	F 83	Bazán, Ferrol	8 Jan 1986	30 Jan 1987	8 Nov 1988
REINA SOFÍA (ex-América)	F 84	Bazán, Ferrol	12 Dec 1987	19 July 1989	18 Oct 1990
NAVARRA	F 85	Bazán, Ferrol	15 Apr 1991	23 Oct 1992	30 May 1994
CANARIAS	F 86	Bazán, Ferrol	16 Apr 1992	21 June 1993	14 Dec 1994

Displacement, tons: 3,610 standard; 3,969 full load

Dimensions, feet (metres): 451.2 × 46.9 × 24.6
(137.7 × 14.3 × 7.5)

Main machinery: 2 GE LM 2500 gas turbines; 41,000 hp (30.59 MW) sustained; 1 shaft, cp prop
2 auxiliary retractable props; 650 hp (484 kW)

Speed, knots, 29. Range, n miles: 4,500 at 20 kt

Complement: 223 (13 officers)

Missiles: SSM: 8 McDonnell Douglas Harpoon Block 1B, active radar homing to 92 km (50 n miles) at 0.9 Mach, warhead 227 kg

SAM: 32 Raytheon SM-1MR Block V; Mk 13 Mod 4 launcher; command guidance; semi-active radar homing to 38 km (20.5 n miles) at 2 Mach

Both missile systems share a common magazine

Guns: 1 OTO Melara 3 in (76 mm)/62; 85 rds/min to 16 km (8.7 n miles); weight of shell 6 kg.

1 Bazán 20 mm/120 12-barrelled Meroka Mod 2A or 2B; 3,600 rds/min combined to 2 km. 2—12.7 mm MGs

Torpedoes: 6—324 mm US Mk 32 (2 triple) tubes; Honeywell/Alliant Mk 46 Mod 5; anti-submarine; active/passive homing to 11 km (5.9 n miles) at 40 kt; warhead 44 kg.

Countermeasures: Decoys: 4 Loral Hycon SRBOC 6-barrelled fixed Mk 37 Mod 1/2; IR flares and chaff to 4 km (2.2 n miles).

Prairie/Masker: hull noise/blade rate suppression

SLQ-25 Nixie, torpedo decoy.

ESM/ECM: Rigel or MK 3600/3700, intercept and jammer

Combat data systems: IPN 10 action data automation, Link 11.

SQQ 28 LAMPS III helo datalink. Saturn and SCOT 3

Secomsat fitted

Weapons control: Loral Mk 92 Mod 2 (Mod 6 with CORT in

F 85 and 86) Enosa optronic tracker for Meroka 2B.

Radars: Air search: Raytheon SPS-49(V)4/6; C/D-band;

range 457 km (250 n miles)

Surface search Raytheon SPS-55; I-band.

Navigation: Raytheon 1650/9; I/J band.

Fire control: RCA Mk 92 Mod 4/6; I/J band.

Raytheon STIR; I/J band

Selenia RAN 12L; D-band (for Meroka).

Sperry/Lockheed VPS 2; I-band (for Meroka)

Tacan: URN 25.

Sonars: Raytheon SQS-56 (DE 1160); hull-mounted; active

search and attack; medium frequency.

Gould SQR-19(V)2 (F 85-86); tactical towed array

(TACTAS); passive; very low frequency.



REINA SOFÍA

(Scale 1 : 1,200), Ian Sturton / 0130395



CANARIAS

1/2005, Camil Busquets / Vilanova / 1153476

Helicopters: 2 Sikorsky SH-60B (only one normally embarked)

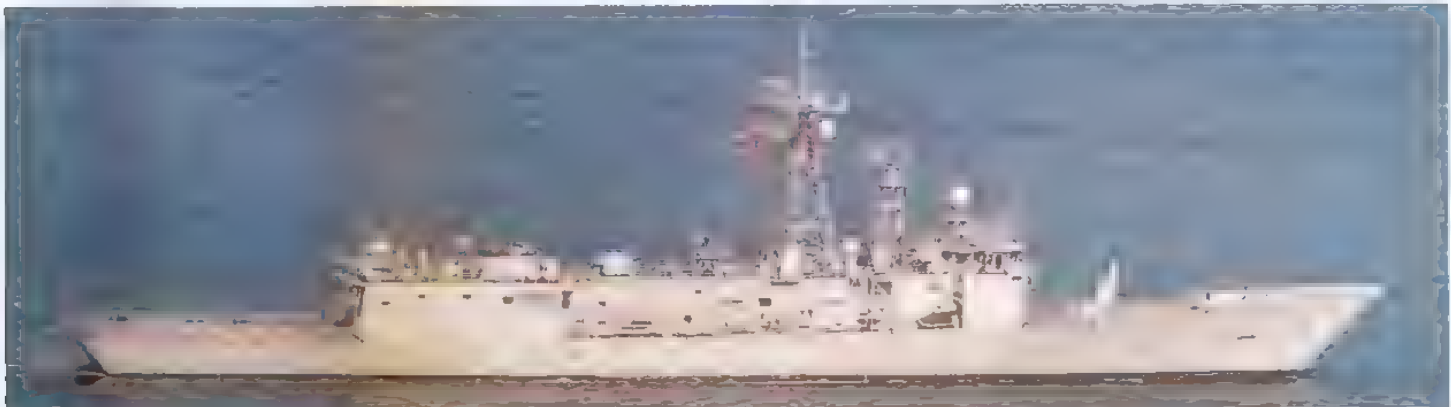
Programmes: Three ordered 29 June 1977. The execution of this programme was delayed due to the emphasis placed on the carrier construction. The fourth ship was ordered on 19 June 1986, and numbers five and six on 26 December 1989

Modernisation: F 85 and F 86 are fitted with the improved Mod 2B Meroka CIWS which includes an Enosa optronic tracker SCOT SATCOM fitted in F 85 and F 84. Others may be similarly fitted. All modernised with RAN 12L target designator for Meroka but VPS 2 fire-control radar is yet to be replaced by RAN 30X radar. A modernisation

programme was initiated in 2005. The programme includes improvements to habitability, hull systems upgrades (to extend ships' lives) and enhancements to sensors and displays. This includes a new sonar suite and new EW equipment (Rigel or Mk 3600/3700). Upgrades to F 81-84 have been completed and are to be followed by F 85-86.

Structure: Based on the US FFG 7 Oliver Perry class although broader in the beam and therefore able to carry more topweight. Fin stabilisers fitted. RAST helicopter handling system. Navarra and Canarias have an indigenous combat data system thereby increasing national inputs to 75 per cent.

Operational: All based at Rota as the 41st Squadron.



REINA SOFÍA

6/2007, John Brodie / 1166870



VICTORIA

11/2007, Adolfo Ortigueira Gil / 1170034

SHIPBORNE AIRCRAFT

Notes: An initial purchase of 11 NH90 helicopters, to replace the SH-3 and AB-212 fleets, was announced on 20 May 2005. This is likely to include a mixture of naval tactical, AEW and transport versions. Entry into service is expected in 2015.

Numbers/Type: 4/12/1 BAe/McDonnell Douglas EAV-8B (Harrier II)/EAV-8B (Harrier Plus)/TAV-8B

Operational speed: 562 kt (1,041 km/h).

Service ceiling: Not available.

Range: 480 n miles (889 km).

Role/Weapon systems: First batch of nine delivered in 1987-88 and a further eight in 1996-97. Four Harrier II to be upgraded to AV-8B with APG 65 radar plus FLIR by 2004. A further TAV-8B twin seat delivered in September 2000. Sensors: ECM; ALQ 164. Weapons: Strike; two 25 mm GAU-12/U cannon, two or four AIM-9L Sidewinders, two or four AGM-65E Mavericks; up to 16 GP bombs. AMRAAM AIM-120 in updated aircraft



HARRIER PLUS

2/2004, Guy Toremans / 1044547

Numbers/Type: 8 Sikorsky SH-3D/G/H Sea King

Operational speed: 116 kt (219 km/h).

Service ceiling: 14,700 ft (4,480 m).

Range: 542 n miles (1,005 km).

Role/Weapon systems: Former ASW helicopters converted to tactical transport and special forces role. ASW equipment fitted for but not with. Can be replaced in 48 hours. Converted to 3H standard in 1996-97. Sensors: APN-217 Doppler radar and IFF.



SH-3D

5/2008*, M Declerck / 1335862

Numbers/Type: 3 Sikorsky SH-3D Sea King AEW.

Operational speed: 110 kt (204 km/h).

Service ceiling: 14,700 ft (4,480 m).

Range: 542 n miles (1,005 km).

Role/Weapon systems: Three Sea King helicopters were taken in hand in 1986 for conversion to AEW role to provide organic cover; first entered service August 1987. Sensors: THORN EMI Searchwater (to be replaced by Racal 2000) radar, ESM. Weapons: Unarmed.



SEA KING AEW

10/2008*, Adolfo Ortigueira Gil / 1335864

Numbers/Type: 8 Agusta AB 212.

Operational speed: 106 kt (196 km/h).

Service ceiling: 14,200 ft (4,330 m).

Range: 230 n miles (426 km).

Role/Weapon systems: Surface search. All ASW equipment removed. Weapons: 1-12.7 mm MG and 70 mm rocket launchers.



AB 212

10/2007, Adolfo Ortigueira Gil / 1170032

Numbers/Type: 11 Sikorsky SH-60B Seahawk (LAMPB III)

Operational speed: 135 kt (249 km/h).

Service ceiling: 10,000 ft (3,050 m)

Range: 600 n miles (1,110 km)

Role/Weapon systems: ASW helicopter. First six delivered in 1988-89 for FFG 7 frigates.

Six more Block 1 acquired in 2002 for F 100 class. First six aircraft being upgraded to Block 1 with first three aircraft completed by 2005. The other three are to follow. Sensors: Search radar, FLIR (Block 1), sonobuoys, ECM/ESM. Weapons: ASW; two Mk 46 torpedoes or depth bombs. ASV, AGM-119B Penguin and AGM-114B/K Hellfire.



SH-60B

10/2008*, Adolfo Ortigueira Gil / 1335863

Numbers/Type: 9 Hughes 500MD

Operational speed: 110 kt (204 km/h).

Service ceiling: 10,000 ft (3,050 m)

Range: 203 n miles (376 km)

Role/Weapon systems: Used for training. secondary role is SAR and surface search. ASW role removed



500 MD

10/2007, Adolfo Ortigueira Gil / 1170031

LAND-BASED MARITIME AIRCRAFT (FRONT LINE)

Notes: (1) The Air Force F/A-18 Hornet (C.15) and Eurofighter Typhoon (C.16) can be armed with Harpoon ASM. Air Force CN-235 are not used for maritime role.

(2) Three CASA C-212/400 are operated by the Fishery Department and are based at Torrejón (Madrid), Jerez and Alicante. Two Agusta A-109C and two Dauphin N3 helicopters are based at Alicante, Jerez and Santander and Canary Islands.

Numbers/Type: 3 Cessna Citation II (C 550).

Operational speed: 275 kt (509 km/h).

Service ceiling: 27,750 ft (8,458 m).

Range: 2,000 n miles (3,704 km).

Role/Weapon systems: Used for transport, training and reconnaissance.



CESSNA CITATION

6/2004, Adolfo Ortigueira Gil / 1044560

Numbers/Type: 14 CASA C-212 Aviocar

Operational speed: 190 kt (353 km/h)

Service ceiling: 24,000 ft (7,315 m).

Range: 1,650 n miles (3,055 km).

Role/Weapon systems: Operated by Air Force. Primary role SAR, secondary role surveillance. Based at Mallorca, Las Palmas and Madrid. Six are leased by Customs. Sensors: APS 128 radar, MAD, sonobuoys and ESM. Weapons (not SAR role) ASW; Mk 46 torpedoes or depth bombs. ASV; two rockets or machine gun pods.



C-212

5/2002, Adolfo Ortigueira Gil / 05288533

Numbers/Type: 3 Fokker F27 Maritime.
Operational speed: 250 kt (463 km/h).
Service ceiling: 29,500 ft (8,990 m).
Range: 2,700 n miles (5,000 km).
Role/Weapon systems: Canaries and offshore patrol by Air Force. Are to be replaced by CN-235 in due course. Sensors: APS-504 search radar, cameras. Weapons: none.



F-27 6/2004, Adolfo Ortigueira Gil / 1044bb2

Numbers/Type: 2/5 Lockheed P-3A Plus Orion/P-3B Plus Orion.
Operational speed: 410 kt (760 km/h).
Service ceiling: 28,300 ft (8,625 m).
Range: 4,000 n miles (7,410 km).
Role/Weapon systems: Air Force operation for long-range MR/ASW. Original P-3A aircraft supplemented in 1988 by P-3B Orions from Norway after Lockheed modernisation. P-3A aircraft upgraded to P-3A plus in 1995–97. The five P-3Bs are undergoing modernisation programme with improved acoustic signal processor, ALR-66 ESM, FLIR and new radar and communications. Sensors: APS-134 (Searchwater 2000 in due course); FLIR, search radar, AQS-81MAD, ALR 66 V(3) ECM/ESM, 87 sonobuoys. Weapons: ASW; eight torpedoes or depth bombs internally; 10 underwing stations. ASV; four Harpoon or 127 mm rockets.



P-3B 7/2002, Adolfo Ortigueira Gil / 0528935

Numbers/Type: 10 Eurocopter AS 332 Super Puma.
Operational speed: 130 kt (240 km/h).
Service ceiling: 15,090 ft (4,600 m).
Range: 672 n miles (1,245 km).
Role/Weapon systems: Air Force operated for SAR/CSAR. Based at Mallorca, Las Palmas and Madrid.



AS 332 7/2001, Adolfo Ortigueira Gil / 0528932

PATROL FORCES

6 DESCUBIERTA CLASS (PSOH/MCS/FSGM)

Name	No	Builders	Laid down	Launched	Commissioned
DESCUBIERTA	P 75 (ex-F 31)	Bazán, Cartagena	16 Nov 1974	8 July 1975	18 Nov 1978
DIANA	M 11 (ex-F 32)	Bazán, Cartagena	8 July 1975	26 Jan 1976	30 June 1979
INFANTA ELENA	P 78 (ex-F 33)	Bazán, Cartagena	26 Jan 1976	14 Sep 1976	12 Apr 1980
INFANTA CRISTINA	P 77 (ex-F 34)	Bazán, Cartagena	11 Sep 1976	25 Apr 1977	24 Nov 1980
CAZADORA	P 78 (ex-F 35)	Bazán, Ferrol	14 Dec 1977	17 Oct 1978	20 July 1982
VENCEDORA	P 79 (ex-F 36)	Bazán, Ferrol	1 June 1978	27 Apr 1979	18 Mar 1983

Displacement, tons: 1,233 standard; 1,666 full load
Dimensions, feet (metres): 291.3 x 34 x 12.5
 (888 x 10.4 x 3.8)
Main machinery: 4 MTU-Bazán 16V 956 TB91 diesels; 15,000 hp(m) (11 MW) sustained; 2 shafts; ep props
Speed, knots: 25
Range, n miles: 4,000 at 18 kt, 7,500 at 12 kt
Complement: 118 (10 officers) plus 30 marines

Guns: 1 OTO Melara 3 in (76 mm)/62 compact; 85 rds/min to 16 km (8.7 n miles); weight of shell 6 kg, 2 Oerlikon 20 mm/120.
Countermeasures: ESM: Elisag Mk 1000 (part of Deneb system); or Mk 1600, intercept.
 ECM: Cesalsa Canopus, or Mk 1900, jammer.
Combat data systems: Tritan IV, Saturn SATCOM
Weapons control: Signaal WM25; GM 101.
Radars: Air/surface search: Signaal DA05/2 (not M 11); E/F-band, range 137 km (75 n miles) for 2 m² target.
Radars: Surface search: Signaal ZW06 (not M 11); I-band Navigation: 2 Furuno; I-band.
Fire control: Signaal WM22/41 or WM25 system (not M 11); I/J-band; range 46 km (25 n miles).

Programmes: Officially rated as Corvettes. *Diana* (tenth of the name) originates with the galley *Diana* of 1570. *Infanta Elena* and *Infanta Cristina* are named after the daughters of King Juan Carlos. Approval for second four ships given on 21 May 1976. First four ordered 7 December 1973 (83 per cent Spanish ship construction components) and two more from Bazán, Ferrol on 25 May 1976.

Structure: Original Portuguese 'João Coutinho' design by Comodoro de Oliveira PN developed by Blohm + Voss and considerably modified by Bazán including use of



INFANTA ELENA 11/2008*, M Declercq / 1335860

Y-shaped funnel. Noise reduction measures include Masker fitted to shafts, auxiliary gas-turbine generator fitted on upper deck, all main and auxiliary diesels sound-mounted. Fully stabilised. Automatic computerised engine and alternator control; two independent engine rooms; normal running on two diesels.
Operational: P 75 completed conversion to an OPV, with capability to act as helicopter platform,
Sales: F 37 and F 38 sold to Egypt prior to completion. One to Morocco in 1983.



DESCUBIERTA 11/2007, Adolfo Ortigueira Gil / 1335861

4 SERVIOIA CLASS (OFFSHORE PATROL VESSELS) (PSOH)

Name	No	Builders	Laid down	Launched	Commissioned
SERVIOIA	P 71	Bazán, Ferrol	17 Oct 1989	10 May 1990	22 Mar 1991
CENTINELA	P 72	Bazán, Ferrol	12 Dec 1989	30 Mar 1990	24 Sep 1991
VIGIA	P 73	Bazán, Ferrol	30 Oct 1990	12 Apr 1991	24 Mar 1992
ATALAYA	P 74	Bazán, Ferrol	14 Dec 1990	22 Nov 1991	29 June 1992

Displacement, tons: 1,147 full load
Dimensions, feet (metres): 225.4, 206.7 pp x 34 x 11
 (68.7, 63 x 10.4 x 3.4)

Main machinery: 2 MTU-Bazán 16V 956 TB91 diesels;
 7,500 hp(m) (5.5 MW) sustained; 2 shafts; LIPS cp props

Speed, knots: 19

Range, n miles: 8,000 at 12 kt

Complement: 42 (8 officers) plus 6 spare berths

Guns: 1 US 3 in (76 mm)/50 Mk 27; 20 rds/min to 12 km
 (6.6 n miles); weight of shell 6 kg

2-12.7 mm MGs

Countermeasures: ESM ULQ-13 (in P 71).

Weapons control: Bazán Alcor or MSP 4000 (P 73)
 optronic director. Hispano mini combat system.
 SATCOM

Radars: Surface search; Recal Decca 2459; I band
 Navigation: Recal Decca ARPA 2690 BT; I-band.

Helicopters: Platform for 1 AB 212

Programmes: Project B215 ordered from Bazán, Ferrol in
 late 1988. The larger Milano design was rejected as being
 too expensive.

Modernisation: The guns are old stock refurbished but
 could be replaced by an OTO Melara 76 mm/62 or a

Bofors 40 mm/70 Model 600 if funds can be found.
 Other equipment fits could include four Harpoon SSM,
 Meroka CIWS, Sea Sparrow SAM or a Bofors 375 mm
 ASW rocket launcher. No plans to carry out any of these
 improvements so far. EW equipment fitted in Serviola for
 training.

Structure: A modified Halcón class design similar to
 ships produced for Argentina and Mexico. Helicopter
 facilities enabling operation in up to Sea State 4
 using non-retractable stabilisers. Three firefighting
 pumps.

Operational: For EEZ patrol. *Vigia* based at Cádiz, *Serviola*
 and *Atalaya* at Ferrol and *Centinela* at Las Palmas.



VIGIA

11/2008, Adolfo Ortigueira Gil / 133858



ATALAYA

6/2004, Adolfo Ortigueira Gil / 1044551

1 PISCALONSO CLASS (OFFSHORE PATROL CRAFT) (PSO)

Name	No	Builders	Commissioned
CHILREU (ex-Pescalonso 2)	P 61	Gijón, Asturias	30 Mar 1992

Displacement, tons: 2,101 full load
 Dimensions, feet (metres): 222.4 x 36.1 x 15.4 (678 x 11 x 4.7)
 Main machinery: 1 MaK 6M-453K diesel; 2,460 hp(m) (1.81 MW) sustained; 1 shaft; cp prop
 Speed, knots: 12. Range, n miles: 1,500 at 12 kt
 Complement: 35 (7 officers)
 Guns: 1—12.7 mm MG
 Radars: Surface search: 2 Consilium Selesmar; E/F/I-band.

Comment: Launched 2 May 1988 and purchased by the Fisheries Department for the Navy to use as a Fishery Protection vessel based at Ferrol. Former stern ramp trawler Inmarsat fitted.



CHILREU 11/2007, B Przewin / 1168822

3 ALBORAN CLASS (OFFSHORE PATROL CRAFT) (PSOH)

Name	No	Builders	Commissioned
ALBORAN	P 62	Freire, Vigo	8 Jan 1997
ARNOMENDI	P 63	Freire, Vigo	13 Dec 2000
TARIFA	P 64	Freire, Vigo	14 June 2004

Displacement, tons: 1,963 full load
 Dimensions, feet (metres): 218.2 x 36.1 x 14.4 (66.5 x 11 x 4.4)
 Main machinery: 1 Krupp MaK 6 M 453C diesel; 2,400 hp(m) (1.76 MW) sustained (P 62), 1 Krupp MaK 8M25 diesel; 3,250 hp(m) (2.39 MW) sustained (P 63); 1 diesel generator and motor for emergency propulsion; 462 hp(m) (340 kW); 1 shaft; bow thruster; 350 hp(m) (257 kW)
 Speed, knots: 13 (P 62), 15.8 (P 63) (3.5 on emergency motor)
 Range, n miles: 20,000 at 13 kt
 Complement: 37 (7 officers) plus 9 spare
 Guns: 2—12.7 mm MGs
 Radars: Surface search: Furuno FAR-825, I-band
 Navigation: Furuno FR-2130S; I-band.
 Helicopters: Platform for 1 light.

Comment: *Alboran* launched in 1991 and purchased by the Fisheries Department to use as a Fishery Protection vessel based at Cartagena. *Arnomendi*, with a slightly larger bridge and more powerful engine, based at Las Palmas, Canary Islands. *Tarifa* is fitted with anti-pollution equipment and is based at Cartagena.



ALBORAN 10/2008, Adolfo Ortigueira Gil / 1335858

5 BARCELÓ CLASS (LARGE PATROL CRAFT) (PB)

Name	No	Builders	Commissioned
BARCELÓ	P 11	Lürssen, Vagesack	20 Mar 1976
LAYA	P 12	Bazán, La Carraca	23 Dec 1976
ORDÓÑEZ	P 14	Bazán, La Carraca	7 June 1977
ACEVEDO	P 15	Bazán, La Carraca	14 July 1977
CÁNDIDO PÉREZ	P 16	Bazán, La Carraca	25 Nov 1977

Displacement, tons: 145 full load
 Dimensions, feet (metres): 118.7 x 19 x 6.2 (36.2 x 5.8 x 1.9)
 Main machinery: 2 MTU-Bazán MD 16V 538 TB90 diesels; 8,000 hp(m) (4.41 MW) sustained; 2 shafts
 Speed, knots: 22 Range, n miles: 1,200 at 17 kt
 Complement: 19 (3 officers)
 Guns: 1 Breda 40 mm/70. 1 Oerlikon 20 mm/85. 2—12.7 mm MGs
 Torpedoes: Fitted for 2—21 in (533 mm) tubes.
 Weapons control: CSEE optical director.
 Radars: Surface search: Raytheon 1220/6XB, I/J-band.

Comment: Ordered 5 December 1973. All manned by the Navy although building cost was borne by the Ministry of Commerce. Of Lürssen/TNC 36 design. Reported as able to take two or four surface-to-surface missiles instead of 20 mm gun and torpedo tubes. 40 mm gun removed from *Barceló*. Plans to transfer to the Guardia Civil del Mar have been shelved. *Javier Quiroga* decommissioned in 2005. Speed much reduced from original 36 kt.



CÁNDIDO PÉREZ 8/2007, Marco Ghigliano / 1170221

4 CONEJERA CLASS (COASTAL PATROL CRAFT) (PB)

Name	No	Builders	Commissioned
CONEJERA	P 31	Bazán, Ferrol	31 Dec 1981
DRAGONERA	P 32	Bazán, Ferrol	31 Dec 1981
ESPALMADOR	P 33	Bazán, Ferrol	10 May 1982
ALCANADA	P 34	Bazán, Ferrol	10 May 1982

Displacement, tons: 85 full load
 Dimensions, feet (metres): 106.6 x 17.4 x 4.6 (32.2 x 5.3 x 1.4)
 Main machinery: 2 MTU-Bazán MA 16V 362 SB80 diesels; 2,450 hp(m) (1.8 MW); 2 shafts
 Speed, knots: 13
 Range, n miles: 1,200 at 13 kt
 Complement: 12
 Guns: 1 Oerlikon 20 mm/120 Mk 10. 1—12.7 mm MG.
 Radars: Surface search: Furuno; I-band

Comment: Ordered in 1978, funded jointly by the Navy and the Ministry of Commerce. Naval manned. Speed reduced from original 25 kt. Basing: P 31 Malaga; P 32 Huelva; P 33/34 Barcelona.



CONEJERA 8/2007, Marco Ghigliano / 1170777

2 TORALLA CLASS (COASTAL PATROL CRAFT) (PB)

Name	No	Builders	Commissioned
TORALLA	P 81	Viudes, Barcelona	29 Apr 1987
FORMENTOR	P 82	Viudes, Barcelona	23 June 1988

Displacement, tons: 102 full load
 Dimensions, feet (metres): 93.5 x 21.3 x 5.9 (28.5 x 6.5 x 1.8)
 Main machinery: 2 MTU-Bazán 8V 396 TB93 diesels; 2,100 hp(m) (1.54 MW) sustained; 2 shafts
 Speed, knots: 19
 Range, n miles: 1,000 at 12 kt
 Complement: 13
 Guns: 1 Browning 12.7 mm MG.
 Radars: Surface search: Racal Decca RM 1070; I-band.
 Navigation: Racal Decca RM 270; I-band.

Comment: Wooden hull with GRP sheath. Very similar to Customs Alcaravan class. *Formentor* refitted in 1996-97 Based at Cartagena.



TORALLA 10/2008, Adolfo Ortigueira Gil / 1335856

2 P 101 CLASS (PBR)

No	No
P 114	P 111

Displacement, tons: 18.5 standard; 20.8 full load
 Dimensions, feet (metres): 44.9 x 14.4 x 4.3 (13.7 x 4.4 x 1.3)
 Main machinery: 2 Baudouin-Interdiesel DNP-350; 768 hp(m) (564 kW); 2 shafts
 Speed, knots: 23.3
 Range, n miles: 430 at 18 kt
 Complement: 6
 Guns: 1—12.7 mm MG
 Radars: Surface search: Decca 110; I-band.

Comment: Ordered under the programme agreed 13 May 1977, funded jointly by the Navy and the Ministry of Commerce. Built to the Aresa LVC 160 design by Aresa, Arenys de Mar, Barcelona. GRP hull. Eight of the class conduct harbour auxiliary duties with Y numbers, the remainder paid off in 1993. P 111 transferred back again to patrol duties in 1996 and is based at Ayamonte (Huelva). P 114 is also used for patrol duties and is based at Ceuta.



P 101 class 6/2000, Adolfo Ortigueira Gil / 0087858

750 Spain/Patrol forces — Amphibious forces

9 ANAGA CLASS (LARGE PATROL CRAFT) (PB)

Name	No	Builders	Commissioned
ANAGA	P 21	Bazán, La Carraca	14 Oct 1980
TAGOMAGO	P 22	Bazán, La Carraca	30 Jan 1981
MAROLA	P 23	Bazán, La Carraca	4 June 1981
MOURO	P 24	Bazán, La Carraca	14 July 1981
GROSA	P 25	Bazán, La Carraca	15 Sep 1981
MEDAS	P 26	Bazán, La Carraca	16 Oct 1981
IZARO	P 27	Bazán, La Carraca	9 Dec 1981
TABARCA	P 28	Bazán, La Carraca	30 Dec 1981
BERGANTÍN	P 30	Bazán, La Carraca	28 July 1982

Displacement, tons: 319 full load
Dimensions, feet (metres): 145.6 × 21.6 × 8.2 (44.4 × 6.6 × 2.5)
Main machinery: 1 MTU-Bazán 18V 956 SB90 diesel; 4,000 hp(m) (2.94 MW) sustained, 1 shaft; cp prop
Speed, knots: 16. **Range, n miles:** 4,000 at 13 kt
Complement: 25 (3 officers)
Guns: 1 FMC 3 in (76 mm)/50 Mk 22. 1 Oerlikon 20 mm Mk 10. 2—7.62 mm MGs
Radars: Surface search: 1 Racal Decca 1226; I-band
Navigation: Consilium Selcosmar SRL MM 950; FI-band.

Comment: Ordered from Bazán, Cadiz on 22 July 1978. For fishery and EEZ patrol duties. Rescue and firefighting capability. Speed reduced from original 20 kt.



TABARCA 10/2008*, Adolfo Ortigueira Gil / 1335857

1 INSHORE/RIVER PATROL LAUNCH (PBR)

Name	No	Builders	Commissioned
CABO FRADERA	P 201	Bazán, La Carraca	11 Jan 1963

Displacement, tons: 21 full load
Dimensions, feet (metres): 58.3 × 13.8 × 3 (17.8 × 4.2 × 0.9)
Main machinery: 2 diesels, 280 hp(m) (206 kW); 2 shafts
Speed, knots: 11
Complement: 9
Guns: 1—7.62 mm MG
Radars: Surface search: Furuno; I-band.

Comment: Based at Tuy on River Miño for border patrol with Portugal.



CABO FRADERA 4/2003, Camil Busquets / Vitanova / 0570981

0 + 4 (4) OFFSHORE PATROL SHIPS (PSO)

Name	No	Builders	Laid down	Launched	Commissioned
METEORO	P 41	Navantia, Puerto Real	2007	2009	July 2010
RAYO	P 42	Navantia, Puerto Real	2008	2009	Dec 2010
RELÁMPAGO	P 43	Navantia, Puerto Real	2008	2009	Apr 2011
TORNA	P 44	Navantia, Puerto Real	2008	2010	Aug 2011

Displacement, tons: 2,490 full load
Dimensions, feet (metres): 308.1 × 46.6 × 14.1 (93.9 × 14.2 × 4.3)
Main machinery: CODAE; 2 diesels; 12,000 hp (9 MW); 2 motors; 2,000 hp (1.5 MW); 2 cp props, bow thruster
Speed, knots: 20.5. **Range, n miles:** 8,000 at 12 kt
Complement: 35 (5 officers)
Guns: 1 Oto Melara 3 in (76 mm)/62. 2—20 mm (to be confirmed)
Combat data systems: SCOMBA, Link 11 and 22, Inmarsat, Secomsat.
Countermeasures: Decoys. To be announced
ESM/ECM: Rigel.
RESM: To be announced
Weapons control: Dorna optronic director.
Radars: Surface search: Indra Aries, I-band.
Fire control: Dorna; K-band.
Helicopters: Platform for 1 NH90

Comment: A programme for the procurement of a new class of up to eight multireole offshore patrol vessels known as Buques de Accion Maritima (BAM) was initiated in 2004. The modular design allows other variants of the BAM design to be capable of conducting intelligence, hydrographic and diving support tasks. Authorisation for the first batch of four patrol ships was made by the Spanish government on 20 May 2005 and a contract for their construction was signed with Navantia on 31 July 2006. The ships are to be capable of operating a helicopter and are to be equipped with two RIBs for boarding/interception operations.



BAM (Scale 1 : 900), Ian Sturton / 1153001

AMPHIBIOUS FORCES

2 NEWPORT CLASS (LSTH)

Name	No	Builders	Laid down	Launched	Commissioned
HERNÁN CORTÉS (ex-Barnstable County)	L 41 (ex-L 1197)	National Steel, San Diego	19 Dec 1970	2 Oct 1971	27 May 1972
PIZARRO (ex-Harlan County)	L 42 (ex-L 1196)	National Steel, San Diego	7 Nov 1970	24 July 1971	8 Apr 1972

Displacement, tons: 4,975 light; 8,550 full load
Dimensions, feet (metres): 522.3 (hull) × 69.5 × 18.2 (aft) (159.2 × 21.2 × 5.5)
Main machinery: 6 Alco 16-251 diesels; 16,500 hp (12.3 MW) sustained; 2 shafts; cp props; bow thruster
Speed, knots: 20
Range, n miles: 14,250 at 14 kt
Complement: 255 (15 officers)
Military lift: 374 troops; (20 officers) 500 tons vehicles, 2 LCVPs and 2 LCPLs on davits

Guns: 1 General Electric/General Dynamics 20 mm Vulcan Phalanx Mk 15. 2 Oerlikon 20 mm/86. 4—12.7 mm MGs.

Countermeasures: ESM Celessa Deneb
Radars: Surface search: Raytheon SPS-10F/67; G-band
Navigation: Marconi LN66; I-band.

Helicopters: Platform only for 3 AB 212.

Programmes: Transferred from the US on 26 August 1994 and 14 April 1995

Structure: The 3 in guns removed on transfer. The ramp is supported by twin derrick arms. A ramp just forward of the superstructure connects the lower tank deck with the main deck and a vehicle passage through the superstructure provides access to the parking

area amidships. A stern gate to the tank deck permits unloading of amphibious tractors into the water, or unloading of other vehicles into an LCU or on to a pier. Vehicle stowage covers 19,000 sq ft. Length over derrick arms is 562 ft (171.3 m); full load draught is 11.5 ft forward and 17.5 ft aft. Bow thruster fitted to hold position offshore while unloading amphibious tractors. SCOT 3 SATCOM fitted in 1995-96. Can carry four Mexeflotes, two of them powered.

Operational: Based at Rota. *Hernán Cortés* reported to have been decommissioned in 2006 but to remain in service until 2009. *Pizarro* to follow as the Strategic Projection Ship enters service.



PIZARRO 5/2004, Marco Ghiglino / 1153478

2 GALICIA CLASS (LPD)

Name	No	Builders	Laid down	Launched	Commissioned
GALICIA	L 51	Bazán, Ferrol	31 May 1996	21 July 1997	30 Apr 1998
CASTILLA	L 52	Bazán, Ferrol	11 Dec 1997	14 June 1999	26 June 2000

Displacement, tons: 13,815 full load
 Dimensions, feet (metres): 524.9 oa, 465.9 pp × 82 × 19.3
 (160; 142 × 25 × 5.9)

Flight deck, feet (metres): 196.9 × 82 (60 × 25)

Main machinery: 2 Bazán/Caterpillar 3612 diesels, 12,512 hp (9.2 MW); 2 shafts; LIPS cp props; bow thruster 680 hp (500 kW)

Speed, knots: 20

Range, n miles: 6,000 at 12 kt

Complement: 115 plus 12 spare; 189 (L 52)

Military lift: 543 or 404 (L 52) fully equipped troops and 72 (staff and aircrew)

6 LCVP or 4 LCM or 1 LCU and 1 LCVP, 130 APCs or 33 MBTs

Guns: 1 Bazán 20 mm/120 12-barrelled Meroka (fitted for) 3,600 rds/min combined to 2 km. 2 Oerlikon GAM-B01 20 mm

Countermeasures: Decoys: 4 SRBOC chaff launchers.

ESM Intercept

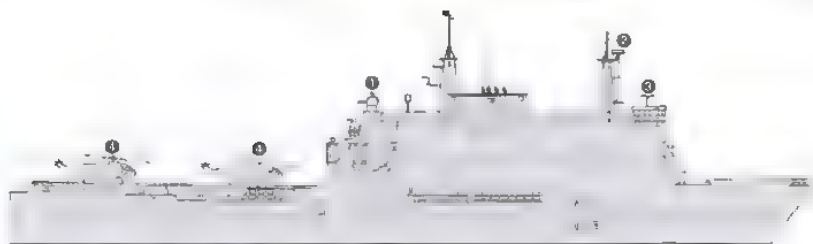
Combat data systems: SICOA (L 52); SATCOM; Link 11.

Radars: Surface search: TRS 3D/16 (L 52) 3; G-band

Surface search: Kelvin Hughes ARPA 3; I-band.

Navigation/helo control: I-band.

Helicopters: 6 AB 212 or 4 SH-3D Sea King or 4 Eurocopter Tiger.



CASTILLA

(Scale 1 : 1,500), Ian Sturton / 0106549

Programmes: Originally started as a national project by the Netherlands. In 1990 the ATS was seen as a possible solution to fulfil the requirements for a new LPD Joint project definition study announced in July 1991 and completed in December 1993 and the first ship was authorised on 29 July 1994. The second of class ordered 9 May 1997

Modernisation: L 52 C² capabilities upgraded in 2002-03 to support Flagship requirements. L 52 embarked the HQ of the Spanish High Readiness Force (Maritime) in November 2003 as part of the NATO Response Force. Both ships are to be fitted with RAM CIWS

Structure: Able to transport a fully equipped battalion of marines providing a built-in dock for landing craft and a helicopter flight deck for debarkation in offshore conditions. Docking well is 885 m²; vehicle area 1,010 m². Access hatch on the starboard side. Hospital facilities. Built to commercial standards with military command and control and NBCD facilities. Castilla has improved command and control facilities with two operations centres, one for amphibious and one for a combat group. Operational: Alternatively can also be used for a general logistic support for both military and civil operations, including environmental and disaster relief tasks. Based at Rota



GALICIA

6/2007, John Brodie / 1166821



GALICIA

6/2007, H M Steele / 1170041

0 + 1 STRATEGIC PROJECTION SHIP (LHD)

Name	No	Builders	Laid down	Launched	Commissioned
REY JUAN CARLOS I	L 61	Navantia, Ferrol	20 May 2005	10 Mar 2008	Dec 2009

Displacement, tons: 27,079 full load
Dimensions, feet (metres): 757.2 x 105.0 x 23.0 (230.8 x 32.0 x 7.0)
Flight deck, feet (metres): 663.9 x 105.0 (202.3 x 32)
Main machinery: CODAGE; 1 GE LM 2500 gas turbine; 26,550 hp (19.8 MW); 2 MAN 324016V; 21,080 hp (15.7 MW); 2 Siemens-Schottel podded propulsors; 29,500 hp (22 MW)
Speed, knots: 21. **Range, n miles:** 9,000 at 15 kt
Complement: 243 (plus 1,220 including flag staff, air group and 900 landing force)
Guns: 4 - 20 mm, 2 - 12.7 mm MGs.
Countermeasures: Decoys: Chaff launchers, SLQ-25a Nixie torpedo decoy.
Combat data systems: Link 11, 16, SATCOM.
Radars: Air search: Indra Lanza; D-band
Surface search/navigation: 3 Indra Aries; I-band.
Helicopters: 6 landing spots for helicopter or AV-8 operations.



REY JUAN CARLOS I

(Scale 1 : 2,400), Ian Sturton / 1164927

Programmes: Approval for the procurement of a Strategic Projection Ship was given by the Spanish Cabinet on 5 September 2003. Contract for design and construction was awarded in March 2004.

Structure: The hangar is 1,000 m². There are two 27-tonne aircraft elevators to the flight deck. Below the hangar there is a 2,000 m² garage. Typical transport configurations include: 46 tanks and 42 Leopard; 70 containers of 20 tons; 32 NH-90 or 19 AV-8 or 12 CH-47 or 12 NH 90 and 11 AV-8. The landing dock (69.3 x 16 m) is to be capable of operating four LCM (1E) landing craft or at least one landing craft air cushion. Medical facilities will include operating rooms, intensive care unit and sick bay. There is space and weight reserved for a point-defence system.
Operational: The principal roles are amphibious, strategic projection of land forces and disaster relief. The ship will also be capable of operating the fixed-wing aircraft of *Principe de Asturias*.



REY JUAN CARLOS I

7/2008*, Navantia / 1335825

Sales: Two similar ships are to be built for the Australian Navy



REY JUAN CARLOS I

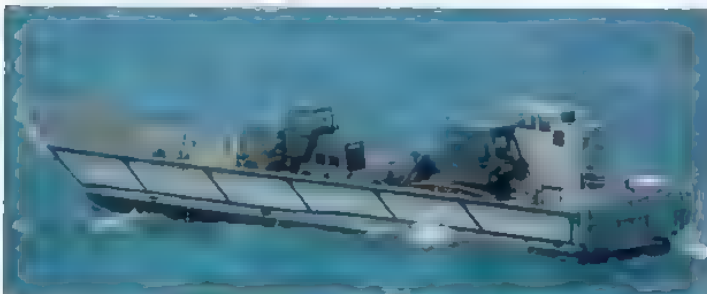
3/2008*, Ships of the World / 1335830

14 LCM (1E)

L 601-614

Displacement, tons: 108 full load
Dimensions, feet (metres): 76.5 x 21 x 3.4 (23.3 x 6.4 x 1.1)
Main machinery: 2 MAN-D 2842-LE 402 diesels; 2,200 hp (m) (1.62 MW); 2 MJ-P660 DD waterjets
Speed, knots: 14
Range, n miles: 160 at 12 kt
Complement: 3
Military lift: 100 tons or one main battle tank

Comment: L 601-602 built by IZAR, San Fernando, for LPDs and delivered in early 2001. Bow and stern ramps. Steel construction with wheelhouse of composites. Maximum speed in ballast is 22 kt. Based at Punteles. An order for a further 12 craft made in November 2004. First three laid down in 2005 and completed by 2007. A further nine built by Navantia, San Fernando. All delivered by early 2008.



L 603

5/2007, Camil Busquets / Vilanova / 1170024

40 LANDING CRAFT

Comment: Apart from those used for divers there are 14 LCM 6 (L 161-167, L 261-267), 16 LCVP and 8 LCPL. All of the LCM 6, eight of the LCVPs and most of the LCPs were built in Spanish Shipyards 1986-88. There are also two tug pontoons (mexoflotes) (L 91-L 92) completed in 1995. Most of these craft are laid up.



LCM L 162

10/1993, Diego Quevedo / 0506170

MINE WARFARE FORCES

6 SEGURA CLASS (MINEHUNTERS) (MHC)

Name	No	Builders	Launched	Commissioned
SEGURA	M 31	Bazán, Cartagena	25 July 1997	27 Apr 1999
SELLA	M 32	Bazán, Cartagena	6 July 1998	28 May 1999
TAMBRE	M 33	Bazán, Cartagena	5 Mar 1999	18 Feb 2000
TURIA	M 34	Bazán, Cartagena	22 Nov 1999	16 Oct 2000
DUERO	M 35	Izar, Cartagena	28 April 2003	6 July 2004
TAJO	M 36	Izar, Cartagena	10 June 2004	10 Jan 2005

Displacement, tons: 530 full load
Dimensions, feet (metres): 177.2 oa; 167.3 wl x 35.1 x 7.2 (54, 51 x 10.7 x 2.2)
Main machinery: 2 MTU-Bazán 6V 396 T883 diesels; 1,523 hp(m) (1.12 MW); 2 motors (for hunting); 200 kW; 2 Voith Schneider props; 2 side thrusters; 150 hp(m) (110 kW)
Speed, knots: 14; 7 (hunting)
Range, n miles: 2,000 at 12 kt
Complement: 41 (7 officers)
Guns: 1 Bazán/Oerlikon 20 mm GAM-BO1.
Countermeasures: MCM: FABA/Inisel system. 2 Gayrobot Pluto Plus ROVs.
Combat data systems: FABA/SMYC Nautis.
Radars: Navigation: Kelvin-Hughes 1007; I-band
Sonars: Raytheon/ENOSA SQQ-32 multifunction VDS mine detection; high frequency.

Comment: On 4 July 1989 a technology transfer contract was signed with Vosper Thornycroft to allow Bazan to design a new MCM vessel based on the Sandown class. The order for four of the class was authorised on 7 May 1993, and an agreement signed on 26 November 1993 between DCN and Bazan provided for training in GRP technology. The first of class laid down 30 May 1995. Two more ordered on 28 January 2001. An option for two further ships is unlikely to be exercised. Sonar includes side scanning, and a towed body tracking and positioning system. M 35 and M 36 are to be fitted with the Minesniper mine disposal system. M 31-34 are to be retrofitted in due course. Form 1st MCM Squadron based at Cartagena.



SEGURA 11/2008*, Adolfo Ortigueira Gil / 1335854

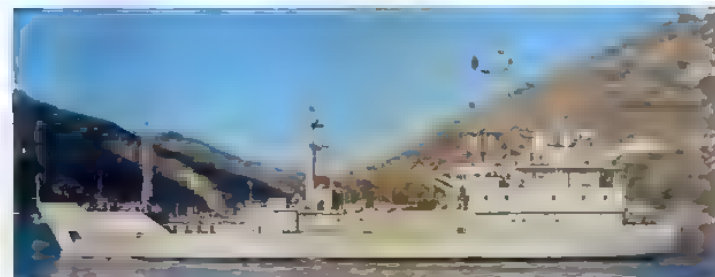
SURVEY AND RESEARCH SHIPS

1 DARSS CLASS (RESEARCH SHIP) (AGI/AGOR)

Name	No	Builders	Commissioned
ALERTA (ex-Jasmund)	A 111	Peenewerft, Wolgast	6 Dec 1992

Displacement, tons: 2,292 full load
Dimensions, feet (metres): 250.3 x 39.7 x 13.8 (76.3 x 12.1 x 4.2)
Main machinery: 1 Kolomna Type 40-DM diesel; 2,200 hp(m) (1.6 MW) sustained; 1 shaft, cp prop
Speed, knots: 11
Range, n miles: 1,000 at 11 kt
Complement: 60
Guns: Fitted for 3 twin 25 mm/70, 2—12.7 mm MGs
Radars: Navigation: Racal Decca, I-band

Comment: Former GDR depot ship launched on 27 February 1982 and converted to an AGI, with additional accommodation replacing much of the storage capacity. Was to have transferred to Ecuador in 1991 but the sale was cancelled. Commissioned in the Spanish Navy and sailed from Wilhelmshaven for a refit at Las Palmas prior to being based at Cartagena and used as an AGI and equipment trials ship. Saturn 35 SATCOM.



ALERTA 10/2008*, Adolfo Ortigueira Gil / 1335853

2 CASTOR CLASS (SURVEY SHIPS) (AGS)

Name	No	Builders	Commissioned
ANTARES	A 23	Bazán, La Carraca	21 Nov 1974
RIGEL	A 24	Bazán, La Carraca	21 Nov 1974

Displacement, tons: 363 full load
Dimensions, feet (metres): 125.9 x 24.9 x 10.2 (38.4 x 7.6 x 3.1)
Main machinery: 1 Sulzer 4TD36 diesel, 720 hp(m) (530 kW); 1 shaft
Speed, knots: 11.5
Range, n miles: 3,620 at 8 kt
Complement: 36 (4 officers)
Radars: Navigation: Raytheon 1620; IJ-band

Comment: Fitted with Raydist, Omega and digital presentation of data. Likely to be decommissioned in the near future. Based at Cadiz.



ANTARES 10/2008*, Adolfo Ortigueira Gil / 1335852

1 RESEARCH SHIP (AGOBH)

Name	No	Builders	Commissioned
HESPERIDES (ex-Mar Antartico)	A 33	Bazán, Cartagena	16 May 1991

Displacement, tons: 2,738 full load
Dimensions, feet (metres): 270.7 oa; 255.2 wl x 46.9 x 14.8 (82.5, 77.8 x 14.3 x 4.5)
Main machinery: Diesel-electric; 4 MAN-Bazán 14V20/27 diesels, 6,860 hp(m) (5 MW) sustained; 4 generators; 2 AEG motors; 3,800 hp(m) (2.8 MW); 1 shaft, bow and stern thrusters; 350 hp(m) (257 kW) each
Speed, knots: 15. **Range, n miles:** 12,000 at 13 kt
Complement: 39 (9 officers) plus 30 scientists
Radars: Surface search: Racal/Hispano ARPA 2690; I-band.
Navigation: Racal 2690 ACS; F-band.
Helicopters: 1 AB 212

Comment: Ordered in July 1988 from Bazán, Cartagena, by the Ministry of Education and Science. Laid down in 1989, launched 12 March 1990. Has 330 sq m of laboratories, Simbad ice sonar. Dome in keel houses several sensors. Ice-strengthened hull capable of breaking first year ice up to 45 cm at 5 kt. Based at Cartagena, the main task is to support the Spanish base at Livingston Island, Antarctica. Manned and operated by the Navy. Has a telescopic hangar. Modifications made to superstructure in 2004 to increase accommodation for scientific staff.



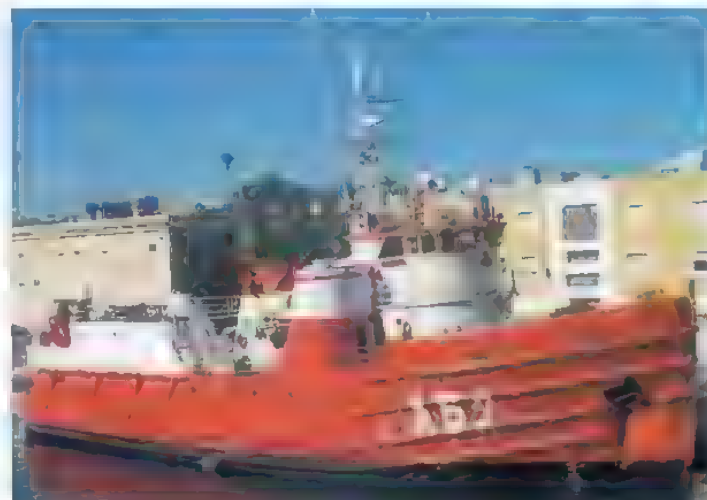
HESPERIDES 5/2006, Adolfo Ortigueira Gil / 1040691

1 RESEARCH SHIP (AGOB)

Name	No	Builders	Commissioned
LAS PALMAS (ex-Somiedo)	A 52	Astilleros Atlántico, Santander	1978

Displacement, tons: 1,450 full load
Dimensions, feet (metres): 134.5 x 38.1 x 18 (41 x 11.6 x 5.5)
Main machinery: 2 AESA/Sulzer 16ASV25/30 diesels; 7,744 hp(m) (5.69 MW); 2 shafts
Speed, knots: 13. **Range, n miles:** 27,000 at 12 kt
Complement: 33 (8 officers) plus 45 scientists
Guns: 2—12.7 mm MGs
Radars: Navigation: 2 Racal Decca; I-band

Comment: Built as a tug for Compania Hispano Americana de Offshore SA. Commissioned in the Navy 30 July 1981. Converted in 1988 for Polar Research Ship duties in Antarctica with an ice strengthened bow, an enlarged bridge and two containers aft for laboratories. Based at Cartagena.



LAS PALMAS 10/2008*, Adolfo Ortigueira Gil / 1335851

2 MALASPINA CLASS (SURVEY SHIPS) (AGS)

Name	No	Builders	Commissioned
MALASPINA	A 31	Bazán, La Carraca	21 Feb 1975
TORIÑO	A 32	Bazán, La Carraca	23 Apr 1975

Displacement, tons: 820 standard; 1,090 full load
 Dimensions, feet (metres): 188.9 × 38.4 × 12.8 (57.6 × 11.7 × 3.9)
 Main machinery: 2 San Carlos MWM TbRHS-345-61 diesels; 3,600 hp(m) (2.64 MW); 2 shafts; LIPS cp props
 Speed, knots: 15
 Range, n miles: 4,000 at 12 kt; 3,140 at 14.5 kt
 Complement: 63 (9 officers)
 Guns: 2 Oerlikon 20 mm.
 Radars: Navigation: Raytheon 1220/6XB, I/J-band.

Comment: Ordered mid-1972. Both named after their immediate predecessors. Developed from British Bulldog class. Fitted with two Atlas DESO-10 AN 1021 (280-1,400 m) echosounders, retractable Burnet 538-2 sonar for deep sounding, Egg Mark B side scan sonar, Raydist DR-S navigation system, Hewlett Packard 2100A computer inserted into Magnavox Transit satellite navigation system, active rudder with fixed pitch auxiliary propeller. *Malaspina* used for a NATO evaluation of a Ship's Laser Inertial Navigation System (SLINS) produced by British Aerospace. Based at Cadiz.



MALASPINA 11/2008*, Adolfo Ortigueira Gil / 1335850

2 LHT-130 CLASS (SURVEY MOTOR BOATS) (YGS)

Name	No	Builders	Commissioned
ASTROLABIO	A 91	Rodman, Vigo	30 Nov 2001
ESCANDALLO	A 92	Rodman, Vigo	27 Feb 2004

Displacement, tons: 8 full load
 Dimensions, feet (metres): 41.3 × 13.8 × 1.6 (12.6 × 4.2 × 0.5)
 Main machinery: 2 diesels, 700 hp (522 kW); 2 shafts
 Speed, knots: 30

Comment: Support craft of the Hydrographic Flotilla. Based at Puntales and transportable by road, rail, ship or aircraft.



ESCANDALLO 10/2008*, Adolfo Ortigueira Gil / 1335849

TRAINING SHIPS**7 SAIL TRAINING SHIPS (AXS)**

Name	No	Builders	Commissioned
JUAN SEBASTIÁN DE ELCANO	A 71	Echevarrieta, Cádiz	17 Aug 1928
AROSA	A 72	Inglaterra	1 Apr 1981
LA GRACIOSA (ex- <i>Dejé Vu</i>)	A 74	Inglaterra	30 June 1988
GIRALDA (ex- <i>Southern Cross</i>)	A 76	Morris & Mortimer, Argyle	26 Aug 1993
SISARGAS	A 75	Novo Glass, Polinya	18 May 1995
SÁLVORA	A 77	—	29 May 2001
PEREGRINA	A 78	—	22 Feb 2007

Displacement, tons: 3,420 standard; 3,956 full load
 Dimensions, feet (metres): 308.5 oa × 43.3 × 24.6 (94.1 × 13.15 × 7.46)
 Main machinery: 1 Deutz MWM KHD 6M diesel; 1,950 hp(m) (1.43 MW); 1 shaft
 Speed, knots: 9
 Range, n miles: 10,000 at 9 kt
 Complement: 347 (students 120)
 Guns: 2—37/80 mm Bazán saluting guns.
 Radars: Navigat on: 2 Racal Decca; I-band

Comment: Details are for A 71 (based at La Carraca) which is a four masted top-sail schooner—near sister of Chilean *Esmeralda*. Named after the first circumnavigator of the world (1519-22) who succeeded to the command of the expedition led by Magellan after the latter's death. Laid down 24 November 1925. Launched on 5 March 1927. Carries 230 tons oil fuel. Engine replaced in 1992. Six further are based at the Naval School, Marin. A ketch (A 72) (52 tons and 22.84 m in length), a schooner (A 74) (16.8 m in length), a 90 tons ketch (A 75) launched in 1958 and formerly owned by the father of King Juan Carlos I and presented to the Naval School in 1993, an ex-yacht (A 76) and a yacht (A 77)



JUAN SEBASTIÁN DE ELCANO 6/2005, Frank Findler / 11040692

4 TRAINING CRAFT (AXL)

Name	No	Builders	Commissioned
CONTRAMAESTRE NAVARRETE (ex- <i>Guardiamarina Salas</i>)	A 82	Cartagena	10 May 1983
CONTRAMAESTRE SÁNCHEZ FERNÁNDEZ (ex- <i>Guardiamarina Godínez</i>)	A 83	Cartagena	4 July 1984
CONTRAMAESTRE ANTERO (ex- <i>Guardiamarina Rull</i>)	A 84	Cartagena	11 June 1984
CONTRAMAESTRE LAMADRID (ex- <i>Guardiamarina Chereguini</i>)	A 85	Cartagena	11 June 1984

Displacement, tons: 56 full load
 Dimensions, feet (metres): 62 × 16.7 × 5.2 (18.9 × 5.1 × 1.6)
 Main machinery: 2 MAN diesels; 2 shafts
 Speed, knots: 13
 Complement: 15; 22 (A 81)
 Radars: Navigation: Halcon 948; I-band

Comment: Former tenders to Naval School transferred to Naval Specialist School, Ferrol, in 2007. The craft have been assigned new names.



CONTRAMAESTRE LAMADRID 6/2007, Roberto Marin / 1170044

4 RODMAN 66 CLASS (AXT)

Name	No	Builders	Commissioned
GUARDIAMARINA BARRUTIA	A 121	Rodman, Vigo	2007
GUARDIAMARINA CHEREGUINI	A 122	Rodman, Vigo	2007
GUARDIAMARINA RULL	A 123	Rodman, Vigo	2007
GUARDIAMARINA SALAS	A 124	Rodman, Vigo	2008

Displacement, tons: 36
 Dimensions, feet (metres): 67.2 × 18.0 × 3.1 (20.5 × 4.9 × 0.96)
 Main machinery: 2 Caterpillar diesels; 1,500 hp (1.1 MW); 2 shafts
 Speed, knots: 20
 Range, n miles: 500 at 15 kt
 Complement: 16
 Radars: Navigation: Furuno; I-band.

Comment: GRP hull. New craft which replaced Naval School tenders in 2007/08.



GUARDIAMARINA CHEREGUINI 12/2006, Adolfo Ortigueira Gil / 1167149

AUXILIARIES

Notes: There are plans to acquire a new submarine rescue ship to replace *Neptuno*.

0 + 1 FLEET REPLENISHMENT SHIP (AORH)

Name	No	Builders	Laid down	Launched	Commissioned
CANTABRIA	A 15	Navantia, San Fernando	18 July 2007	21 July 2008	Sep 2009

Displacement, tons: 19,500 full load
 Dimensions, feet (metres): 570.5 x 75.5 x 26.2 (173.9 x 23.0 x 8.0)
 Main machinery: 2 diesels; 29,200 hp (21.8 MW); 1 shaft
 Speed, knots: 21
 Range, n miles: 6,000 at 13 kt
 Complement: 112
 Cargo capacity: 6,400 tons diesel; 1,600 tons aviation fuel
 Guns: To be announced.
 Countermeasures: To be announced.
 Combat data systems: To be announced.
 Radars: To be announced.
 Helicopters: 2 SH 3D Sea King or 3 AB 212.

Comment: Similar in design to *Patino* class with improved capabilities including double-hull, container cargo capacity, enhanced sensors and a combat data system. Two RAS stations on each side and one stern refuelling station. There is to be a small hospital with 10 beds. Contract for construction of the ship signed on 30 December 2004.



CANTABRIA 10/2008*, Navantia / 1335823

1 PATIÑO CLASS (FLEET LOGISTIC TANKER) (AORH)

Name	No	Builders	Launched	Commissioned
PATIÑO	A 14	Bazán, Ferrol	22 June 1994	16 June 1995

Displacement, tons: 5,762 light; 17,045 full load
 Dimensions, feet (metres): 544.6 x 72.2 x 26.2 (166 x 22 x 8)
 Main machinery: 2 Bazán/Burmeister & Wain 16V40/45 diesels, 24,000 hp(m) (17.6 MW) sustained; 1 shaft; LIPS cp prop
 Speed, knots: 20
 Range, n miles: 13,440 at 20 kt
 Complement: 146 plus 19 aircrew plus 20 spare
 Cargo capacity: 6,815 tons diesel; 1,660 tons aviation fuel; 500 tons solids
 Guns: 2 Bazán 20 mm/120 Meroka CIWS (fitted for), 2 Oerlikon 20 mm/90
 Countermeasures: Decoys: 4 SRBOC chaff launchers. Nixie torpedo decoy.
 ESM/ECM: Aldebaran intercept and jammer.
 Radars: 3 navigation/helo control; I-band
 Helicopters: 2 SH-3D Sea King or 3 AB 212

Comment: The Bazán design AP 21 was rejected in favour of this joint Netherlands/Spain design. Ordered on 28 December 1991. Laid down 1 July 1993. Two supply stations each side for both liquids and solids. Stern refuelling. One *Ventrep* supply station, and workshops for aircraft maintenance. Medical facilities. Built to merchant ship standards with military NBC. Accommodation for up to 50 female crew members. SCOT 3 SATCOM to be fitted. Based at Ferrol.



PATIÑO 6/2007, Maritime Photographic / 1170043

1 TRANSPORT SHIP (AKRH)

Name	No	Builders	Commissioned
MARTIN POSADILLO (ex-Rivanerion, ex-Cala Portals)	A 04 (ex ET 02)	Duro Folguera, Gijón	1973

Displacement, tons: 1,920 full load
 Dimensions, feet (metres): 246.1 x 42.7 x 14.1 (75 x 13 x 4.3)
 Main machinery: 1 BMW diesel; 2,400 hp(m) (1.77 MW); 1 shaft
 Speed, knots: 10
 Complement: 18
 Military lift: 42 trucks plus 25 jeeps
 Helicopters: Platform for 1 Chinook.

Comment: Ro-Ro ship taken on by the Army in 1990 and transferred to the Navy on 14 February 2000. Based at Cartagena.



MARTÍN POSADILLO 4/2008*, Adolfo Ortigueira Gil / 1335848

1 TRANSPORT SHIP (APH)

Name	No	Builders	Recommissioned
CONTRAMAESTRE CASADO (ex-Thanasia-K, ex-Fortuna Reafer, ex-Bonzo, ex-Bajamar, ex-Leeward Islands)	A 01	Ericksberg-Göteborg, Sweden	15 Dec 1982

Displacement, tons: 4,965 full load
 Dimensions, feet (metres): 343.4 x 46.9 x 29.2 (104.7 x 14.3 x 8.9)
 Main machinery: 1 Burmeister & Wain diesel, 3,600 hp(m) (2.65 MW); 1 shaft
 Speed, knots: 14. Range, n miles: 8,000 at 14 kt
 Complement: 72
 Guns: 2 Oerlikon 20 mm.
 Radars: Navigation: Racal Decca 1226 and 626, I band.

Comment: Built in 1953. Impounded as smuggler. Delivered after conversion 6 December 1983. Has a helicopter deck. Since 2001, based at La Carraca (Cadiz).



CONTRAMAESTRE CASADO 10/2008*, Adolfo Ortigueira Gil / 1335846

6 HARBOUR TANKERS (YO)

No	Displacement, tons	Dimensions, metres	Cargo, tons fuel	Commissioned
Y 231	524	37.9 x 7.0 x 3.1	300	1981
Y 251	830	46.7 x 8.4 x 3.1	500	1981
Y 252	337	34.3 x 6.2 x 2.6	189	1965
Y 253	337	34.3 x 6.2 x 2.5	193	1965
Y 254	214.7	27.2 x 6.2 x 2.2	100	1981
Y 255	524	37.6 x 7 x 2.9	300	1981

Comment: All built by Bazán at Cádiz and Ferrol.



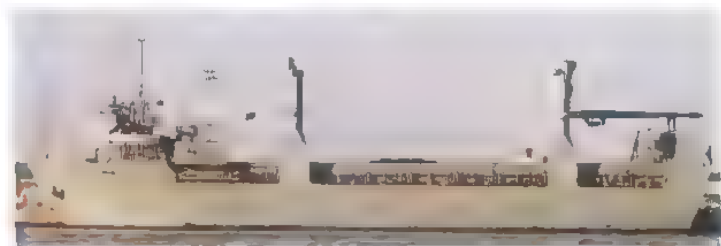
Y 251 11/2003, Diego Quevedo / 0570853

1 TRANSPORT SHIP (AKR)

Name	No	Builders	Commissioned
EL CAMINO ESPAÑOL (ex-Araguary, ex-Cyndia)	A 05 (ex-ET 03)	Maus, Rio de Janeiro	Oct 1984

Displacement, tons: 5,804 full load
 Dimensions, feet (metres): 313.6 x 59.8 x 15.2 (95.5 x 18.3 x 4.6)
 Main machinery: 2 Sulzer diesels; 6,482 hp(m) (4.76 MW); 2 shafts
 Speed, knots: 12
 Complement: 24 (3 officers) plus 40 Army
 Military lift: 24 tanks plus 15 trucks and 102 jeeps
 Radars: Navigation, I-band.

Comment: Acquired by the Army in early 1999 but commissioned into the Navy on 21 September 1999. Ro-Ro design converted for military use by Bazán in Cartagena. Used for logistic support of armed forces. Has two 25 ton cranes. Based at Cartagena.



EL CAMINO ESPAÑOL 10/2008*, Adolfo Ortigueira Gil / 1335845

756 Spain/Auxiliaries

1 FLEET TANKER (AORLH)

Name	No	Builders	Launched	Commissioned
MARQUÉS DE LA ENSENADA (<i>ex-Mar del Norte</i>)	A 11	Bazan, Ferrol	5 Oct 1990	3 June 1991

Displacement, tons: 13,592 full load
Dimensions, feet (metres): 403.9 oa; 377.3 wl x 64 x 25.9 (123.1; 115 x 19.5 x 7.9)
Main machinery: 1 MAN-Bazán 18V40/50A; 11,247 hp(m) (8.27 MW) sustained; 1 shaft
Speed, knots: 16
Range, n miles: 10,000 at 15 kt
Complement: 80 (11 officers)
Cargo capacity: 7,498 tons diesel; 1,746 tons JP-5; 120 tons deck cargo
Guns: 2—12.7 mm MGs.
Radars: Surface search. Racal Decca 2459, i/F-band
Navigation: Racal Decca ARPA 2690/9; I-band.
Helicopters: 1 AB 212 or similar.

Comment: Ordered 30 December 1988; laid down 16 November 1989. The deletion of the *Teide* left a serious deficiency in the Fleet's at sea replenishment capability which has been restored by the *Patino*. In addition, and as a stop gap, this tanker was built at one third of the cost of the larger support ship. Two Vartrep stations and a platform for a Sea King size helicopter. Replenishment stations on both sides and one astern. Provision for Meroka CIWS four chaff launchers as well as ESM. Has a small hospital. Based at Rota.



MARQUÉS DE LA ENSENADA 3/2008*, Michael Winter / 1335831

2 LOGISTIC SUPPORT SHIPS (ATF/AGDS)

Name	No	Builders	Commissioned
MAR CARIBE (<i>ex-Amatista</i>)	A 101	Duro Felguera, Gijón	24 Mar 1975
NEPTUNO (<i>ex-Mar Rojo, ex-Amapiola</i>)	A 20 (ex-A 102)	Duro Felguera, Gijón	24 Mar 1975

Displacement, tons: 1,860 full load
Dimensions, feet (metres): 176.4 x 38.8 x 14.8 (53.8 x 11.8 x 4.5)
Main machinery: 2 Echevarria-Burmeister & Wain 18V23HU diesels; 4,860 hp(m) (3.57 MW); 2 shafts; bow thruster
Speed, knots: 12
Range, n miles: 6,000 at 10 kt
Complement: 44

Comment: Two offshore oil rig support tugs were acquired and commissioned into the Navy 14 December 1988. Bollard pull, 80 tons. *Neptuno* converted as a diver support vessel and submarine rescue ship. She has a dynamic positioning system and carries a side scan mine detection high-frequency sonar as well as a semi-autonomous remote-controlled DSRV. The control cable restricts operations to within 75 m of an auxiliary diving unit. The DSRV is launched and recovered by a hydraulic arm. *Mar Caribe* works with Amphibious Forces and is based at Cadiz. *Neptuno* based at Cartagena.



MAR CARIBE 10/2008*, Adolfo Ortigueira Gil / 1335847



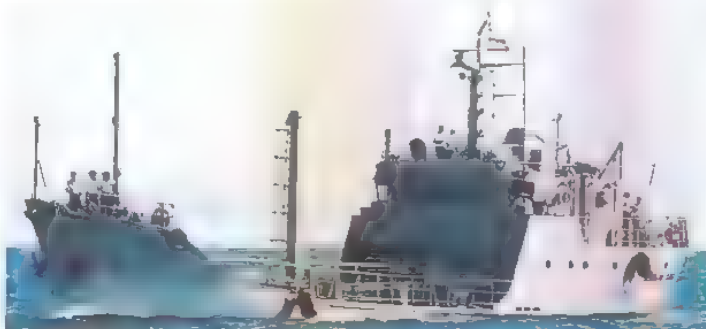
NEPTUNO 11/2002, A Campanera / Rovira / 0570952

1 WATER TANKER (AWT)

Name	No	Builders	Commissioned
MARINERO JARANO	A 65 (ex-AA 31)	Bazan, Cádiz	16 Mar 1981

Displacement, tons: 549 full load
Dimensions, feet (metres): 123 x 23 x 9.8 (37.6 x 7 x 3)
Main machinery: 1 diesel; 600 hp(m) (447 kW); 1 shaft
Speed, knots: 10
Complement: 13
Cargo capacity: 300 tons

Comment: Similar to Y 231 and Y 255 (harbour tankers). Based at Cartagena.



MARINERO JARANO 9/2003, Diego Quevedo / 0570951

1 WATER TANKER (AWT)

Name	No	Builders	Commissioned
CONDESTABLE ZARAGOZA	A 66 (ex-AA 41)	Bazan, Cádiz	16 Oct 1981

Displacement, tons: 895 full load
Dimensions, feet (metres): 152.2 x 27.6 x 11.2 (46.4 x 8.4 x 3.4)
Main machinery: 1 diesel; 700 hp(m) (515 kW); 1 shaft
Speed, knots: 10
Complement: 16
Cargo capacity: 600 tons

Comment: Based at Puntales (Cadiz)



CONDESTABLE ZARAGOZA 2/1995, Diego Quevedo / 0080637

42 HARBOUR LAUNCHES (YDT/YFL)

Y 502-511	Y 534-535	Y 545	Y 554-558	Y 584
Y 521-531	Y 539-540	Y 548-549	Y 579-582	Y 586-589

Comment: Some used as diving tenders, others as harbour ferries. Some are former patrol craft of the P 101 and P 202 class. Y 540 is an Admirals' Yacht.



Y 558 10/2008*, Adolfo Ortigueira Gil / 1335844



Y 549 10/2007, Adolfo Ortigueira Gil / 1170036

47 BARGES (YO/YE)

Comment: Have Y numbers. Four in 200 series carry fuel, five in 300 for ammunition and general stores, eight in 400 for anti pollution. Some floating pontoons have L numbers.



Y 221 10/2005, Adolfo Ortigueira Gil / 1153458

TUGS

1 OCEAN TUG (ATA)

Name	No	Builders	Commissioned
MAHÓN (ex-Circos)	A 51	Astilleros Atlántico, Santander	1978

Displacement, tons: 1,450 full load
 Dimensions, feet (metres): 134.5 x 38 1 x 18 (41 x 11 6 x 5.5)
 Main machinery: 2 AESA/Sulzer 16ASV25/30 diesels, 7,744 hp(m) (5.69 MW); 2 shafts
 Speed, knots: 13
 Range, n miles: 27,000 at 12 kt (A 52)
 Complement: 33 (8 officers) plus 45 scientists
 Guns: 2 – 12 7 mm MGs.
 Radars: Navigation: 2 Racal Decca; I-band

Comment: Built for Compania Hispano Americana de Offshore SA. Commissioned in the Navy 30 July 1981. Based at Ferrol



MAHÓN 7/2000, Adolfo Ortigueira Gil / 0105651

1 OCEAN TUG (ATA)

Name	No	Builders	Commissioned
LA GRAÑA (ex-Punta Amer)	A 53 (ex-Y 119)	Astilleros Luzuriaga, San Sebastian	1982

Displacement, tons: 664 full load
 Dimensions, feet (metres): 102.4 x 27.6 x 10.5 (31.2 x 8.4 x 3.2)
 Main machinery: 1 diesel; 3,240 hp(m) (2.38 MW); 1 Voith Schneider prop
 Speed, knots: 13
 Range, n miles: 1,750 at 12 kt
 Complement: 28

Comment: Former civilian tug acquired by Navy on 20 October 1987. Now designated as ocean-going. Based at Cad.z.



LA GRAÑA 6/2006, Adolfo Ortigueira Gil / 1170035

31 COASTAL AND HARBOUR TUGS (YTB/YTM/YTL)

No	Displacement tons (full load)	HP/speed	Commissioned
Y 116	422	1,820/12	1981
Y 118	236	1,750/12	1989-91
Y 121	236	1,750/12	1989-91
Y 122	236	1,500/12	1999-02
Y 123	236	1,500/12	1999-02
Y 124	236	1,500/12	1999-02
Y 125	236	1,500/12	1999-02
Y 126	236	1,500/12	1999-02
Y 120 (ex-Punta Roca)	260	1,750/12	1988
Y 137	80	200/8	1965
Y 138	80	200/8	1965
Y 139	80	200/8	1965
Y 140	70	200/8	1965-67
Y 141	229	800/11	1981
Y 142	229	800/11	1981
Y 144	195	2,030/11	1983
Y 145	195	2,030/11	1983
Y 147	87	400/10	1987/1999
Y 148	87	400/10	1987/1999
Y 172	10	440/11	1982/1985
Y 173	10	440/11	1982/1985
Y 174	10	440/11	1982/1985
Y 175	10	440/11	1982/1985
Y 176	10	440/11	1982/1985
Y 177	10	440/11	1982/1985
Y 178	10	440/11	1982/1985
Y 179	10	440/11	1982/1985
Y 180	10	540/9	2005
Y 181	10	540/9	2005
Y 182	10	540/9	2005
Y 183	10	540/9	2005

Comment: Y 143 has a troop carrying capability. Y 171-176 are pusher tugs for submarines. Y 118, Y 121-126 have Voith Schneider propulsion.



Y 124 10/2008, Adolfo Ortigueira Gil / 1335843

GOVERNMENT MARITIME FORCES

POLICE (GUARDIA CIVIL – MARITIME SERVICE)

Notes: Created by Royal decree on 22 February 1981 and owned by the Ministry of Interior. Bases at Algeciras, Alicante, Almería, Barcelona, Bilbao, Cadiz, Cartagena, Castellón, Ceuta, Corralajo, Gijón, Huelva, La Coruña, Lanzarote, Las Palmas, Málaga, Main, Motril, Palma, Pontevedra, Santander, Tarragona, Valencia and Vizcaya. Personnel strength 1,000 (35 officers). The force has taken over the anti-terrorist role and some general patrol duties as a peacetime paramilitary organisation coming under the Ministry of Defence in war. In addition to the craft listed there are some 42 smaller craft (under 9 m). All vessels are armed. 18 BO 105, 8 BK-117 and 31 Eurocopter EC-135 helicopters are used for coastal patrols and are based at Tenerife, Seville, Valencia, Mallorca, Huesca, Logroño, Leon and La Coruña. Two EADS/CASA 235 maritime patrol aircraft are to enter service in 2009.



EC-135 6/2004, Oris / 1044563



BK 117 10/2005, Adolfo Ortigueira Gil / 1153467

1 IZAR IVP-22 CLASS (WPB)

SALEMA A 01

Displacement, tons: 52 full load
 Dimensions, feet (metres): 80.4 x 19.6 x 5.9 (24.5 x 5.96 x 1.8)
 Main machinery: 2 MAN diesels; 1,100 hp (820 kW)
 Speed, knots: 20
 Range, n miles: 400 at 12 kt
 Complement: 8
 Guns: 1—12.7 mm MG.
 Radars: Navigation, I-band

Comment: Built by Bazén, San Fernando. Steel hull. Commissioned on 24 June 1999 having been procured by Agriculture and Fisheries Ministry for operation by Guardia Civil. Hull lengthened in 2003 to facilitate operation of RIB. Based at Algeciras.



SALEMA 10/2005, Adolfo Ortigueira Gil / 1153463

3 RODMAN 82 CLASS (WPB)

RIO GUADIARO (ex-Seriola) A 02 RIO PISUERGA A 03 RIO NALON A 04

Displacement, tons: 93 full load
 Dimensions, feet (metres): 85.3 x 19.4 x 4.3 (26.0 x 5.9 x 1.3)
 Main machinery: 2 diesels; 1,400 hp (1.04 MW); 2 waterjets
 Speed, knots: 30
 Range, n miles: 720 at 17 kt
 Complement: 9
 Guns: 1 LAG 40 mm grenade launcher.
 Radars: Navigation; I-band.

Comment: Built in 2001 by Rodman, Vigo. A 02 based at Alicante, A 03 at Algeciras and A 04 at Asturias. A 02 purchased by Fisheries department



RIO NALON 6/2007, Camil Busquets i Vilanova / 1170025

13 RODMAN 101 CLASS (WPB)

RIO PALMA A 05	RIO GUADALAVIAR A 10	RIO DUERO A 15
RIO ANDARAX A 06	RIO CABRIEL A 11	RIO GUADIANA A 16
RIO GUADALOPE A 07	RIO CERVANTES A 12	RIO FRANCOLI A 17
RIO ALMANZORA A 08	RIO ARA A 13	
RIO NERVION A 09	RIO ADAJA A 14	

Displacement, tons: 109 full load
 Dimensions, feet (metres): 98.4 x 19.4 x 4.3 (30.0 x 5.9 x 1.3)
 Main machinery: 2 Caterpillar 3412C diesels, 2,800 hp (2.06 MW); 2 Hamilton waterjets
 Speed, knots: 30. Range, n miles: 800 at 12 kt
 Complement: 9
 Guns: 1 LAG 40 mm grenade launcher.
 Radars: Navigation; I-band

Comment: GRP hull. Built by Rodman, Vigo and delivered in 2002 (A 05), 2003 (A 06-08), 2004 (A 09-13), 2005 (A 14) and 2006 (A 15-17). A 05 A 06, A 08 and A 16 purchased by Agriculture and Fisheries Ministry. All operated by Guardia Civil.



RIO FRANCOLI 11/2008, Adolfo Ortigueira Gil / 1335840

9 RODMAN 55M CLASS (WPBF)

M 02-M 14 series

Displacement, tons: 15.7 full load
 Dimensions, feet (metres): 54.1 x 12.5 x 2.3 (16.5 x 3.8 x 0.7)
 Main machinery: 2 MAN D2848-LXE diesels, 1,360 hp(m) (1 MW) sustained; 2 Hamilton water-jets
 Speed, knots: 36
 Range, n miles: 500 at 25 kt
 Complement: 7
 Guns: 1—12.7 mm MG
 Radars: Surface search; Ericsson, I-band

Comment: GRP hulls built by Rodman, Vigo. First five in service in 1992, three in 1993, six more in 1995-96. M 01 sunk in 2002. Known as Baltic class. Two transferred to Mauritania in 2006 and two to Gambia in 2007



M 10 5/2008, M Declerck / 1336837

2 RODMAN 55 CANARIAS CLASS (WPBF)

TINEYCHEIDE M 15 ALMIRANTE DIAZ PIMIENTA M 16

Displacement, tons: 18.5
 Dimensions, feet (metres): 57.1 x 12.5 x 2.6 (17.4 x 3.8 x 0.8)
 Main machinery: 2 MAN D2848 LXE406 diesels; 2,300 hp (1.71 MW); 2 Hamilton waterjets
 Speed, knots: 48
 Range, n miles: 400 at 25 kt
 Complement: 5
 Guns: 1—12.7 mm MG
 Radars: Navigation, I-band

Comment: GRP hull built by Rodman, Vigo. Purchased in 1999 by Canary Islands Agriculture and Fishery Department. Based at Lanzarote. Same class sold to Cyprus.



ALMIRANTE DIAZ PIMIENTA 2/2008, Adolfo Ortigueira Gil / 1336847

14 RODMAN 55HJ CLASS (PB)

RIO ARBA M 17	RIO CEDENTA M 22	RIO JILOCA M 27
RIO CAUDAL M 18	RIO LADRA M 23	RIO ALFAMBRA M 28
RIO BERNESGA M 19	RIO CERVERA M 24	RIO SANTA EULALIA M 29
RIO MARTIN M 20	RIO JUCAR M 25	RIO ULLA M 30
RIO GUADALOBON M 21	RIO GALLO M 26	

Displacement, tons: 20 full load
 Dimensions, feet (metres): 55.8 x 12.5 x 2.9 (17.0 x 3.8 x 0.9)
 Main machinery: 2 MAN D2848 LXE406 diesels, 2,300 hp (1.71 MW); 2 Hamilton waterjets
 Speed, knots: 52
 Range, n miles: 400 at 25 kt
 Complement: 5
 Radars: Navigation; I-band.

Comment: GRP hull built by Rodman, Vigo. Similar to Colombo class of Spanish Customs. M 17-24 delivered in 2004 and M 25-30 in 2005.



RIO CERVERA 9/2008, Diego Quevedo / 1335838

1 RODMAN 58 CLASS (PB)

CORVO MARINO M 31

Displacement, tons: 20.0 full load
 Dimensions, feet (metres): 59.1 x 16.1 x 3.9 (18.0 x 4.9 x 1.2)
 Main machinery: 2 diesels, 2,000 hp (1.5 MW); 2 Hamilton waterjets
 Speed, knots: 34
 Range, n miles: 450 at 25 kt
 Complement: 5
 Guns: 1—7.62 mm MG
 Radars: Navigation. Furuno; I-band.

Comment: GRP hull built by Rodman, Vigo. Purchased in 2006 for patrol duties around Cies Islands off Vigo. Based at Naval School, Marin



CORVO MARINO 6/2007, L. M Rodriguez Garcia / 1170039

9 SAETA-12 CLASS (WPBF)

L 02 L 04-11

Displacement, tons: 14 full load
 Dimensions, feet (metres): 39 x 12.5 x 2.3 (11.9 x 3.8 x 0.7)
 Main machinery: 2 MAN D2848-LXE diesels; 1,360 hp(m) (1 MW) sustained; 2 Hamilton waterjets
 Speed, knots: 38
 Range, n miles: 300 at 25 kt
 Complement: 4
 Guns: 1—7.62 mm MG
 Radars: Surface search, Ericsson, I-band

Comment: GRP hulls built by Bazán and delivered in 1993-97. Known as Aegean class. L 03 deleted in 2004 following an accident. Two (possibly including L 12) transferred to Mauritania in 2006



L 11 11/2008*, Adolfo Ortigueira Gil / 1335839

1 PATROL SHIP (PBO)

RIO MIÑO (ex-Hoyo Maru, ex-Amazonas Reefer)

Measurement, tons: 349 gross
 Dimensions, feet (metres): 169.9 x 28.2 x 10.8 (51.8 x 8.6 x 3.3)
 Main machinery: 1 diesel; 1,000 hp (736 kW); 1 shaft
 Speed, knots: 12
 Complement: 30
 Radars: Navigation; I-band

Comment: Former fishing boat constructed by Narasaki Zosen Shipyard, Japan, in 1984. Steel construction with bulbous bow. Converted to patrol boat in 2007 and recommissioned on 2 September 2007. Based at Las Palmas, Canary Islands for patrol duties between the islands and the African coastline.



RIO MIÑO 9/2007, Joaquín Ojeda / 1170047

6 RODMAN 66 CLASS (PB)

CANAL BOCAYNA M 34 **RIO GUADALQUIVIR M 36** **RIO PAS M 38**
PICO DEL TEIDE M 35 **RIO TORDERA M 37** **RIO GUADALENTIN M 39**

Displacement, tons: 36 full load
 Dimensions, feet (metres): 67.2 x 16.1 x 3.1 (20.5 x 4.9 x 0.96)
 Main machinery: 2 MAN D2848 diesels; 2,200 hp (1.64 MW); 2 Hamilton HM 461 waterjets
 Speed, knots: 30
 Range, n miles: 450 at 22 kt
 Complement: 6
 Radars: Navigation; Furuno, I-band

Comment: Built by Rodman to replace the Saeta class which are to be withdrawn from service. Canal Bocayna (Fuerteventura) delivered on 28 January 2008, Pico del Tiede (Tenerife) on 11 February 2008, Rio Guadalquivir (Cadiz) on 18 May 2008, Rio Tordera (Almeria) in June 2008, Rio Pas (Santander) on 11 June 2008 and Rio Guadalentin (Cartagena) in July 2008



RIO TORDERA 11/2008*, Adolfo Ortigueira Gil / 1335841

RESEARCH SHIPS

Notes: Nine civilian research ships are owned by the Government Science and Technology Ministry and by the Agriculture Fishery and Food Ministry. Those operated by the Instituto Español de Oceanografía (IEO) are Vizconde de Eza (1,400 tons), Cornida de Saavedra (1,113 tons), F P Navarro (178 tons), Odon de Buen (64 tons), Lura (34 tons), José Rioja (32 tons), J M Navaz (30 tons), Emma Bardán (209 tons) and Miguel Oliver (1,200 tons). Those operated by CSIC are Garcia del Cid (539 tons), Mytilus (170 tons) and Sarmiento de Gamboa (2,980 tons). The ships operate in co-operation with the Spanish Navy ship Hesperides and the French research ship Thalassa. A new ship is to be delivered to CSIC in 2006



VIZCONDE DE EZA 6/2005, Adolfo Ortigueira Gil / 1153454



SARMIENTO DE GAMBOA 5/2008*, Adolfo Ortigueira Gil / 1335834

CUSTOMS

Notes: Customs service is the responsibility of the Ministry of Treasure. All carry ADUANAS on ships' sides. Some of the larger vessels are armed with machine guns. Ships are based at 17 ports including Ceuta and Melilla in north Africa. There are also three MBB-105, one MBB-117 and two AS 365 Dauphin helicopters. Six CASA C-212 patrol aircraft were transferred to the Air Force in 1997 and are operated by the 37th Air Wing.



CASA C-212 3/2003, Adolfo Ortigueira Gil / 0570963

46 PATROL CRAFT (PB)

Nome	Displacement, tons (full load)	HP/speed	Commissioned
ÁGUILA	80	2,700/29	1974
ALBATROS II and ALBATROS III	85	2,700/29	1964-69
ALCA I and ALCA III	24	2,000/45	1987-88
ALCAUDON II/ALCOTÁN/FENIX	18.5	1,200/55	1997-99
ALCAVARAN I/ALCAVARAN II/ALCAVARAN III/ALCAVARAN IV/ALCAVARAN V	65	3,920/28	1984-87
COLIMBO II	17	2,400/50	1999-03
CORMORÁN/HJ I/COLIMBO III/COLIMBO IV	17	2,400/52	1986-03
FULMAR	623	5,400/21	2006
GAVILÁN II/GAVILÁN III/GAVILÁN IV	65	3,200/26	1963-87
ARAO/GERIFALTE I/DÉCIMO ANIVERSARIO ABANTO/PAÍÑO/SACRE/ALBATROS	46	2,366/35	2001/2003/2006
HJA	12	2,200/55	1994
HJ III/HJ IV/HJ V/HJ VI/HJ VII/HJ VIII/HJ IX/HJ X	20	2,300/50	1986-89
HALCÓN II/HALCÓN III	68	3,200/28	1980-83
IMP I/IMP II	5	600/40	1989
IPP I and IPP III	2	200/50	1989
MILANO II	15	2,000/50	1999
PETREL I	1,600	1,200/12	1994
VA II/VA III/VA IV/VA V	23	1,400/27	1985

Comment: These craft are also listed as auxiliary ships of the Navy. Flagship is *Petrel I* for which replacement is under construction at Astilleros Gondan for delivery in 2006.



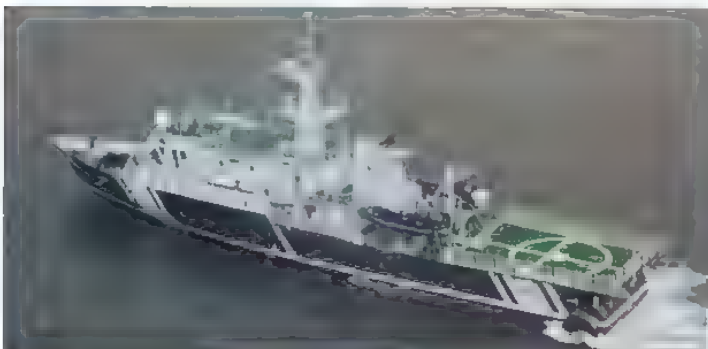
PETREL I 11/2003, Javier Somavilla 0570950



GERIFALTE I 11/2005, Adolfo Ortigueira Gil / 1153455



HJ-VI 9/2008*, Adolfo Ortigueira Gil / 1335835



FULMAR 5/2006, Gondán / 1335835

MARITIME RESCUE, SAFETY AND LOGISTIC SUPPORT

Notes: These roles are discharged by two services. SASEMAR (Sociedad Estatal de Salvamento y Seguridad Marítima) is under the direction of the Merchant Marine but may come under a Coast Guard service in due course. It operates 11 salvage tugs (*Don India, Clara Campoamor, Punta Mayor, Alfonso de Chaves, Ria de Vigo, Punta Salinas, Ofi Valencia, L'Albufera, Golfo de Vizcaya, Catalunya* and *Remolcanosa Cinco*), five anti-pollution ships and 55 fast rescue craft. Aircraft assets include three EADS/CASA C-235 and 10 helicopters (AW-139 and Sikorsky S-61). All ships are painted red with a white stripe on the hull. ISM (Instituto Social de la Mar) operates one specialised medical and logistic ship for support of fishing vessels. *Esperanza del Mar* (5,000 tons) is based at Las Palmas (Canary Islands) Naval Base and *Juan de la Cosa* is based at Santander.



SALVAMAR ALBORAN 1/2005, Adolfo Ortigueira Gil / 1153456



ESPERANZA DEL MAR 9/2001, Adolfo Ortigueira Gil 0170140



CLARA CAMPOAMOR 11/2007 1335833



S 61 10/2008*, Adolfo Ortigueira Gil 1335837

Sri Lanka



Country Overview

Formerly known as Ceylon, the Democratic Socialist Republic of Sri Lanka gained independence in 1948. Situated off the southeast coast of India, from which it is separated by the Palk Strait and Gulf of Mannar, it has an area of 25,326 square miles and a coastline of 723 n miles with the Indian Ocean. The capital of Sri Lanka is Sri Jayawardenapura (Kotte) while Colombo is the largest city and principal port. There are further ports at Trincomalee, Kankasanthurai and Galle. Territorial waters (12 n miles) are claimed. A 200 n mile EEZ has been claimed although the limits have only been partly defined by boundary agreements.

Headquarters Appointments

Commander of the Navy:

Vice Admiral W K J Karannagoda, RSP, VSV, USP

Chief of Staff

Rear Admiral M R U Siriwardana, USP

Director General, Operations:

Rear Admiral D W A S Dissanayake, WV, RSP, VSV, USP

Area Commanders

Commander Western Naval Area

Rear Admiral W M K N Weerakoon, USP

Area Commanders – continued

Commander North Central Naval Area:

Rear Admiral W M LT B Illangakoon, RSP, USP

Commander Northern Naval Area:

Rear Admiral T S G Samarasinghe, RSP, VSV, USP

Commander Eastern Naval Area:

Rear Admiral S M B Weerasekera, RSP, USP

Commander Southern Naval Area:

Commodore R C Wijegunaratne, WV, RSP, USP

Personnel

- (a) 2009: 35,148 (1,720 officers) regulars
 (b) SLVNF: 7,351 (333 officers)
 (c) Reserve force (regular): 730 (7 officers)
 (d) Reserve force (volunteer): 143 (8)

Bases

Navy HQ: Colombo.

Western Command HQ: Colombo port (other bases at Welisara and Kalpitiya Training Centre at Thalathoya).

Eastern Command HQ: Trincomalee port (other bases at Nilaweli, Pulmudai, Sampoor, Thavulwewa and Thiriyaya, Naval Academy at Trincomalee)

Southern Command HQ: Galle port (other bases at Tangalle, Boossa training centre and Kirinda harbour).

Northern Command HQ: Kankasanthurai port (other bases at Madagal, Karainagar, Velerni Island, Mandathive Island, Nagadeepe Island and Pungudathive Island).
 North Central Command HQ: Medewachchiya (other bases at Punewa training centre, Silavathurai, Mullikulam, Mannar Town, Thalaimannar and Mannar Island)

Pennant Numbers

Pennant numbers were reviewed in 1996 and 2002.

Prefix To Ships Names

SLNS.

DELETIONS

Patrol Forces

2006 P 418 (sunk in action), P 476 (sunk in action)
 2008 P 438 (sunk in action)

Auxiliaries

2008 A 520

PATROL FORCES

Notes: It is planned to acquire six fast attack craft and four 41 m patrol craft in 2009.

1 SUKANYA CLASS (OFFSHORE PATROL VESSEL) (PSOH)

Name	No	Builders	Launched	Commissioned
SAYURA (ex-Saryu)	P 620 (ex 54)	Hindustan SY, Vishakapatnam	16 Oct 1989	8 Oct 1991

Displacement, tons: 1,890 full load

Dimensions, feet (metres): 331.7 oa; 315 wl x 37.7 x 14.4 (101.1; 96 x 11.5 x 4.4)

Main machinery: 2 SEMT-Pielstick 16 PA6V 280 diesels, 12,800 hp(m) (9.41 MW) sustained, 2 shafts

Speed, knots: 21

Range, n miles: 5,800 at 15 kt

Complement: 140 (15 officers)

Guns: 1 Bofors 40 mm/80. 4 China 14.5 mm (twin) 4–12.7 mm MGs.

Radars: Surface search: Racal Decca 2459; I-band

Navigation: Bherat 1245; I-band.

Comment: Transferred from India and recommissioned on 9 December 2000.



SAYURA 12/2007, Chris Sattler / 1170045

1 RELIANCE CLASS (PSOH)

Name	No	Builders	Commissioned
SAMUDURA (ex-Courageous)	P 621 (ex-WMEC 622)	Coast Guard Yard, Baltimore	8 Dec 1967

Displacement, tons: 1,129 full load

Dimensions, feet (metres): 210.5 x 34 x 10.5 (64.2 x 10.4 x 3.2)

Main machinery: 2 Alco 16V-251 diesels; 6,480 hp (4.83 MW) sustained, 2 shafts; LIPS cp props

Speed, knots: 18. Range, n miles: 6,100 at 14 kt; 2,700 at 18 kt

Complement: 75 (12 officers)

Guns: 1 Boeing 25 mm/87 Mk 38 Bushmaster; 200 rds/min to 6.8 km (3.4 n miles). 2–12.7 mm MGs.

Radars: Surface search: Hughes/Furuno SPS-73; I-band.

Helicopters: Platform for one medium.

Comment: Transferred from USCG to Sri Lanka on 24 June 2004. During 34 years in USCG service, underwent Major Maintenance Availability (MMA) in 1989. The exhausts for main engines, ship service generators and boilers were run in a vertical funnel which reduced flight deck size. Capable of towing ships up to 10,000 tons.



SAMUDURA 6/2007, Sri Lanka Navy / 116/812

1 JAYASAGARA CLASS (OFFSHORE PATROL VESSEL) (PB)

Name	No	Builders	Launched	Commissioned
JAYASAGARA	P 601	Colombo Dockyard	26 May 1983	9 Dec 1983

Displacement, tons: 330 full load

Dimensions, feet (metres): 130.5 x 23 x 7 (39.8 x 7 x 2.1)

Main machinery: 2 MAN 8L20/27 diesels; 2,180 hp(m) (1.6 MW) sustained; 2 shafts

Speed, knots: 15

Range, n miles: 3,000 at 11 kt

Complement: 52 (4 officers)

Guns: 2 China 25 mm/80 (twin) 2 China 14.5 mm (twin) MGs. 2–12.7 mm MGs. 2–40 mm

AGL. 2–7.62 mm MGs.

Radars: Surface search. Anritsu RA 723; I band.

Comment: Ordered from Colombo Dockyard on 31 December 1981. Second of class sunk by Tamil forces in September 1994.



JAYASAGARA 6/2004, Sri Lanka Navy / 1044193

2 SAAR 4 CLASS (FAST ATTACK CRAFT—MISSILE) (PGG)

Name	No	Builders	Launched	Commissioned
NANDIMITHRA (ex-Moloch)	P 701	Israel Shipyard, Haifa	22 Mar 1979	May 1979
SURANIMALA (ex-Komamiut)	P 702	Israel Shipyard, Haifa	19 July 1978	Aug 1980

Displacement, tons: 415 standard; 450 full load

Dimensions, feet (metres): 190.6 x 25 x 8 (58 x 7.8 x 2.4)

Main machinery: 4 MTU/Bazán 16V 956TB91 diesels; 15,000 hp(m) (11.03 MW) sustained; 4 shafts

Speed, knots: 32

Range, n miles: 1,650 at 30 kt; 4,000 at 17.5 kt

Complement: 75

Missiles: 3 Gabriel II; radar or TV optical guidance; semi-active radar plus anti-radiation homing to 36 km (20 n miles) at 0.7 Mach; warhead 75 kg

Guns: 1 OTO Melara 3 in (76 mm)/62 compact; 85 rds/min to 16 km (8.7 n miles); weight of shell 6 kg. Adapted for shore bombardment. 1–40 mm.

2 Rafael Typhoon 20 mm. 2–20 mm. 2–12.7 mm MGs. 2–40 mm AGL.

Radars: Air/surface search: Thomson-CSF TH-D 1040 Neptune; G-band; range 33 km (18 n miles) for 2 m² target

Fire control: Selenia Orion RTN 10X; I-band.

Comment: Transferred from Israel and recommissioned on 9 December 2000.



NANDIMITHRA 10/2003, Hartmut Ehlers / 05/0591

**5 SHANGHAI II (TYPE 062) CLASS
(FAST ATTACK CRAFT—GUN) (PB)**

WEERAYA P 311 (ex-P 3141) **ABEETHA II** P 316
JAGATHA P 315 (ex-P 3148) **EDITHARA II** P 317 **WICKRAMA II** P 318

Displacement, tons: 139 full load
Dimensions, feet (metres): 127.3 × 17.7 × 5.2 (38.8 × 5.4 × 1.6)
Main machinery: 4 Type L12-180 diesels; 4,800 hp (3.53 MW); 4 shafts
Speed, knots: 28. **Range, n miles:** 750 at 16 kt
Complement: 44
Guns: 4 (2 in P 311, P 315) Royal Ordnance GCM-A03 30 mm (2 (1 in P 311, P 315) twin)
4—37 mm 2 (twin) (P 311, P 315)
4 China 14.5 mm (2 twin) MG
2—762 mm MGs.
2—40 mm AGL (P 311, P 315).
Radars: Surface search: Kodon MD 3220 Mk 2; I-band.
Navigation: Furuno 825 D, I-band.

Comment: Five transferred by China in 1971 of which four since decommissioned and *Weeraya* remains in service. Two further craft transferred in 1980 of which *Jagatha* remains in service. Three further craft (*Abeetha II*, *Edithara II* and *Wickrama II*) are modified craft with improved habitability but similar specifications. These were built at Qinxin Shipyard and commissioned on 11 June 2000



WEERAYA 6/2001, Sri Lanka Navy / 030146



EDITHARA II 6/2003, Sri Lanka Navy / 0570992

1 MOD SHANGHAI II CLASS (FAST ATTACK CRAFT—GUN) (PB)

Name	No	Builders	Commissioned
RANARISI	P 322	Guijiang Shipyard	14 July 1992

Displacement, tons: 150 full load
Dimensions, feet (metres): 134.5 × 17.7 × 5.2 (41 × 5.4 × 1.6)
Main machinery: 4 diesels, 4,800 hp (3.53 MW); 4 shafts
Speed, knots: 29
Range, n miles: 750 at 16 kt
Complement: 44 (4 officers)
Guns: 2 Royal Ordnance GCM-A03 30 mm (1 twin). 2—25 mm.
4 China 14.5 mm (twin) Type 69. 2—12.7 mm MGs 2—40 mm AGL.
Radars: Surface search. Racal Decca; I-band.

Comment: Acquired from China in September 1991. Automatic guns and improved habitability. *Ranaviru* and *Ranasuvu* destroyed by Tamil guerrillas



RANARISI 6/2003, Sri Lanka Navy / 0570988

3 HAIZHUI (TYPE 062/1G) CLASS (PB)

Name	No	Builders	Commissioned
RANA JAYA	P 330	Guijiang Shipyard	22 May 1996
RANA DEERA	P 331	Guijiang Shipyard	22 May 1996
RANA WICKRAMA	P 332	Guijiang Shipyard	22 May 1996

Displacement, tons: 170 full load
Dimensions, feet (metres): 134.5 × 17.4 × 5.9 (41 × 5.3 × 1.8)
Main machinery: 4 Type L12-180A diesels; 4,400 hp (3.22 MW) sustained; 4 shafts
Speed, knots: 21
Complement: 44
Guns: 2 China 37 mm/63 (1 twin). 1—30 mm GCM-A03. 4 China 25 mm/60 (2 twin).
2—12.7 mm MGs 2—40 mm AGL.
Radars: Surface search: Anritsu 726UA; I-band.

Comment: Transferred from China by lift ship after delivery in 1995.



RANAWICKRAMA 6/2008, Sri Lanka Navy / 1335871

**2 MOD HAIZHUI (LUSHUN) (TYPE 062/1G) CLASS
(FAST ATTACK CRAFT—GUN) (PB)**

PRATHPA P 340 **UDARA** P 341

Displacement, tons: 212 full load
Dimensions, feet (metres): 149 × 21 × 5.6 (45.5 × 6.4 × 1.7)
Main machinery: 4 Type Z12V 190 BCJ diesels, 4,800 hp (3.53 MW); 4 shafts
Speed, knots: 28
Range, n miles: 750 at 16 kt
Complement: 44 (3 officers)
Guns: 4 China 37 mm/63 (2 twin) Type 76.
2 China 14.5 mm (1 twin) Type 82 MGs
2—12.7 mm MGs
2—40 mm AGL
Radars: Surface search. Racal Decca RM 1070A; I-band

Comment: Built at Lushun Dockyard, Darlin. Commissioned on 2 March 1998. Larger version of Haizhui class.



UDARA 6/2005, Sri Lanka Navy / 1153483

**28 COLOMBO MK I/II/III/IV CLASS
(FAST ATTACK CRAFT—GUN) (PBF)**

P 410-415	P 419-424	P 432-437	P 450-451	P 494
P 417	P 430	P 439	P 490-492	P 497

Displacement, tons: 56 full load
Dimensions, feet (metres): 79.7 × 18.6 × 3.9 (24.3 × 5.7 × 1.2)
Main machinery: 2 MTU 12V 396 TE94 diesels (Mk I/II) or 2 Deutz TBD 620 16V (Mk III/IV);
4,570 hp (3.36 MW); ASD 16 surface drives
Speed, knots: 45. **Range, n miles:** 850 at 16 kt
Complement: 20
Guns: 1 Rafael Typhoon 23 mm. 1 Oerlikon 20 mm. 4—12.7 mm MGs. 8—762 mm MGs.
2—40 mm AGL
Weapons control: Elop MSIS optronic director; Typhoon GFCS.
Radars: Surface search. Furuno FR 8250 or Corden Mk 2, I-band

Comment: Built by Colombo Dockyard to the Israeli Shaldag design. Deliveries of Mk I (P 450-451) began in 1996 and of Mk II (P 490-492, P 494, P 497) began in 1997. P 493 and P 496 sunk in action in 2000. Deliveries of Mk III (P 410-415, P 417, P 419-424) began in 2000 and of Mk IV (P 430, 432-439) in 2005. P 418 sunk in action in May 2006 and P 438 in March 2008.



COLOMBO MK II 6/2006, Sri Lanka Navy / 116412



COLOMBO MK III 6/2006, Sri Lanka Navy / 116411

6 SHALDAG CLASS (FAST ATTACK CRAFT—GUN) (PBF)

P 470 (ex-P 491) P 471 (ex-P 492) P 472 P 473 P 474 P 475

Displacement, tons: 58 full load
Dimensions, feet (metres): 81.4 × 19.7 × 3.9 (24.8 × 6 × 1.2)
Main machinery: 2 Deutz 620 TB 16V diesels; 5,000 hp(m) (3.68 MW); 2 LIPS or MJP water-jets
Speed, knots: 50
Range, n miles: 700 at 32 kt
Complement: 20
Guns: 1 Rafael Typhoon 23 mm, 1—20 mm 2—12.7 mm MGs, 6—7.62 mm MGs, 2—40 mm AGL.
Weapons control: ELOP compass optronic director, Typhoon GFCS
Radars: Surface search: MD 3220 Mk II; I-band

Comment: Originally launched in December 1988, first one acquired from the Israeli Shipyards, Haifa on 24 January 1996, second 20 July 1996 and third on 16 February 2000. Four more followed. Same hull used for the Colombo class. Also in service in Cyprus. P 476 sunk on 7 January 2006.



SHALDAG CLASS 6/2003, Sri Lanka Navy / 05/16989

4 SUPER DVORA MK I CLASS (FAST ATTACK CRAFT—GUN) (PBF)

P 440 (ex-P 465) P 441 (ex-P 466) P 442 (ex-P 467) P 443 (ex-P 468)

Displacement, tons: 54 full load
Dimensions, feet (metres): 73.5 × 18 × 5.8 (22.4 × 5.5 × 1.8)
Main machinery: 2 MTU 12V 396 TB93 diesels; 3,260 hp(m) (2.4 MW) sustained; 2 shafts
Speed, knots: 46
Range, n miles: 1,200 at 17 kt
Complement: 20 (1 off cer)
Guns: 2 Oerlikon 20 mm, 2—12.7 mm MGs, 4—40 mm AGL.
Radars: Surface search: Decca 926; I-band

Comment: Ordered from Israel Aircraft Industries in October 1986 and delivered in 1987–88. A more powerful version of the Dvora class. P 464 was destroyed by Tamil guerrillas on 29 August 1993 and P 463 on 29 August 1995. These craft have a deeper draft than the Mk II version with surface drives.



P 443 (ex-P 468) 1995, Sri Lanka Navy / 0130147

4 SUPER DVORA MK II CLASS (FAST ATTACK CRAFT—GUN) (PBF)

P 460 (ex-P 441) P 462 (ex-P 497) P 464 P 465

Displacement, tons: 64 full load
Dimensions, feet (metres): 82 × 18.4 × 3.6 (25 × 5.6 × 1.1)
Main machinery: 2 MTU 12V 396 TE94 diesels; 4,570 hp(m) (3.36 MW); ASD16 surface drives
Speed, knots: 50
Range, n miles: 700 at 30 kt
Complement: 20 (1 officer)
Guns: 1 Rafael Typhoon 23 mm, 4—12.7 mm MGs, 6—7.62 mm MGs, 2—40 mm AGL.
Weapons control: Elop MSIS optronic director; Typhoon GFCS
Radars: Surface search: Kodon MD 3220; I-band.

Comment: First four ordered from Israel Aircraft Industries Ramta in early 1995. A slightly larger version of the Mk I. First one delivered 5 November 1995, second 30 April 1996, third 22 June 1996 and fourth in December 1996. Two more were acquired on 9 June 1999 and 15 September 1999 respectively. The engines are an improved version of those fitted in the Israeli Navy craft. P 463 sunk in action in 2000. P 461 reported lost in action.



SUPER DVORA Mk II 11/1999 / 07061697

3 DVORA CLASS (FAST ATTACK CRAFT—GUN) (PBF)

P 401–403 (ex-P 420 (ex-P 453)–P 422 (ex-P 456))

Displacement, tons: 47 full load
Dimensions, feet (metres): 70.8 × 18 × 5.8 (21.6 × 5.5 × 1.8)
Main machinery: 2 MTU 12V 331 TC81 diesels; 2,605 hp(m) (1.91 MW) sustained; 2 shafts
Speed, knots: 36
Range, n miles: 1,200 at 17 kt
Complement: 18
Guns: 2 Oerlikon 20 mm, 2—12.7 mm MGs, 6—7.62 mm MGs, 2—40 mm AGL.
Radars: Surface search: Anritsu 721UA; I-band.

Comment: 'Dvora' class, first pair of which transferred from Israel early 1984, next four in October 1986. Built by Israel Aircraft Industries. One sunk by Tamil forces on 29 August 1995 and second on 30 March 1996. One more deleted in late 1996. Not downgraded to patrol craft as previously reported but speed may have been reduced.



DVORA CLASS 6/2003, A Sharma / 0570994

3 SOUTH KOREAN KILLER CLASS (FAST ATTACK CRAFT—GUN) (PBF)

P 404 (ex-P 430 (ex-P 473)) P 405 (ex-P 431 (ex-P 474)) P 406 (ex-P 432 (ex-P 475))

Displacement, tons: 56 full load
Dimensions, feet (metres): 75.5 × 17.7 × 5.9 (23 × 5.4 × 1.8)
Main machinery: 2 MTU 396 TB93 diesels; 3,260 hp(m) (2.4 MW) sustained; 2 shafts
Speed, knots: 40
Complement: 18
Guns: 2 Oerlikon 20 mm, 2—12.7 mm MGs, 6—7.62 mm MGs
Radars: Surface search: Racal Decca 926; I-band.

Comment: 'South Korean Killer' class, built by Korea SB and Eng, Busan. All commissioned February 1988. Not downgraded to patrol craft as previously reported but speed may have been reduced.



KILLER CLASS 6/2003, A Sharma / 0570994

For details of the latest updates to *Jane's Fighting Ships* online and to discover the additional information available exclusively to online subscribers please visit jfs.janes.com

5 TRINITY MARINE CLASS (FAST ATTACK CRAFT—GUN) (PBF)

P 480–481 P 483–485

Displacement, tons: 68 full load
Dimensions, feet (metres): 81.7 × 17.7 × 4.9 (24.9 × 5.4 × 1.5)
Main machinery: 2 MTU 12V 396TE94 diesels, 4,570 hp (m) (3.36 MW) sustained; 2 water-jets
Speed, knots: 47 **Range, n miles:** 600 at 17 kt
Complement: 20
Guns: 2 Derlikon 20 mm, 2—12.7 mm MGs, 2—762 mm MGs, 1 Grenade launcher.
Radars: Surface search: Raytheon R 1210; I-band.

Comment: All built at Equitable Shipyard, New Orleans. First three delivered in January 1997; second three in September 1997. All aluminium construction. P 482 sunk in action in 2000.



P 480 1/1997, Sri Lanka Navy / 0080/01

3 COASTAL PATROL CRAFT (PB)

P 201 P 211 P 215

Displacement, tons: 21 full load
Dimensions, feet (metres): 46.6 × 12.8 × 3.3 (14.2 × 3.9 × 1)
Main machinery: 2 Detroit 8V-71TA diesels; 460 hp (343 kW); 2 shafts
Speed, knots: 20 **Range, n miles:** 450 at 14 kt
Complement: 15 (1 officer)
Guns: 2—12.7 mm MGs.
Radars: Surface search: Furuno FR 2010; I-band.

Comment: Built by Colombo DY and commissioned in 1982 (P 201), June 1986 (P 211) and 1993 (P 215). P 241 and P 243 decommissioned in 2001 and P 214 and P 233 no longer in service.



P 201 6/2003, Sri Lanka Navy / 05/05B/

4 CHEVERTON CLASS COASTAL PATROL CRAFT (PB)

P 221 (ex-P 421) P 222 (ex-P 422) P 223 (ex-P 423) P 224 (ex-P 424)

Displacement, tons: 22 full load
Dimensions, feet (metres): 55.9 × 14.8 × 3.9 (17 × 4.5 × 1.2)
Main machinery: 2 Detroit 8V-71TA diesels; 460 hp (343 kW); 2 shafts
Speed, knots: 23 **Range, n miles:** 1,000 at 12 kt
Complement: 15
Guns: 1—12.7 mm MG
Radars: Surface search: Racal Decca 110; I-band.

Comment: Used for general patrol duties. Built by Cheverton Workboats, UK and commissioned in 1977. One paid off in 1996.



P 222 6/2004, Sri Lanka Navy / 104419Z

3 SIMONNEAU CLASS (PBF)

P 250 (ex-P 410, ex-P 483) P 252 (ex-P 412, ex-P 485) P 253 (ex-P 413, ex-P 486)

Displacement, tons: 28 full load
Dimensions, feet (metres): 56.8 × 16.1 × 4.6 (17.3 × 4.9 × 1.4)
Main machinery: 2 MTU 12V 183 TE93 diesels; 2,300 hp (m) (1.69 MW); 2 Hamilton water-jets
Speed, knots: 42 **Range, n miles:** 500 at 35 kt
Complement: 15
Guns: 1 DCN 20 mm 2—12.7 mm MGs 2—762 mm MGs.
Radars: Surface search: Racal Decca, I-band.

Comment: Simonneau Marine Type 508 craft. First pair completed in December 1993 and shipped to Colombo in 1994. Second pair built in Colombo and completed in 1995. The plan to build more was shelved. Downgraded to patrol craft on 1 August 2000. Speed likely to have been reduced. P 251 sunk in 2001.



SIMONNEAU CLASS 6/2004, Sri Lanka Navy / 1044191

42 INSHORE PATROL CRAFT (PBR)

P 106–107 (ex-P 151–152)	P 124 (ex-P 180)	P 140–145 (ex-P 120–125)
P 115–118 (ex-P 163–166)	P 126 (ex-P 182)	P 146–150 (ex-P 127–131)
P 119 (ex-P 169)	P 127–132 (ex-P 184–189)	P 151–156 (ex-P 133–138)
P 120–122 (ex-P 171–173)	P 133–136 (ex-P 191–194)	
P 123 (ex-P 175)	P 137–138 (ex-P 196–197)	

Displacement, tons: 10 full load
Dimensions, feet (metres): 44.3 × 9.8 × 1.6 (13.5 × 3 × 0.5)
Main machinery: 2 Cummins 6BTA5.9-M2; 584 hp (436 kW) sustained; 2 water-jets
Speed, knots: 33 **Range, n miles:** 330 at 25 kt
Complement: 5
Guns: 2—12.7 mm MGs, 2—762 mm MGs.
Radars: Surface search: Furuno 1941; I-band.

Comment: First pair (P 106, 107) built by TAOS Yacht Company, Colombo, and delivered in 1991. Next 23 (P 115–124, P 126–138) built by Blue Star Marine, Colombo and delivered between 1994 and 1998. There are minor superstructure differences between the first pair and the rest. P 140–156 built by SLN, IPCCP Welisara. P 162, P 168, P 174 and P 182 sunk in action. P 101 and P 104 decommissioned.



INSHORE PATROL CRAFT 6/2006, Sri Lanka Navy / 1164410

4 INSHORE PATROL CRAFT (TYPE BSM) (PBR)

P 145–147 P 149

Displacement, tons: 3.5 full load
Dimensions, feet (metres): 42 × 8 × 1.6 (12.8 × 2.4 × 0.5)
Main machinery: 2 outboard motors; 280 hp (209 kW)
Speed, knots: 30
Complement: 9
Guns: 1—12.7 mm MG.

Comment: Acquired in 1988 from Blue Star Marine. Similar to P 111 but with outboard engines. P 143 (ex-P 150) was mined and sunk in August 1991 and again sunk in 1995.



INSHORE PATROL CRAFT 6/2004, Sri Lanka Navy / 1044190

4 INSHORE PATROL CRAFT (TYPE CME) (PBR)

P 110 P 111 P 112 P 113

Displacement, tons: 5 full load
Dimensions, feet (metres): 44 × 9.8 × 1.6 (13.4 × 3 × 0.5)
Main machinery: 2 Yamaha D 343 diesels; 730 hp(m) (544 kW) sustained; 2 shafts
Speed, knots: 26
Complement: 5
Guns: 1—12.7 mm MG, 1—7.62 mm MG.
Radars: Surface search: Furuno FR 1941; I-band

Comment: Built by Consolidated Marine Engineers, Sri Lanka. First nine delivered in 1988, four more in 1992 and two more in 1994. Most of these craft have been destroyed.



P 111 6/2003, Sri Lanka Navy / 0570906

1 VIKRAM CLASS (OFFSHORE PATROL VESSEL) (PSOH)

Name	No	Builders	Launched	Commissioned
SAGARA (ex-Varaha)	P 622 (ex-41)	Goa Shipyard	5 Nov 1990	11 Mar 1992

Displacement, tons: 1,224 full load
Dimensions, feet (metres): 243.1 × 37.4 × 10.5 (74.1 × 11.4 × 3.2)
Main machinery: 2 SEMT-Pielstick 16 PA6V280 diesels; 12,800 hp (9.41 MW) sustained; 2 shafts, cp props
Speed, knots: 22
Range, n miles: 4,250 at 12 kt
Complement: 96 (11 officers)
Guns: 1—30 mm, 1—23 mm.
Radars: Surface search/navigation: Furuno 2127; I-band.
Helicopters: Platform for 1 light.

Comment: Former Indian Coast Guard ship donated and recommissioned on 25 February 2007.



SAGARA 6/2008*, Sri Lanka Navy / 1335872

12 MK III INSHORE PATROL CRAFT (PBF)

P 010-021

Displacement, tons: 8 full load
Dimensions, feet (metres): 46.6 × 7 × 7 (14.2 × 7 × 7)
Main machinery: 2 Yanmar 6LY2A STP diesels; 737 hp(m) (550 kW); 2 shafts
Speed, knots: 38
Complement: 8
Guns: 1—23 mm; 1—14.5 mm.
Radars: Surface search: Furuno; I-band.

Comment: Built by Sri Lanka Navy.



P 012 6/2008*, Sri Lanka Navy / 1335870

103 INSHORE PATROL CRAFT (PBF)

Z 101-203

Displacement, tons: 2.6 full load
Dimensions, feet (metres): 23.0 × 7 × 7 (7.0 × 7 × 7)
Main machinery: 2 outboard motors, 400 hp(m) (298 kW)
Speed, knots: 40
Complement: 8
Guns: 1—23 mm or 1—14.5 mm, 4—7.62 mm MGs

Comment: Built by Sri Lanka Navy.



Z 101 6/2008*, Sri Lanka Navy / 1335869

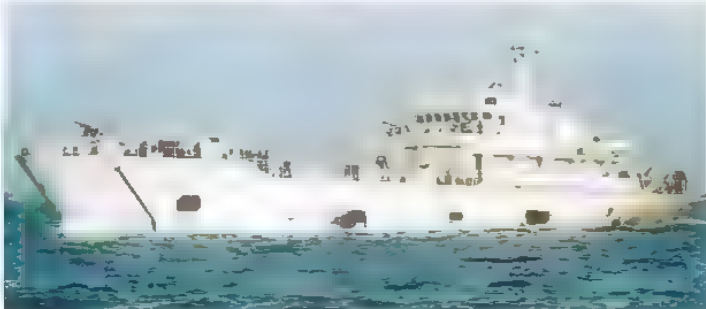
AMPHIBIOUS FORCES

1 YUHAI (WUHU-A) (TYPE 074) CLASS (LSM)

Name	No	Builders	Commissioned
SHAKTHI	L 880	China	22 May 1996

Displacement, tons: 799 full load
Dimensions, feet (metres): 191.6 × 34.1 × 8.9 (58.4 × 10.4 × 2.7)
Main machinery: 2 MAN 8 L 20/27 diesels; 4,900 hp(m) (3.6 MW); 2 shafts
Speed, knots: 14
Range, n miles: 1,000 at 12 kt
Complement: 60
Military lift: 150 tons
Guns: 10—14.5 mm/93 (5 twin) MGs, 6—12.7 mm MGs.
Radars: Navigation: Racal Decca; I-band

Comment: Transferred by lift ship from China arriving 13 December 1995. A planned second of class was built but not acquired.



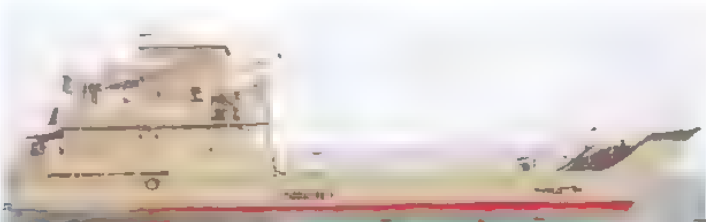
SHAKTHI 5/1996, Sri Lanka Navy / 0080710

2 LANDING CRAFT (LCM)

Name	No	Builders	Commissioned
RANAGAJA	L 839	Colombo Dockyard	15 Nov 1991
RANAVIJAYA	L 836	Colombo Dockyard	21 July 1994

Displacement, tons: 268 full load
Dimensions, feet (metres): 108.3 × 26 × 4.9 (33 × 8 × 1.5)
Main machinery: 2 Caterpillar diesels; 1,524 hp (1.14 MW); 2 shafts
Speed, knots: 8
Range, n miles: 1,800 at 8 kt
Complement: 28 (2 officers)
Guns: 4 China 14.5 mm (2 twin), 2—12.7 mm MGs.
Radars: Navigation: Furuno FCR 1421; I-band.

Comment: Two built in 1983 and acquired in October 1985. Third of the class taken over by the Navy in September 1991 and a fourth in March 1992. *Kandula* sank in October 1992 and the hulk was salvaged in mid-December. *Pabbatha* sank in action in February 1998.



RANAVIJAYA 6/2008*, Sri Lanka Navy / 1335867

2 YUNNAN CLASS (TYPE 067)

L 820 L 821

Displacement, tons: 135 full load
Dimensions, feet (metres): 93.8 × 17.7 × 4.9 (28.6 × 5.4 × 1.5)
Main machinery: 2 diesels, 600 hp(m) (441 kW); 2 shafts
Speed, knots: 12
Range, n miles: 500 at 10 kt
Complement: 22 (2 officers)
Military lift: 46 tons
Guns: 4—14.5 mm (2 twin) MGs. 2—762 mm MGs
Radars: Surface search: Fuji, I-band

Comment: First one acquired from China in May 1991, second in May 1995.



L 821 6/2008*, Sri Lanka Navy / 1335868



A 543 6/2006, Sri Lanka Navy / 1164408

1 M 10 CLASS HOVERCRAFT (UCAC)

A 530

Displacement, tons: 18 full load
Dimensions, feet (metres): 67.6 × 28.9 (20.6 × 8.8)
Main machinery: 2 Deutz diesels; 1,050 hp(m) (772 kW)
Speed, knots: 40; 7 with cushion deflated
Range, n miles: 500 at 30 kt
Complement: 10
Military lift: 56 troops or 20 troops plus 2 vehicles
Guns: 1—12.7 mm MG.
Radars: Navigation Furuno; I-band.

Comment: Acquired from ABS Hovercraft/Vosper Thornycroft in April 1998 and designated a Utility Craft Air Cushion (UCAC). Has a Kevlar superstructure. More may be ordered in due course.



A 530 6/2006, Sri Lanka Navy / 1164409

3 FAST PERSONNEL CARRIERS (LCP)

Name	No	Builders	Commissioned
HANSAYA (ex-Offshore Pioneer)	A 540	Sing Koon Seng, Singapore	20 Dec 1987
(ex-Lanka Rani)	A 542	Kvaerner Fielstrand Ltd, Singapore	2000
(ex-Lanka Devi)	A 543	Kvaerner Fielstrand Ltd, Singapore	2000

Displacement, tons: 444 full load
Dimensions, feet (metres): 131.2 × 33.1 × 5.9 (40.0 × 10.1 × 1.8)
Main machinery: 2 MTU 16V 396 TE 74L; 1,800 hp(m) (1.32 MW); 2 shafts
Speed, knots: 30
Range, n miles: 650 at 20 kt
Complement: 30 (4 officers)
Military lift: 60 tons; 120 troops
Guns: 1 Oerlikon 20 mm. 2—12.7 mm MGs.
Radars: Navigation, Furuno FR 1012; I-band

Comment: A 540 acquired in January 1986 from Aluminium Shipbuilders. Catamaran hull built as oil rig tender. Now used as fast transport. A 541 decommissioned in 2002. Details are as for A 543 which was acquired from Ceylon Shipping Corporation.

1 SUPPORT/TRAINING SHIP (AA/AX)

Name	No	Builders	Commissioned
(ex-Simon Koghian)	A 521	BPKSKP, Gdynia, Poland	1972

Displacement, tons: 592 full load
Dimensions, feet (metres): 177.2 × 36.1 × 20.1 (54.0 × 11.0 × 6.3)
Main machinery: 1 DUVANT CREPELLE 8R26L diesel; 1,320 hp(m) (970 kW) sustained; 1 shaft
Speed, knots: 10
Range, n miles: 5,500 at 9 kt
Complement: 57 (7 officers)
Guns: 6—12.7 mm MGs. 2—40 mm AGLs.
Radars: Surface search/navigation: Furuno FR 2125; I-band

Comment: Former deep-sea fishing trawler donated by the Lorient-Matara Friendship Foundation of France and commissioned into the Sri Lanka Navy on 26 April 2005. The ship was donated on humanitarian grounds, following the tsunami of 26 December 2004, and it is understood that the vessel is used by the navy in support of fishing activities and as a training vessel.



A 521 6/2007, Sri Lanka Navy / 1167813

1 TRANSPORT SHIP (AP)

Name	No	Builders	Commissioned
(ex-Djursland)	A 545	Mjøllem & Karlsen	1971

Displacement, tons: 1,746 full load
Measurement, tons: 8,531 grt
Dimensions, feet (metres): 311.7 × 57.1 × 12.1 (95.0 × 17.4 × 3.7)
Main machinery: 4 MTU 20V 1163TB73 diesels, 2 shafts
Speed, knots: 24
Range, n miles: 1,800 at 18 kt
Complement: 107 (7 officers)
Guns: 6—12.7 mm MGs. 2—40 mm AGLs.
Radars: Surface search/navigation: Kelvin Hughes; E/F/I-band

Comment: Ro-Ro ferry on bare boat charter from Indonesia from 2006.



A 545 6/2006, Sri Lanka Navy / 1164405

Sudan



Country Overview

The Republic of Sudan is situated in north-eastern Africa. The largest country in Africa, it has an area of 967,500 square miles and is bordered to the north by Egypt, to the east by Eritrea and Ethiopia, to the south by Kenya, Uganda and the Democratic Republic of the Congo and to the west by the Central African Republic, Chad, and Libya. It has a 459 n mile coastline with the Red Sea. Khartoum is the capital and largest city and Port Sudan is the principal port. There are about 2,867 n miles of navigable waterways. Territorial waters (12 n miles) are claimed. An EEZ has not been claimed.

The country has been ravaged by civil war in recent years but a Comprehensive Peace Agreement was finally concluded on 9 January 2005. This allows for the south to become a self-administering region until 2011 by when its future status will be decided by referendum.

Naval Forces are part of the Army and have low budgetary priority.

Headquarters Appointments

Commander, Naval Forces:
Lieutenant General Ai-Zain Hamad Balla

Personnel

- (a) 2009: 1,300 officers and men
(b) Voluntary service

Establishment

The Navy was established in 1962 to operate on the Red Sea coast and on the River Nile

Bases

Port Sudan (HQ), Flamingo Bay (Red Sea), Khartoum (Nile), Kosti (Nile)

PATROL FORCES

4 KURMUK (TYPE 15) CLASS (INSHORE PATROL CRAFT) (PBR)

KURMUK 502 QAYSAN 603 RUMBEK 504 MAYOM 505

Displacement, tons: 19.5 full load
Dimensions, feet (metres): 55.4 × 12.8 × 2.3 (16.9 × 3.9 × 0.7)
Main machinery: 2 diesels, 330 hp(m) (243 kW), 2 shafts
Speed, knots: 16
Range, n miles: 160 at 12 kt
Complement: 6
Guns: 1 Oerlikon 20 mm; 2—7.62 mm MGs.

Comment: Delivered by Yugoslavia on 18 May 1989 for operations on the White Nile. All based at Flamingo Bay



KURMUK 1989, G Jacobs / 0506101

4 SEWART CLASS (INSHORE PATROL CRAFT) (PBR)

MAROUB 1161 FUJAB 1162 SALAK 1163 HALOTE 1164

Displacement, tons: 9.1 full load
Dimensions, feet (metres): 40 × 12.1 × 3.3 (12.2 × 3.7 × 1)
Main machinery: 2 GM diesels; 348 hp (260 kW); 2 shafts
Speed, knots: 31
Complement: 6
Guns: 1—12.7 mm MG

Comment: Transferred by Iranian Coast Guard in 1975. All are based at Flamingo Bay but operational status is doubtful

7 ASHOORA I CLASS (INSHORE PATROL CRAFT) (PBR)

Displacement, tons: 3 full load
Dimensions, feet (metres): 26.6 × 8 × 1.6 (8.1 × 2.4 × 0.5)
Main machinery: 2 Yamaha outboards; 400 hp(m) (294 kW)
Speed, knots: 42
Complement: 2
Guns: 1—7.62 mm MG

Comment: Acquired from Iran in 1992–94. Four based at Flamingo Bay and three at Khartoum but operational status is doubtful.



ASHOORA I 1992, IRI Marine Industries / 0081715

AUXILIARIES

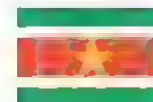
Notes: (1) In addition there are two small miscellaneous support ships. *Baraka 21* a water boat, and a Rotork 512 craft. Both restored with Iranian assistance.
(2) Five Type II LCVPs were delivered from Yugoslavia in 1991 and are based at Kosti.

2 SUPPLY SHIPS (AFL)

SOBAT 221 DINDER 222

Displacement, tons: 410 full load
Dimensions, feet (metres): 155.1 × 21 × 7.5 (47.3 × 6.4 × 2.3)
Main machinery: 3 Gray Marine diesels, 495 hp (369 kW); 3 shafts
Speed, knots: 9
Complement: 15
Guns: 1 Oerlikon 20 mm 2—12.7 mm MGs.
Comment: Two Yugoslav MFPD class LCTs transferred in 1969. Used for transporting ammunition, petrol and general supplies.

Suriname



Country Overview

Formerly known as Dutch Guiana, the Republic of Suriname gained full independence in 1975. With an area of 63,037 square miles it has borders to the east with French Guiana, to the west with Guyana and to the south with Brazil; its 208 n mile coastline is on the Atlantic Ocean. The capital, largest city and chief port is Paramaribo. Territorial seas (12 n miles) and a fisheries zone (200 n miles) are claimed. There are further ports at Nieuw-Nickerke, Moengo, Paranam and Smalkalden. Territorial waters (12 n miles)

are claimed. A 200 n mile Exclusive Economic Zone (EEZ) has also been claimed but the limits are not defined

Headquarters Appointments

Commander Marine Section:
Lieutenant Colonel Henk Mohamatsaid

Personnel

2009: 240 (25 officers)

Bases

Kruktu Tere, Paramaribo

Aircraft

Two CASA C-212-400 Aviocar aircraft acquired for maritime patrol in 1998/99.

PATROL FORCES

3 RODMAN 101 CLASS (PB)

JARABAKKA P 01 SPARI P 02 GRAMORGU P 03

Displacement, tons: 72 full load
Dimensions, feet (metres): 98.4 × 19.4 × 4.3 (30.0 × 5.9 × 1.3)
Main machinery: 2 MTU 12V 2000 diesels; 2,900 hp (2.16 MW) sustained; 2 Hamilton 571 water-jets
Speed, knots: 26
Range, n miles: 800 at 12 kt
Complement: 9
Guns: 1—40 mm grenade launcher.
Radars: Surface search; 2 Furuno; I-band.

Comment: Ordered in December 1997, from Rodman, Vigo. First one delivered in February 1999, second and third on 3 July 1999. Carry a RIB with twin outboards. Operational status doubtful.



SPARI 3/2001, Adolfo Ortigueira GH / 1305139

2 SÖDERMANLAND (A 17) CLASS (SSK)

Name	No	Builders	Laid down	Launched	Commissioned
SÖDERMANLAND	—	Kockums, Malmö	2 Feb 1985	12 Apr 1988	21 Apr 1989
ÖSTERGÖTLAND	—	Kockums, Malmö	15 Oct 1985	9 Dec 1988	10 Jan 1990

Displacement, tons: 1,500 surfaced; 1,600 dived
Dimensions, feet (metres): 198.5 x 20 x 18.4
 (60.5 x 6.1 x 5.6)

Main machinery: Diesel-Stirling-electric; 2 Hedemora V12A/15 diesels; 2,200 hp(m) (1.62 MW); 2 Kockums Stirling Mk III AIP; 204 hp (150 kW); 1 Jeumont Schneider motor; 1,800 hp(m) (1.32 MW); 1 shaft, LIPS prop

Speed, knots: 10 surfaced; 20 dived
Complement: 27 (5 officers)

Torpedoes: 6—21 in (533 mm) tubes. 12 FFV Type 613; anti-surface; wire-guided; passive homing to 20 km (10.8 n miles) at 45 kt; warhead 240 kg. swim-out discharge.

3—15.75 in (400 mm) tubes. 6 FFV Type 431/451; anti-submarine, wire-guided; active/passive homing to 20 km (10.8 n miles) at 25 kt; warhead 45 kg shaped charge or a small charge anti-intruder version is available.

Mines: 12 Type 47 swim-out mines in lieu of torpedoes.

Countermeasures: ESM: Argo AR-700-S5; or Condor CS 3701, intercept

Weapons control: Ericsson IPS-17 (Sesub 900A) TFCS.

Radars: Navigation: Terma; I-band.

Sonars: Atlas Elektronik CSU 83; hull-mounted; passive search and attack; medium frequency.

Reson Subac; active search (from 2008)

Flank array; passive search; low frequency

Programmes: Design contract awarded to Kockums, Malmö on 17 April 1978. Contract for construction of these boats signed 8 December 1981. Kockums built midship section and carried out final assembly while Karlskrona built bow and stern sections.

Modernisation: Modernised variants of the Västergötland class. Mid-life refit of both boats began with *Södermanland* at Kockums in late 2000. The principal upgrade was



SÖDERMANLAND

5/2006, Michael Nitz / 1164723

the installation of Air Independent Propulsion (Stirling Mk 3 AIP) by the insertion of a 12 m plug in the pressure hull. Other work included the installation of a pressurised diver's lock-out in the base of the sail to facilitate special forces operations. The refit also included a new climate control system. Thales Optronics CK 038 periscope has been upgraded with a thermal imaging camera and an improved image intensifier. A new command and control system is to be installed in *Södermanland* during a further refit which began

in late 2008. Plans for a new active sonar suite, Subac, have been postponed.

Structure: Single hulled with an X type rudder/after hydroplane design. Diving depth 300 m (984 ft). Anechoic coating.

Operational: *Södermanland* relaunched on 8 September 2003 and, after six-months sea trials, returned to service in mid-2004. *Östergötland* was relaunched on 3 September 2004 and returned to service in 2005.



SÖDERMANLAND

5/2006, Frank Findler / 1159909



SÖDERMANLAND

6/2006, John Brodie / 1159976

3 GOTLAND (A 19) CLASS (SSK)

Name	No	Builders	Laid down	Launched	Commissioned
GOTLAND	-	Kockums, Malmö	20 Nov 1992	2 Feb 1995	2 Sep 1996
UPPLAND	-	Kockums, Malmö	14 Jan 1994	9 Feb 1996	1 May 1997
HALLAND	-	Kockums, Malmö	21 Oct 1994	27 Sep 1996	1 Oct 1997

Displacement, tons: 1,494 surfaced; 1,599 dived
Dimensions, feet (metres): 198.2 x 20.3 x 18.4 (60.4 x 6.2 x 5.6)
Main machinery: Diesel-stirling-electric; 2 MTU diesels; 2 Kockums V4-275R Stirling AIP; 204 hp(m) (150 kW); 1 Jeumont Schneider motor; 1 shaft; LIPS prop
Speed, knots: 10 surfaced; 20 dived
Complement: 27 (5 officers)

Torpedoes: 4-21 in (533 mm) bow tubes; 12 FFV Type 613/62; anti-surface; wire-guided; passive homing to 20 km (10.8 n miles) at 45 kt; warhead 240 kg or Bofors Type 62 (2000); wire-guided, active/passive homing to 50 km (27 n miles) at 20-50 kt; warhead 250 kg, swim-out discharge.
 2-15.75 in (400 mm) bow tubes; 6 Swedish Ordnance Type 432/451; anti-submarine; wire-guided, active/passive

homing to 20 km (10.8 n miles) at 25 kt; warhead 45 kg. Shaped charge or a small charge anti-intruder version.
Mines: 12 Type 47 swim-out mines in lieu of torpedoes
Countermeasures: ESM: Racal THORN Manta S; radar warning
Weapons control: CelsiusTech IPS-19 (Sesub 940A); TFCS.
Radars: Navigation: Terma Scanter; I-band.
Sonars: STN/Atlas Elektronik CSU 90-2; hull-mounted; bow, flank and intercept arrays; passive search and attack. Reson Subac; active search (from 2008).

Programmes: In October 1986 a research contract was awarded to Kockums for a design to replace the Sjöormen class. Ordered on 28 March 1990.
Modernisation: A mid-life update for all three boats is planned. Upgrades are likely to include a new combat management system. Work is likely to start in 2010.

Structure: The design has been developed on the basis of the Type A 17 series but this class is the first to be built with Air Independent Propulsion as part of the design. This type of AIP runs on liquid oxygen and diesel in a helium environment. Space has been reserved to fit two more V4-275R engines in due course. Single electro-optic periscope. The periscope is the only hull penetrating mast. Anechoic coatings are being applied. The four 21 in torpedo tubes are mounted over the smaller 15.75 in tubes. The smaller tubes can be tandem-loaded with two torpedoes per tube.
Operational: Reported as being able to patrol at 5 kt for several weeks without snort charging. The Type 47 mine swims out to a predetermined position before laying itself on the bottom. *Gotland* participated in exercises with the USN on the west coast of the US 2005-07



UPPLAND

7/2004, E & M Laurson / 1043523



UPPLAND

6/2003, L-G Nilsson / 0572636



HALLAND

5/2006, L-G Nilsson / 116475

CORVETTES

4 + 1 VISBY CLASS (FSGH)

Name	No	Builders	Laid down	Launched	Commissioned
VISBY	K 31	Karlskronavarvet	17 Dec 1996	8 June 2000	12 June 2006
HELSINGBORG	K 32	Karlskronavarvet	June 1997	27 June 2003	24 Apr 2006
HÄRNÖSAND	K 33	Karlskronavarvet	Dec 1997	16 Dec 2004	12 June 2006
NYKÖPING	K 34	Karlskronavarvet	June 1998	18 Aug 2005	24 Aug 2006
KARLSTAD	K 35	Karlskronavarvet	Dec 1999	24 Aug 2006	2008

Displacement, tons: 620 full load
 Dimensions, feet (metres): 239.5 x 34.1 x 7.9
 (73.0 x 10.4 x 2.4)

Main machinery: CODOG, 4 AlliedSignal TF 50A gas turbines; 21,760 hp(m) (16 MW); 2 MTU 16V N90 diesels; 3,536 hp(m) (2.6 MW); 2 Kamewa 125 water-jets, bow thruster

Speed, knots: 35; 15 (diesels)
 Complement: 43 (10 officers)

Missiles: SSM 8 RBS 15 Mk II (Batch 2) inertial guidance; active radar homing to 110 km (54 n miles) at 0.8 Mach; warhead 150 kg

Guns: 1 Bofors 57 mm/70 SAK Mk 3 ● 220 rds/min to 17 km (9.3 n miles); weight of shell 2.4 kg. 2—12.7 mm MGs.

Torpedoes: 4 fixed 400 mm tubes ●. Type 45 anti-submarine/surface; wire guided active homing to 20 km (10.8 n miles) at 25 kt; warhead 45 kg shaped charge.

Mines: Can be carried.

Countermeasures: Decoys: Rheinmetall MASS-HIDD ●

MCMV: STN Atlas Seafox Combat (C) sonar/TV sensor; range 500 m at 6 kt; shaped charge. Saab Underwater Systems Double Eagle Mk III ROV fitted with Reson triple frequency sonar.

ESM: Condor Systems CS 3701; intercept and jammer.

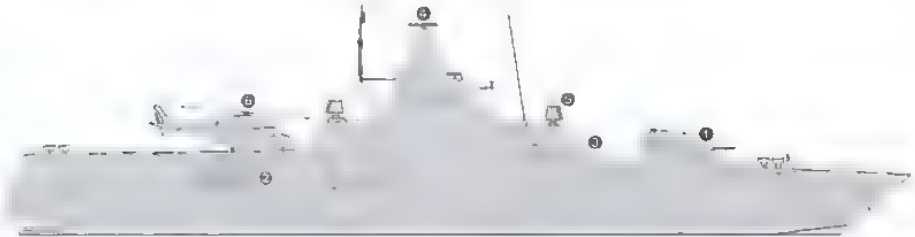
Combat data systems: CelsiusTech BLV Mk 3E CETRIS with Link

Weapons control: Optronic director.

Radars: Air/surface search: Ericsson Sea Giraffe AMB 3D; G band.

Surface search: Terma Scanter 2001 ●; E/F/I-band

Fire control CEROS 200 Mk 3 ●; I/J-band.



VISBY CLASS

(Scale 1 : 600), Ian Sturton / 1166652

Sonars: General Dynamics Canada Hydra Suite; bow mounted active high frequency (86 kHz) plus passive towed array and VDS (26 kHz) active

Helicopters: Platform for 1 Agusta A 109M ●.

Programmes: Order for first two with an option for two more on 17 October 1995. Second pair ordered 17 December 1996 and third pair in mid-1999. However, due to cost overruns, order reduced on 9 October 2001 to five ships.

Structure: Stealth features developed from the trials vessel *Smyge* but without the twin hull design for which this ship was considered too large. A hanger for the helicopter is not to be included. The hull is of Carbon Fibre Reinforced Plastic used in a sandwich construction and the superstructure is covered with RAM. A Double

Eagle Mk III ROV-Swith active sonar is carried in the MCM role as well as expendable mini torpedoes for mine countermeasures. There is provision for a SAM system to be installed at a later date

Operational: The first of class, was launched at Karlskrona shipyard on 8 June 2000 but delays in outfitting schedule led to 10-month slippage of contractor's sea trials until 7 December 2001. The combat system was installed in *Visby* late 2002 followed by trials from late 2003. Other ships were fitted on build. The test and evaluation period has been exhaustive and there has been an overall 5-year slippage in the programme. A 10-month work-package, known as a Special Period (SP) has been defined to address signature, sensor integration, weapon integration, and safety issues. The first ship is to start SP in 2009 and is to become operational in 2010. The other ships are to follow at six-month intervals, the final vessel is to be completed in 2012.



HELSINGBORG

8/2006, Frank Findler / 1166654



NYKÖPING

9/2007, Michael Nitz / 1166709

2 GÖTEBORG CLASS (FSG)

Name	No	Builders	Laid down	Launched	Commissioned
GÄVLE	K 22	Karlskronavarvet	21 Mar 1988	23 Mar 1990	1 Feb 1991
SUNDSVALL	K 24	Karlskronavarvet	20 Nov 1989	29 Nov 1991	7 July 1993

Displacement, tons: 300 standard; 399 full load

Dimensions, feet (metres): 187 × 26.2 × 8.6
(57 × 8 × 2)

Main machinery: 3 MTU 16V 396TB94 diesels; 8,700 hp (m)
(6.4 MW) sustained; Kamewa 80562-6 water-jets; bow
thrusters

Speed, knots: 30

Complement: 36 (7 officers) plus 4 spare berths

Missiles: SSM: 8 Saab RBS 15 Mark II (4 twin) launchers ●; inertial guidance; active radar homing to 110 km
(59.4 n miles) at 0.8 Mach; warhead 150 kg.

Guns: 1 Bofors 57 mm/70 Mk 2 ●; 220 rds/min to 17 km
(9.3 n miles); weight of shell 2.4 kg.

1 Bofors 40 mm/70 (stealth dome) ●; 330 rds/min to
12.5 km (6.8 n miles); weight of shell 0.96 kg

Torpedoes: 4—15.75 in (400 mm) tubes can be fitted ●.
Swedish Ordnance Type 43/45, anti-submarine.

A/S mortars: 4 Saab 601 ● 9-tubed launchers; range
1,200 m; shaped charge.

Depth charges. On mine rails.

Mines: Minelaying capability.

Countermeasures: Decoys: Rheinmetal MASS-1L decoy
system

ESM: Condor CS 3701; intercept.

ECM: Rafael Shark/RAN-1101; jammer.

Combat data systems: CelsiusTech 9LV Mk 3 SESYM
Link 11.

GÄVLE

Weapons control: 2 Bofors Electronics 9LV 200 Mk 3 Sea
Viking (K 22) or Signal IRST (K 24) optronic directors.
Bofors Electronics 9LV 450 GFCS. RC1-400 MFCS 9AU-
300 ASW control system with AQS 928G/SM sonobuoy
processor Bofors 9EW 400 EW control.

Radars: Air/surface search, Ericsson Sea Giraffe 150 HC ●;
G-band.

Navigation: Terma PN 612 ●; I-band.

Fire control: 2 Bofors Electronics 9GR 400 ●; I/J-band

Sonars: Hydra multisonar system (K 22) ●; bow-mounted
active high-frequency plus passive towed array and
active VDS

Simrad SA 950 (K 24); hull-mounted; active attack.

STN Atlas passive towed array; low frequency, Thomson-
Sintra TSM 2643 VDS.

Programmes: Ordered 1 December 1985 as replacements
for Spica I class.

Modernisation: Gävle refitted to accommodate Hydra
towed array, jammer and 40 mm gun with stealth dome.
Bridge wings removed and topmast modified. Sundsvall
may be similarly refitted. Both ships are to receive a mid-
life upgrade starting in 2010.

Structure: Efforts have been made to reduce radar and IR
signatures.



(Scale 1 : 600), Ian Sturton / 1153882



SUNDSVALL

8/2007, B Prézelin / 1165670



GÄVLE

4/2007, Michael Nitz / 1166710

2 STOCKHOLM CLASS (FSG)

Name	No	Builders	Laid down	Launched	Commissioned
STOCKHOLM	K 11	Karlskronavarvet	1 Aug 1982	24 Aug 1984	22 Feb 1985
MALMÖ	K 12	Karlskronavarvet	14 Mar 1983	22 Mar 1985	10 May 1985

Displacement, tons: 350 standard; 372 full load

Dimensions, feet (metres): 184 × 24.6 × 10.8
(50 × 7.5 × 3.3)

Main machinery: CODAG; 1 Allied Signal TF50A gas turbine; 5,440 hp(m) (4.0 MW) sustained; 2 MTU 16V 396 TB84 diesels, 5,277 hp(m) (3.9 MW) sustained; 3 shafts, Kamewa props

Speed, knots: 32 gas, 20 diesel

Complement: 33 (7 officers)

Missiles: SSM. 8 Saab RBS 15 Mk II (4 twin) launchers ●; inertial guidance; active radar homing to 110 km (54 n miles) at 0.8 Mach; warhead 150 kg.

Guns: 1 Bofors 57 mm/70 Mk 2 ●; 220 rds/min to 13.5 km (7.3 n miles); weight of shell 2.4 kg.

Torpedoes: 4—15.75 in (400 mm) tubes; Swedish Ordnance Type 45; anti-submarine/surface; wire guided active homing to 20 km (10.8 n miles) at 25 kt; warhead 45 kg shaped charge.

A/S mortars: 4 Saab 601 ● 9-tubed launchers; range 1,200 m; shaped charge.

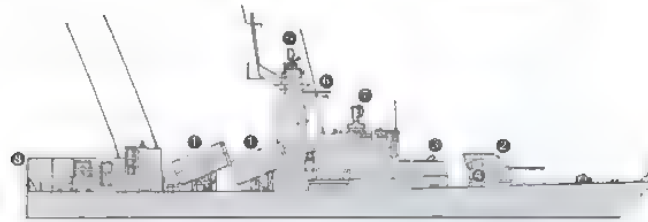
Mines: Minelaying capability.

Countermeasures: Decoys: Rheinmetall MASS-1L decoy system ●

ESM: Condor CS 3701; intercept and warning

Combat data systems: SAAB Tech 9LV Mk 3E Cetris, datalink.

Weapons control: Philips 9LV 300 GFCS including a 9LV 100 optronic director and laser range-finder.



MALMÖ

(Scale 1 : 600), Ian Sturton / 1153880

Radars: Air/surface search: Ericsson Sea Giraffe 50HC ●;

G-band.

Navigation: Terma Scantar ●; I-band.

Fire control: Philips 9LV 200 Mk 3 ●; J-band.

Sonars: Simrad SA 950; hull-mounted, active attack.

Thomson Sintra TSM 2642 Salmon ●; VDS; search, medium frequency.

Programmes: Orders placed in September 1981. Developed from Spica II class.

Modernisation: RBS 15 missile upgraded to Mk II from 1994. Improved A/S mortar fitted in 1988–89. Extensive mid-life upgrade carried out 1999–2002. Modernisation

included removal of the 21 in torpedo tubes and the aft 40 mm mounting and modification of the superstructure to reduce radar and IR signatures. The bridge wings have been removed and a pylon mast has replaced a lattice structure. Upgrades include a new propulsion system, combat data system and EW systems. The decoys are situated on either side of the gun turret. Both ships are to be fitted with CDC Hydra

Operational: Both ships are expected to remain in service beyond 2015. *Malmö* ran aground on 10 October 2006 but has since returned to service.



MALMÖ

10/2007, Michael Nitz / 1166117



STOCKHOLM

6/2007, H M Steele / 1166111

SHIPBORNE AIRCRAFT

Numbers/Type: 20 Agusta A 109M (Hkp-15).

Operational speed: 152 kt (280 km/h).

Service ceiling: 16,500 ft (5,029 m).

Range: 447 n miles (827 km).

Role/Weapon systems: Military version of A 109E with Turbomeca Arrius 2K2 engine. Swedish Armed Forces ordered 20 on 20 June 2001. Of these, eight are to be 'navalised' for operation from Visby class and from shore bases. First delivered on 3 Feb 2006 and the remainder by 2009. ASW and ASV roles.



Hkp-15

6/2006, Royal Swedish Navy / 1164715

LAND-BASED MARITIME AIRCRAFT (FRONT LINE)

Notes: In addition 11 AS 332 Super Puma helicopters are used for SAR.

Numbers/Type: 18 NH Industries NH 90.

Operational speed: 157 kt (291 km/h).

Service ceiling: 13,940 ft (4,250 m).

Range: 621 n miles (1,150 km).

Role/Weapon systems: Eighteen aircraft to be procured for tactical troop transport and ASW role. Modular construction is to enable rapid re-roling. There are to be 5 sets of ASW sensors for delivery between 2007 and 2010. Sensors: Telephonics APS-143B(V) ocean eye radar, Galileo Avionica FLIR, Thales FLASH-S dipping sonar. Weapons: To be announced.



NH 90

6/2006, Royal Swedish Navy / 1164714

PATROL FORCES

1 TYPE 72 INSHORE PATROL CRAFT (PBR)

HUVUDSKÄR 77

Displacement, tons: 30 full load

Dimensions, feet (metres): 69.2 × 15 × 4.3 (21.1 × 4.6 × 1.3)

Main machinery: 3 diesels; 3 shafts

Speed, knots: 22

Guns: 1–20 mm.

Depth charges: Carried in all of the class.

Radars: Surface search Decca RM 914; I-band.

Sonars: Simrad; hull-mounted; active search; high frequency.

Comment: Last remaining vessel of a class built in 1966–67. Modernised in the 1980s with a tripod mast and radar mounted over the bridge.



TYPE 72

6/1994, Curt Borgenstam / 0090/731

12 TAPPER CLASS (PBR)

TAPPER 81	DRISTIG 83	TRYGG 85	HURTIG 87	STOLT 89	MUNTER 91
DJARV 82	HANDIG 84	MODIG 86	RAPP 88	ARLIG 90	ORÄDD 92

Displacement, tons: 57 full load

Dimensions, feet (metres): 71.9 × 17.7 × 4.9 (21.9 × 5.4 × 1.5)

Main machinery: 2 MWM TBD234V16 diesels, 1,812 hp(m) (1.33 MW) sustained; 2 shafts

Speed, knots: 25

Complement: 9

Guns: 2 12.7 mm MGs.

A/S mortars: 4 Elma/Saab grenade launchers; range 300 m; warhead 4.2 kg shaped charge.

Depth charges: 18

Mines: 2 rails (in four of the class).

Radars: Surface search: 2 Racal Decca; I-band.

Sonars: Simrad; hull-mounted; active search; high frequency.

Comment: Seven Type 80 ordered from Djupviksvarvet in early 1992, and delivered between February 1993 and December 1995. Five more ordered in 1995 for delivery at six month intervals between December 1996 and January 1999. A Phantom HD-2 ROV is carried. This is equipped with a Tritech ST 525 imaging sonar.



TAPPER

5/2006, L-G Nilsson / 1164713



TAPPER

3/2006, Per Körnefeldt / 1159924

1 COASTAL PATROL CRAFT (PB)

Name	No	Builders	Commissioned
ÖSTHAMMAR	SVK 11 (ex-V 11)	Djupviks Varvet	1 Mar 1985

Displacement, tons: 50 full load

Dimensions, feet (metres): 76.8 × 16.7 × 3.6 (23.4 × 5.1 × 1.1)

Main machinery: 2 MTU 8V396 TB83 diesels; 2,100 hp (1.6 MW); 2 shafts

Speed, knots: 30

Complement: 7 (3 officers)

Radars: Navigation: I-band.

Comment: Former patrol craft originally commissioned in 1985 and later decommissioned in 2002. Reactivated in 2008 as patrol craft in Sjövärnskåren (SVK).



ÖSTHAMMAR

7/2008, A Sheldon-Duplaix / 1338051

1 JÄGAREN CLASS (COASTAL PATROL CRAFT) (PC)

Name JÄGAREN	No V 150	Builders Bergens MV, Norway	Commissioned 24 Nov 1972
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Displacement, tons: 120 standard; 150 full load
Dimensions, feet (metres): 120 x 20.7 x 5.6 (36.6 x 6.3 x 1.7)
Main machinery: 2 Cummins KTA50-M; 2,500 hp (1.87 MW) sustained; 2 shafts
Speed, knots: 20. **Range, n miles:** 550 at 20 kt
Complement: 15 (3 officers)
Guns: 1 Bofors 40 mm/70.
Mines: 2 rails.
Radars: Surface search/navigation. To be announced.

Comment: Originally constructed as a prototype for the deleted Hugin class, the vessel was converted for patrol duties in 1988. Decommissioned in 2002, she was reactivated as a patrol and general duties craft in 2008 following a four month refit. The ship is reported to have been fitted with a new surface search radar and the aft of the ship to have been modified to provide stowage space for oil recovery equipment.



JÄGAREN 8/1997, Frank Behling / 0019191

AMPHIBIOUS FORCES

145 COMBATBOAT 90H/90HS (STRIDSBÅT) (LCPFM)

803-946	BLÅTUNGA 947
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Displacement, tons: 19 full load
Dimensions, feet (metres): 52.2 x 12.5 x 2.6 (15.9 x 3.8 x 0.8)
Main machinery: 2 Saab Scania DSI 14 diesels; 1,250 hp(m) (935 kW) (1,350 hp(m) in 90HS (1,000 kW)); 2 Kamewa water-jets
Speed, knots: 36-50, 20 (Sea State 3). **Range, n miles:** 240 at 30 kt
Complement: 3
Military lift: 20 troops plus equipment or 2.8 tons
Missiles: SSM. Rockwell RBS 17 Hellfire, semi-active laser guidance to 5 km (3 n miles) at 10 Mach; warhead 8 kg.
Guns: 3—12.7 mm MGs.
Mines: 4 (or 6 depth charges)
Radars: Navigation: Racal Decca; RD 360 or Furuno 8050, I-band.

Comment: The first two prototypes (801-802) ordered in January 1988 are no longer in service. Twelve more (803-814) built in 1991-92. There were 63 (815-877) ordered from Dockstavarvet and Gotlands Varv in mid-January 1992, with an option for 30 more (878-907) which was taken up in 1994. The building period for these completed in mid-1997. A further 40 (908-947) were ordered in August 1996 and delivery was completed in October 2003. Of these, the last 27 (90HS) units were all modified to undertake international peacekeeping operations by the inclusion of armoured protection, an NBC citadel and air conditioning. All have a 20' deadrise and all carry four six-man inflatable rafts. 947 is equipped as VIP craft. It is planned to upgrade a further 60-70 craft to the 90HS standard. There were 22 (90N) of the class delivered to Norway 1999, 40 (90 HEX) to Mexico, 17 (90H) to Malaysia and three (90 HEX) to the Hellenic Coast Guard.



COMBATBOAT 821 6/2006, Per Körnefeldt / 1159925



COMBATBOAT 825 5/2007, Per Körnefeldt / 1166719

5 COMBATBOAT 90E (STRIDSBÅT) (YH)

101 series

Displacement, tons: 9 full load
Dimensions, feet (metres): 39 x 9.5 x 2.3 (11.9 x 2.9 x 0.7)
Main machinery: 1 Scania AB DSI 14 diesel, 398 hp(m) (293 kW) sustained; FFJet 410 water-jet
Speed, knots: 40, 37 (laden)
Complement: 2
Military lift: 2 tons or 6-10 troops
Radars: Navigation: Furuno 8050; I-band.

Comment: Ambulance boats that may also be used for stores. First batch ordered from Storebro Royal Cruiser AB in 1995 for delivery from August 1995-98. Second batch ordered in 1997 for delivery in 1998-99. Of 54 that entered service, 49 have been decommissioned and sold or donated.



COMBATBOAT 90E 8/2002, E & M Laursen / 0529975

9 LCMs (TROSSBÅT)

603-606	608-610	653	657
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Displacement, tons: 55 full load
Dimensions, feet (metres): 68.9 x 19.7 x 4.9 (21 x 6 x 1.5)
Main machinery: 2 Scania DSI 11/40 M2 diesels, 340 hp(m) (250 kW); 2 Schottel props
Speed, knots: 10
Military lift: 30 tons
Radars: Navigation: Racal Decca 914C; I-band.

Comment: Completed from 1980-88. Classified as Trossbåt (support boat). Built by Djupviksvarvet. Eight have been deleted.

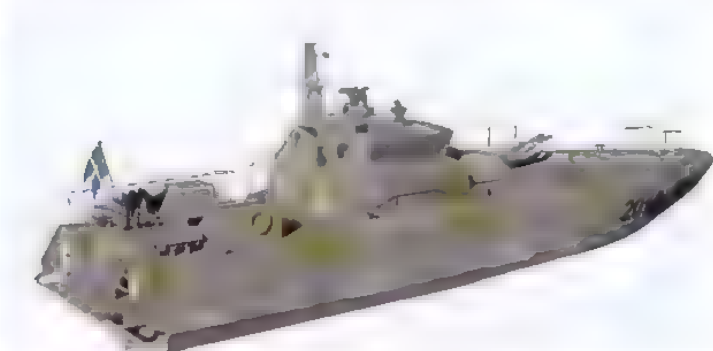


LCM 609 5/2004, E & M Laursen / 1043535

0 + 1 (4) COMBATBOAT 2010M (PBF)

Displacement, tons: 56 full load
Dimensions, feet (metres): 79.1 x 17.2 x 3.8 (24.1 x 5.24 x 1.17)
Main machinery: 2 diesels; 2 waterjets
Speed, knots: 37
Guns: 1 Patria Hägglunds 120 mm advanced mortar system

Comment: Following trials in a converted Combatboat 90H, a prototype of a mortar-armed fast support craft has been ordered. The vessel is to be larger than the existing CB 90 series. A test and evaluation period was planned to start in the second half of 2008 and an initial production run of four vessels is projected to start in 2011.



COMBATBOAT 2010M (artist's impression) 5/2007, Dockstavarvet / 1184950

2 TRANSPORTBÅT 2000 (AGF/YFLB)

451 452

Displacement, tons: 43 full load
Dimensions, feet (metres): 77.1 × 16.7 × 3.3 (23.6 × 5.1 × 1)
Main machinery: 3 Saab Scania DSI 14 diesels or 3 Volvo Penta 163 diesels; 1,194 hp(m) (878 kW) sustained; 3 FFJet 450 or 3 Kamewa K40 waterjets
Speed, knots: 25
Complement: 3
Military lift: 45 troops or 10 tons
Guns: 2–12.7 mm MGs.
Radars: Navigation: Terma; I-band

Comment: Two similar prototypes ordered from Djupviks Shipyard in 1997. Both configured as command boats



TRANSPORTBÅT 452

6/2000, Michael Nitz / 0105593

3 GRIFFON 8100TD (TYPE 392) CLASS HOVERCRAFT (UCAC)

302-304

Displacement, tons: 18.2; 24.6 full load
Dimensions, feet (metres): 73.8 × 36.1 × 1 (22.5 × 11.0 × 0.32)
Main machinery: 2 Iveco diesels; 2,000 hp (1.5 MW)
Speed, knots: 42
Range, n miles: 400 at 45 kt
Complement: 13 (2 officers)
Guns: 1–12.7 mm MG
Radars: Raytheon; I-band.

Comment: Three hovercraft ordered in July 2005. The first delivered in October 2006 and the second two in 2007. The aluminium-hulled craft are stretched versions of the Griffon 8000TD. Capable of carrying an 11 ton payload, the craft are to be fitted with ballistic protection and NBC protection



GRIFFON 8100TD

9/2007, Richard Scott/NAVYPIX / 1169099

82 RAIDING CRAFT (GRUPPBÅT) (LCP)

Displacement, tons: 3 full load
Dimensions, feet (metres): 28.2 × 6.9 × 1 (8 × 2.1 × 0.3)
Main machinery: 1 Volvo Penta TAMD 42WJ diesel; 230 hp(m) (169 kW); 1 Kamewa 240 waterjet
Speed, knots: 30
Complement: 2
Military lift: 1 ton

Comment: Small raiding craft are used throughout the Archipelago. Some have been decommissioned.



GRUPPBÅT

5/2006, E & M Laursen / 1159938

MINE WARFARE FORCES

Notes: A transportable COOP system was ordered in 1991. The unit can be shifted from one ship to another and comprises a container, processing module and tactical display, an underwater positioning system, sonar, Sea Eagle ROV and mine disposal charge. Optimised for shallow water surveillance and can be used in conjunction with other MCM systems. The primary role is route survey.

5 SAM CLASS (MCM DRONES) (MSD)

SAM 01-02 SAM 04 SAM 06-07

Displacement, tons: 20 full load
Dimensions, feet (metres): 59.1 × 20 × 5.2 (18 × 6.1 × 1.6)
Main machinery: 1 Volvo Penta TAMD70D diesel; 210 hp(m) (154 kW); 1 Schottel prop
Speed, knots: 8
Range, n miles: 330 at 8 kt

Comment: Built by Karlskronavarvet in 1983. SAM 03 and 05 sold to the USA for Gulf operation in March 1991 and replaced in 1992/93. Remote-controlled catamaran magnetic and acoustic sweepers operated by the Landsort, Koster, Visby and Styrö classes. Six sold to Japan.



SAM 07

4/2003, Per Körnefeldt / 0512624

2 LANDSORT CLASS (MINEHUNTERS) (MHSCDM)

Name	No	Builders	Launched	Commissioned
LANDSORT	M 71	Karlskronavarvet	2 Nov 1982	19 Apr 1984
ARHOLMA	M 72	Karlskronavarvet	2 Aug 1984	23 Nov 1984

Displacement, tons: 270 standard, 360 full load
Dimensions, feet (metres): 155.8 × 31.5 × 7.3 (47.5 × 9.6 × 2.2)
Main machinery: 4 Saab-Scania DSI 14 diesels; 1,592 hp(m) (117 MW) sustained; coupled in pairs to 2 Voith Schneider props
Speed, knots: 15
Range, n miles: 2,000 at 12 kt
Complement: 29 (12 officers) plus 4 spare

Guns: 1 Bofors 40 mm/70 Mod 48; 240 rds/min to 12.5 km (6.8 n miles); weight of shell 0.86 kg. Bofors SeaTrinity CIWS trial carried out in *Vinga* (fitted in place of 40 mm/70). 2–7.62 mm MGs.

Countermeasures: Decoys: 2 Philips Philax fixed launchers can be carried with 4 magazines each holding 36 grenades, IR/chaff.

MCM: This class is fitted for mechanical sweeps for moored mines as well as magnetic and acoustic sweeps. In addition it is possible to operate two SAM drones (see separate entry). Fitted with 2 Sutek Sea Eagle or Double Eagle remote-controlled units with 600 m tether and capable of 350 m depth.

Weapons control: Philips 9LV 100 optronic director. Philips 9 MJ 400 minehunting system.

Radars: Navigation. Thomson-CSF Terma; I-band.

Sonars: Thomson-CSF TSM-2022; Racal Decca 'Meins' control system; hull-mounted, minehunting; high frequency.

Programmes: These first two of this class ordered in early 1981.

Modernisation: The other five ships of the class, now known as the Koster class, are being modernised. These two ships are not to be upgraded.

Structure: The GRP mould for the hull has also been used for the Coast Guard former KBV 171 class.

Operational: The integrated navigation and action data automation system developed by Philips and Racal Decca. Both ships likely to be decommissioned in 2012.

Sales: Four built for Singapore.



ARHOLMA

10/2007, Michael Nitz / 1166707

5 KOSTER CLASS

Name	No	Builders	Launched	Commissioned
KOSTER	M 73	Karlskronavarvet	16 Jan 1986	30 May 1986
KULLEN	M 74	Karlskronavarvet	15 Aug 1986	28 Nov 1986
VINGÅ	M 75	Karlskronavarvet	14 Aug 1987	27 Nov 1987
VEN	M 76	Karlskronavarvet	10 Aug 1988	12 Dec 1988
ULVÖN	M 77	Karlskronavarvet	4 Mar 1992	9 Oct 1992

Displacement, tons: 270 standard; 360 full load
Dimensions, feet (metres): 165.8 x 31.5 x 7.3 (47.5 x 9.6 x 2.2)
Main machinery: 4 Saab-Scania DSI 14 diesels, 1,592 hp(m) (1.17 MW) sustained; coupled in pairs to 2 Voith Schneider props
Speed, knots: 15
Range, n miles: 2,000 at 12 kt
Complement: 29 (12 officers) plus 4 spare

Guns: 1 Bofors 40 mm/70 Mod 48; 240 rds/min to 12.5 km (6.8 n miles); weight of shell 0.96 kg. Bofors Sea Trinity CIWS trial carried out in *Vinga* (fitted in place of 40 mm/70). 2 — 762 mm MGs.
Countermeasures: Decoys: 2 Philips Philax fixed launchers can be carried with 4 magazines each holding 36 grenades; IR/chaff
MCM: This class is fitted for mechanical sweeps for moored mines as well as magnetic and acoustic sweeps. In addition it is possible to operate two SAM drones (see separate entry). Fitted with Double Eagle Mk III ROV with variable depth sonar and Sea Fox C expendable mine disposal system.
Combat data systems: Atlas Elektronik integrated Mine Countermeasures System.
Weapons control: Saab Philips 9LV 200 Mk II radar and optronic director.
Radars: Navigation: Litton Marine Bridgemaster; I-band
Fire control: Saab Philips 9LV 200 Mk II; I-band
Sonars: Atlas Elektronik HMS-12M triple frequency high resolution. Kongsberg HIPAP 500 positioning system.

Programmes: The first four ordered in 1984 and the fifth in 1989
Modernisation: All five ships of the former Landsort class are undergoing a two-stage upgrade at Kockums, Karlskrona. The first phase, to enable participation in international operations, was undertaken in *Kullen* and *Ven* in 2003 and *Koster*, *Vinga* and *Ulvön* in 2005. A second more extensive mid-life modernisation includes installation of a new command system, an integrated mine countermeasures system (comprising hull-mounted sonar and VDS installed in Double Eagle ROV), and a mine-identification and disposal system based on the Atlas SeaFox. Delivery schedule: *Koster* (November 2008), *Vinga* (February 2009); *Ulvön* (July 2009); *Kullen* (January 2010), *Ven* (August 2010).



VEN 10/2007, Michael Nitz / 1166706

4 STYRSÖ CLASS (MINESWEEPERS/HUNTERS—INSHORE) (MHSDI/YDT)

Name	No	Builders	Launched	Commissioned
STYRSÖ	M 11	Karlskronavarvet	8 Mar 1996	20 Sep 1996
SPÄRO	M 12	Karlskronavarvet	30 Aug 1996	21 Feb 1997
SKAFTÖ	M 13	Karlskronavarvet	20 Jan 1997	13 June 1997
STURKÖ	M 14	Karlskronavarvet	27 June 1997	19 Dec 1997

Displacement, tons: 205 full load
Dimensions, feet (metres): 118.1 x 25.9 x 7.2 (36 x 7.9 x 2.2)
Main machinery: 2 Saab Scania DSI 14 diesels; 1,104 hp(m) (812 kW), 2 shafts; bow thruster
Speed, knots: 13
Complement: 17 (9 officers)
Guns: 2 — 12.7 mm MGs.
Countermeasures: MCM AK-90 acoustic, EI-90 magnetic, and mechanical sweeps. 2 Sutec Sea Eagle/Double Eagle ROVs equipped with Tritech SE 500 sonar and mine disposal charges
Combat data systems: Ericsson tactical data system with datalink
Radars: Navigation: Racal Bridgemaster; I-band
Sonars: Reson Sea Bat 8100; mine avoidance: active; high frequency. EG & G side scan; active for route survey; high frequency.

Comment: Contract awarded to KKV and Ericsoft AB on 11 February 1994. Capable of operating two SAM drones. *Späro* and *Sturkö* have been modified to act as diving support ships.



SKAFTÖ 10/2007, Harald Carstens / 1166705

1 MSF MK 1 CLASS (MSD)

SÖKAREN MRF 01
Displacement, tons: 128 full load
Dimensions, feet (metres): 86.9 x 23 x 6.9 (26.5 x 7 x 2.1)
Main machinery: 2 Scania DSI 14 diesels, 1,000 hp(m) (736 kW); 2 Schottel azimuth thrusters
Speed, knots: 12
Complement: 6
Radars: Navigation: Bridgewater E; I-band.
Sonars: STS 2054 side scan active; high frequency

Comment: MCMV drone with GRP hull transferred from Denmark in 2001 for evaluation following cancellation of SAM II drone project.



SÖKAREN 5/2004, E & M Laursen / 1043531

INTELLIGENCE VESSELS

1 ELECTRONIC SURVEILLANCE SHIP (AGIH)

Name	No	Builders	Launched	Commissioned
ORION	A 201	Karlskronavarvet	30 Nov 1983	7 June 1984

Displacement, tons: 1,400 full load
Dimensions, feet (metres): 201.1 x 32.8 x 9.8 (61.3 x 10 x 3)
Main machinery: 2 Hedemora V8A diesels; 1,800 hp(m) (1.32 MW) sustained; 2 shafts; cp props
Speed, knots: 15
Complement: 35
Radars: Navigation: Terma Scantec 009; I-band.
Helicopters: Platform for 1 light.

Comment: Ordered 23 April 1982. Laid down 28 June 1982. The communications aerials are inside the elongated dome



ORION 9/2006, Frank Findler / 1155910

RESCUE VEHICLES

1 RESCUE SUBMERSIBLE (DSRV)

URF
Displacement, tons: 52
Dimensions, feet (metres): 45.6 x 10.5 x 9.2 (13.9 x 3.2 x 2.8)
Main machinery: Electric/hydraulic: single shaft
Speed, knots: 3
Complement: 4

Comment: Rescue submersible URF (*Ubåts Räddnings Farkost*) was launched by Kockums on 17 April 1978 and commissioned in 1979. The double-hulled vehicle is capable of operating down to 460 m with an endurance of 85 hours. The URF can mate with the hull of a submarine at angles up to 45° and is equipped with a lockout chamber that can support two divers to 300 m. It has a rescue capacity of 35 per dive and submariners can be transferred directly from the pressurised hull of the submarine to a compression chamber on board the support ship *Belas*. The vehicle is normally based at the Naval Diving Centre at Berga but can be transported by road using a specially designed trailer to a site suitable for loading on to the support ship. URF is to be modernised in 2009 (plans to replace her with S-SRV have been shelved).



URF 8/2004, E & M Laursen / 1043538

TRAINING SHIPS

2 SAIL TRAINING SHIPS (AXS)

Name	No	Builders	Commissioned
GLADAN	S 01	Naval Dockyard, Stockholm	1947
FALKEN	S 02	Naval Dockyard, Stockholm	1947

Displacement, tons: 225 standard

Dimensions, feet (metres): 112.8 × 23.6 × 13.8 (34.4 × 7.2 × 4.2)

Main machinery: 1 diesel; 120 hp(m) (88 kW); 1 shaft

Comment: Sail training ships. Two masted schooners. Sail area, 512 sq m. Both had major overhauls in 1986–88 in which all technical systems were replaced.



FALKEN

5/2007, Derek Fox / 1166553

5 ALTAIR CLASS (TRAINING VESSELS) (YXT)

ALTAIR A 501 ANTARES A 502 ARCTURUS A 503 ARGO A 504 ASTREA A 505

Displacement, tons: 85 full load

Dimensions, feet (metres): 85.0 × 19.7 × 5.6 (25.9 × 6.0 × 1.7)

Main machinery: 2 MTU 12V 2000 M90 diesels; 2,500 hp (1.86 MW); 2 shafts

Speed, knots: 24. Range, n miles: 530 at 11 kt

Complement: 4 plus 6 cadets

Comment: Contract placed with Swede Ship Marine AB on 12 May 2006 for five training vessels of aluminium construction; the ships are to be built by Djupviks Varv. The vessels are to be used for cadets' seamanship and navigation training and are to replace the M 15 class minesweepers. The ships are to have a secondary SAR role. The first vessel was delivered in May 2008 and the remainder are to follow by May 2009.



ALTAIR

6/2008*, Swedish Navy / 1335876

AUXILIARIES

Notes: The Combat Support Ship (L 10) project is for two ships capable of conducting replenishment at sea, amphibious support, repair and maintenance, medical support and transport of about 170 troops. Conceptual work suggests that the requirement might be met by a modified Ro-Ro ferry design. The ships would be of about 145 m length, include bow doors and stern ramps, a vehicle deck of about 400 lane-metres, a hangar for two NH90 and a flight deck. There would be space on the upper deck for the stowage of 10 Combatboat 90H and two Combatboat 2010. Subject to approval of the project, a competitive tendering process is planned to lead to a construction contract in 2010 and delivery of the first ship in 2013.

1 TRANSPORT (AKR)

Name	No	Builders	Commissioned
SLEIPNER (ex-Arda)	A 343	Bergen	1980

Displacement, tons: 1,049 full load

Dimensions, feet (metres): 163.1 × 36.1 × 11.5 (49.7 × 11 × 3.5)

Main machinery: 1 Normo diesel; 1,300 hp(m) (956 kW); 1 shaft

Speed, knots: 12

Complement: 12

Cargo capacity: 260 tons

Comment: Former Ro-Ro vessel acquired in 1992 from a Norwegian Shipping Company. There is a stern ramp and side door.



SLEIPNER

7/2003, E & M Laursen / 057629

1 TROSSÖ CLASS (SUPPORT SHIP) (AGP)

Name	No	Builders	Commissioned
TROSSÖ (ex-Arnold Viemer, ex-Livonia)	A 264	Valmet, Finland	1 Jan 1984

Displacement, tons: 2,140 full load

Dimensions, feet (metres): 234.9 × 42 × 14.8 (71.6 × 12.8 × 4.5)

Main machinery: 2 Russkiy G74 36/45 diesels; 3,084 hp(m) (2.27 MW); 2 shafts

Speed, knots: 14

Complement: 64

Comment: Built as a survey ship for the USSR and used in the Baltic as an AGOR. Taken on by the Estonian Marine Institute and then transferred to Sweden on 23 September 1996. Converted as a depot ship for corvettes and patrol craft and back in service in 1997. Can act as a Headquarters Ship. A second vessel, *Ornö*, was purchased in 2001 but rebuilding of the ship was abandoned in November 2001 due to its poor material state.



TROSSÖ

10/2007, Michael Nitz / 1166703

1 CARLSKRONA CLASS (SUPPORT SHIP) (AG)

Name	No	Builders	Launched	Commissioned
CARLSKRONA	M 04	Karlskronavarvet	28 June 1980	11 Jan 1982

Displacement, tons: 3,600 full load

Dimensions, feet (metres): 346.7 × 49.9 × 13.1 (105.7 × 15.2 × 4)

Main machinery: 4 Nohab F212 D825 diesels, 10,660 hp(m) (7.76 MW); 2 shafts, cp props

Speed, knots: 20

Complement: 50 plus 136 trainees. Requires 118 as operational minelayer

Guns: 2 Bofors 57 mm/70. 2 Bofors 40 mm/70.

Mines: Can lay 105.

Countermeasures: 2 Philips Phifax chaff/IR launchers.

ESM: Argo AR 700; intercept

Radars: Air/surface search: Ericsson Sea Giraffe 50HC; G/H/I-band

Surface search: Raytheon; E/F-band.

Fire control: 2 Philips 9LV 200 Mk 2; I/J-band

Navigation: Terma Scantec 009; I-band

Helicopters: Platform only.

Comment: Ordered 25 November 1977, laid down in sections late 1979 and launched at the same time as Karlskrona celebrated its tercentenary. Former minelayer now employed on miscellaneous support and training tasks.



CARLSKRONA

7/2008*, 1335875

1 ÄLVSBERG CLASS (SUPPORT SHIP) (AKH)

Name	No	Builders	Launched	Commissioned
VISBERG	A 265	Karlskronavarvet	25 Jan 1975	6 Feb 1976

Displacement, tons: 2,400 standard; 2,650 full load

Dimensions, feet (metres): 303.1 × 48.2 × 13.2 (92.4 × 14.7 × 4)

Main machinery: 2 Nohab-Polar diesels; 4,200 hp(m) (3.1 MW); 1 shaft; cp prop; bow thruster: 350 hp(m) (257 kW)

Speed, knots: 18

Complement: 95

Guns: 3 Bofors 40 mm/70 SAK 48.

ESM: Argo 700; intercept.

Radars: Surface search: Raytheon; E/F-band.

Fire control: Philips 9LV 200 Mk 2; I/J-band.

Navigation: Terma Scantec 009; I-band.

Helicopters: Platform only.

Comment: Laid down on 18 October 1973. Formerly a minelayer, now supply ship for second surface flotilla. Sister ship transferred to Chile in 1996.



VISBERG

9/2007, Maritime Photographic / 1166704

1 FURUSUND CLASS (SALVAGE AND DIVING SUPPORT SHIP) (ARS)

Name	No	Builders	Launched	Commissioned
FURUSUND	20	ASI Verken	16 Dec 1982	10 Oct 1983

Displacement, tons: 225 full load
Dimensions, feet (metres): 106.9 × 26.9 × 7.5 (32.6 × 8.2 × 2.3)
Main machinery: Diesel electric; 2 Scania GAS 1 diesel generators; 2 motors; 416 hp(m) (306 kW); 2 shafts
Speed, knots: 11.5
Complement: 24
Guns: 1—12.7 mm MG
Mines: 22 tons
Radars: Navigation: Racal Decca 1226; I-band

Comment: Former minelayer built for the Coastal Artillery. Now employed as a salvage and diving support ship.



FURUSUND 5/2001, Per Körnefeldt / 0131140

2 ARKÖSUND CLASS (SERVICE SHIPS) (YAG)

GRUNDSUND 15	FÄRÖSUND (ex-Öresund) 18
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Displacement, tons: 200 standard; 245 full load
Dimensions, feet (metres): 102.3 × 24.3 × 10.2 (31.2 × 7.4 × 3.1)
Main machinery: Diesel-electric; 2 Nohab/Scania diesel generators; 2 motors, 460 hp(m) (338 kW); 2 shafts
Speed, knots: 12
Complement: 24
Guns: 4—7.62 mm MGs
Mines: 2 rails, 26 tons
Radars: Navigation: Racal Decca 1226; I-band.

Comment: All completed by 1954–1957. Former Coastal Artillery craft for laying and maintaining minefields. One deleted in 1992, one in 1996, *Skramsösund* in 1998, *Kalmarsund* and *Barösund* in 2004 and *Arkösund* in 2006. 40 mm guns removed. Employed as general service craft.



FÄRÖSUND 10/2007, Michael Nitz / 1168702

1 DIVER SUPPORT SHIP (YDT/AGF)

ÅGIR (ex-Bloom Syrvæyar) A 212

Displacement, tons: 117 full load
Dimensions, feet (metres): 82 × 24.9 × 6.6 (25 × 7.6 × 2)
Main machinery: 2 GM diesels, 2 shafts
Speed, knots: 11
Complement: 15
Radars: Navigation: Terma; I-band.

Comment: Built in Norway in 1984. Acquired in 1989



ÅGIR 5/2006, Per Körnefeldt / 1159921

1 SALVAGE SHIP (ARSH)

Name	No	Builders	Recommissioned
BELOS III (ex-Energy Supporter)	A 214	De Hoop, Netherlands	Nov 1992

Measurement, tons: 5,096 grt
Dimensions, feet (metres): 344.2 × 59.1 × 16.7 (104.9 × 18 × 5.1)
Main machinery: 5 MAN 9ASL 25/30 diesel alternators; 8.15 MW; 2 motors; 5,110 hp(m) (3.76 MW); 2 azimuth thrusters and 3 bow thrusters
Speed, knots: 14
Complement: 50 (22 officers)

Comment: Bought from Midland and Scottish Resources in mid 1992 and arrived in Sweden in November 1992. Replaced the previous ship of the same name which paid off in April 1993. Ice-strengthened hull and fitted with a helicopter platform. Acts as the support ship for the rescue submersible URF. Equipped with Dynamic Positioning System MOSHIP. Life-extension refit completed in December 2005



BELOS III 8/2004, E & M Laursen / 1043539

1 TORPEDO AND MISSILE RECOVERY VESSEL (YPT)

Name	No	Builders	Commissioned
PELIKANEN	A 247	Djupviksvärvet	26 Sep 1963

Displacement, tons: 144 full load
Dimensions, feet (metres): 108.2 × 19 × 7.2 (33 × 5.8 × 2.2)
Main machinery: 2 MTU MB diesels; 1,040 hp(m) (764 kW); 2 shafts
Speed, knots: 14
Complement: 14
Radars: Navigation: Terma; I-band

Comment: Torpedo recovery and rocket trials vessel.



PELIKANEN 5/2005, E & M Laursen / 1153897

16 SUPPORT VESSEL (TROSSBÅT) (YAG)

662-677

Displacement, tons: 60 full load
Dimensions, feet (metres): 80.1 × 17.7 × 4.6 (24.4 × 5.4 × 1.4)
Main machinery: 3 Saab Scania DSI 14 diesels; 1,194 hp(m) (878 kW) sustained; 3 FFJet 450 water-jets
Speed, knots: 25; 13 (laden)
Complement: 3
Military lift: 22 tons
Guns: 1—12.7 mm MG
Radars: Navigation: Terma; I-band.

Comment: Prototype Trossbat built at Holms Shipyard in 1991 and capable of carrying 15 tons of deck cargo and 9 tons internal cargo or 17 troops plus mines. Aluminium hull with a bow ramp. Some ice capability. A second prototype delivered in late 1993, and the first production vessel in 1996. Eight vessels have been modified to undertake international peacekeeping operations by the inclusion of armoured protection, an NBC citadel and air conditioning



TROSSBÅT 668 8/2002, E & M Laursen / 0529906

1 SUPPORT SHIP (AKL)

Name	No	Builders	Commissioned
LOKE	A 344	Oskarsham Shipyard	Sep 1994

Displacement, tons: 455 full load
Dimensions, feet (metres): 117.8 × 29.5 × 8.6 (35.9 × 9 × 2.7)
Main machinery: 2 Scania diesels, 2 shafts
Speed, knots: 12
Complement: 8
Cargo capacity: 50 tons or 50 passengers
Radars: Navigation: Ternis; I-band.

Comment: General support craft which can be used as a ferry. Landing craft bow.



LOKE 4/2004, E & M Laursen / 1043540

TUGS**2 COASTAL TUGS (YTM)**

HEROS A 322	HERA A 324
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Displacement, tons: 185 standard; 215 full load
Dimensions, feet (metres): 80.5 × 22.6 × 13.1 (24.5 × 6.9 × 4)
Main machinery: 1 diesel, 600 hp(m) (441 kW); 1 shaft
Speed, knots: 11
Complement: 8

Comment: Details given for A 322 launched in 1957. Second is smaller at 127 tons and was launched in 1969-71. Both are icebreaking tugs.



HERA 6/2000, E & M Laursen / 0106591

9 COASTAL TUGS (YTL)

A 702-705	A 751	A 753-756
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Displacement, tons: 42 full load
Dimensions, feet (metres): 50.9 × 16.4 × 8.9 (15.5 × 5 × 2.7)
Main machinery: 1 diesel; 1 shaft
Speed, knots: 9.5
Complement: 6

Comment: Can carry 40 people. Icebreaking tugs. 702-703 used by Amphibious Corps. All can carry mines.



A 702 5/2005, Per Körnfeldt / 1153899

COAST GUARD (KUSTBEVAKNING)

Establishment: Established in 1638, and for 350 years was a part of the Swedish Customs administration. From 1 July 1988 the Coast Guard became an independent civilian authority with a Board supervised by the Ministry of Defence. Organised in four regions with a central Headquarters.

Duties: Responsible for civilian surveillance of Swedish waters, fishery zone and continental shelf. Supervises and enforces fishing regulations, customs, dumping and pollution regulations, environmental protection and traffic regulations. Also concerned with prevention of drug running and forms part of the Swedish search and rescue organisation.

Headquarters Appointments

Director General:
Christina Salomonson

Bases

HQ. Karlskrona
 Regional HQs: Karlskrona, Härnösand, Stockholm, Gothenburg
 There are 26 Coast Guard stations

Personnel

2009: 748

Aircraft: Two Bombardier Dash 8Q which were ordered in 2005

Ships: Pennant numbers prefixed by KBV but the KBV is not displayed. Vessels are not normally armed.

2 + 1 KBV 001 CLASS (MULTIPURPOSE VESSELS) (WPSO)

No	Builders	Launched	Commissioned
KBV 001	Damen Shipyard, Galati	20 Feb 2008	2009
KBV 002	Damen Shipyard, Galati	14 Aug 2008	2009
KBV 003	Damen Shipyard, Galati	2009	2009

Displacement, tons: 5,756 full load
Dimensions, feet (metres): 266.4 × 52.5 × 18.1 (81.2 × 16.0 × 5.5)
Main machinery: Diesel-electric; 3 Caterpillar 3516 diesel generators; 7,800 hp (5.82 MW); 2 Caterpillar 3512 diesel generators; 3,650 hp (2.72 MW); 2 Rolls Royce Aquamaster US 355 FP azimuth thrusters; 2 retractable bow thrusters (850 kW and 415 kW).

Speed, knots: 16
Complement: 15
Radars: Navigation: Sperry Bridgemaster; E/F/I-band.

Comment: Contract signed on 20 December 2005 with Damen Shipyards for the construction of two multipurpose vessels to be capable of towing, fire-fighting, oil recovery, environmental-control, fishery control, control of territorial waters, rescue operations and diving support. A third vessel was ordered on 19 April 2007. The ships are designed by Schelde Naval Shipbuilding and are being built and outfitted at Damen Shipyard, Galati, Romania. KBV 001 is to be based at Gothenburg and KBV 002 at Sigtuna, Gotland.



KBV 001 (artist's impression) 12/2005, Damen Shipyards / 1041661

3 KBV 101 CLASS (MEDIUM ENDURANCE CUTTERS) (WMEC/PB)

KBV 103-105

Displacement, tons: 65 full load
Dimensions, feet (metres): 87.6 × 16.4 × 7.2 (26.7 × 5 × 2.2)
Main machinery: 2 Cummins KTA38 M diesels, 2,120 hp (1.56 MW); 2 shafts
Speed, knots: 21 Range, n miles: 1,000 at 15 kt
Complement: 5 plus 2 spare
Sonars: Hull-mounted, active search; high frequency

Comment: Built 1969-73 at Djupviksvarvet. Class A cutters. All-welded aluminium hull and upperworks. Equipped for salvage divers. Modernisation with new diesels, a new bridge and new electronics completed in 1988. KBV 101 transferred to Lithuania in 1996.



KBV 103 5/2007, E & M Laursen / 1170090

1 KBV 181 CLASS (HIGH ENDURANCE CUTTER) (WHEC/PBO)

KBV 181

Displacement, tons: 991 full load
Dimensions, feet (metres): 183.7 oa, 167.3 wl x 33.5 x 15.1 (56; 51 x 10.2 x 4.6)
Main machinery: 2 Wärtsilä Vasa 8R22 diesels; 3,755 hp(m) (2.76 MW) sustained; 1 shaft; Kamewa cp prop, bow thruster
Speed, knots: 16 **Range, n miles:** 2,800 at 15 kt
Complement: 11
Guns: 1 Oerlikon 20 mm (if required).
Radars: Navigation: Furuno FAR 2630; I-band.
Sonars: Simrad Subsea, active search; high frequency.

Comment: Ordered from Rauma Shipyards in August 1989 and built at Uusikaupunki. Commissioned 30 November 1990. Unarmed in peacetime. Equipped as a Command vessel for SAR and anti-pollution operations. All-steel construction similar to Finnish *Tursas*.



KBV 181 6/2007, Swedish Coast Guard / 1170063

2 KBV 201 CLASS (HIGH ENDURANCE CUTTERS) (WHEC/PBO)

KBV 201-202

Displacement, tons: 476 full load
Dimensions, feet (metres): 170.6 x 28.2 x 7.9 (52 x 8.6 x 2.4)
Main machinery: 2 MWM 610 diesels; 5,440 hp(m) (4 MW); 2 MWM 616 diesels; 1,904 hp(m) (1.4 MW); 2 shafts; Kamewa cp props; 2 bow thruster 424 hp(m) (312 kW)
Speed, knots: 21 **Range, n miles:** 1,340 at 16 kt
Complement: 9
Radars: Navigation: E/F- and I-band.

Comment: Ordered from Kockurns in January 1999 and built at Karlskrona. First one delivered in March 2001 and second in September 2001. Steel hulls. Multitrole vessels for surveillance and environmental protection. Stern ramp for launching a RIB.



KBV 201 11/2007, Swedish Coast Guard / 1170052

3 KBV 288 CLASS (MEDIUM ENDURANCE CUTTERS) (WMEC/PBO)

KBV 288-290

Displacement, tons: 53 full load
Dimensions, feet (metres): 71.5 x 17.7 x 5.9 (21.8 x 5.4 x 1.8)
Main machinery: 2 Cummins KTA38-M or MWM diesels; 2,120 hp (1.56 MW); 2 shafts
Speed, knots: 24
Complement: 5
Radars: Navigation: Furuno; I-band.

Comment: An improved design of the KBV 281 class which entered service 1990-93



KBV 290 7/2008* / 1335874

6 KBV 281 CLASS (MEDIUM ENDURANCE CUTTERS) (WMEC/PB)

KBV 281-283

KBV 285-287

Displacement, tons: 45 full load
Dimensions, feet (metres): 71.5 x 16.4 x 6.2 (21.8 x 5 x 1.9)
Main machinery: 2 Cummins KTA38-M or MWM diesels; 2,120 hp (1.56 MW); 2 shafts
Speed, knots: 27
Complement: 4
Radars: Navigation: Furuno; I-band

Comment: Built by Djupviksvarvet and delivered at one a year from 1979. Last one commissioned in 1990. Aluminium hulls. Some of the class have an upper bridge



KBV 287 5/2004, P Marsan / 1043544

11 KBV 301 CLASS (MEDIUM ENDURANCE CUTTERS) (WMEC/PB)

KBV 301-311

Displacement, tons: 35 full load
Dimensions, feet (metres): 65.6 x 15.1 x 3.6 (20 x 4.6 x 1.1)
Main machinery: 2 MTU 183 TE92 diesels; 1,830 hp(m) (1.35 MW) sustained; 2 MTP 7500S or Kamewa water-jets
Speed, knots: 34
Range, n miles: 500 at 25 kt
Complement: 4
Radars: Navigation: 2 Kelvin Hughes 6000; I-band.

Comment: Built at Karlskronavarvet. First one delivered in May 1993 and the remainder ordered in December 1993. Three delivered in 1995, four in 1996 and the last three in 1997. Five deleted in 2006.



KBV 307 5/2007, E & M Laurson / 1170081

3 KBV 591 (GRIFFON 2000 TDX) CLASS (HOVERCRAFT) (UCAC)

KBV 591-593

Displacement, tons: 3.5 full load
Dimensions, feet (metres): 38.4 x 19.4 (11.7 x 5.9)
Main machinery: 1 Deutz BF8L diesel; 350 hp(m) (235 kW)
Speed, knots: 50
Range, n miles: 450 at 35 kt
Complement: 3
Radars: Navigation: Furuno 7010 D; I-band.

Comment: Built by Griffon Hovercraft, Southampton and delivered in 1992-93. Aluminium hulls. Based at Stockholm, Lulea and Umea.



KBV 591 6/2003, Swedish Coast Guard / 05/2610

60 COAST GUARD PATROL CRAFT (SMALL) (PB)

KBV 401-408 +52

Displacement, tons: 2.2 full load
 Dimensions, feet (metres): 29.7 × 8.5 × 2.9 (9.05 × 2.6 × 0.9)
 Main machinery: 2 Yamaha outboard engines; 500 hp (372 kW)
 Speed, knots: 65
 Range, n miles: 100 at 35 kt
 Complement: 2

Comment: Details are for KBV 401-408 built in 1994-95. There is a total of some 60 speed boats with Raytheon radars.



KBV 454

7/2008* / 1335873

POLLUTION CONTROL CRAFT (YPC)

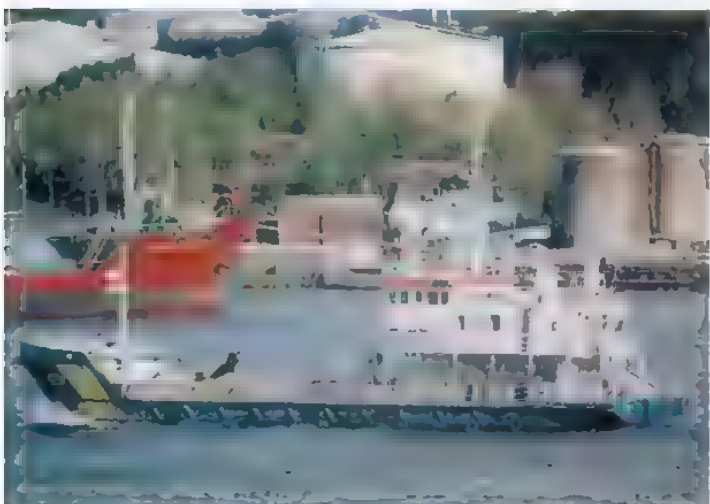
Number	Displacement (tons)	Comment
KBV 004	450	Built by Lunde in 1978. Has helipad and carries salvage divers
KBV 005	990	Ice Class 1A built in 1980 and acquired in 1993
KBV 010	400	Built by Lunde in 1985. Oil spill clean-up craft
KBV 020	60	Catamaran design built by Djupviks in 1982
KBV 044	100	Class B Sea Trucks built by Djupviks in 1976. Oil spill clean-up craft
KBV 045	230	Pollution control craft built by Lunde 1980-83. Have bow ramp
KBV 046	230	Pollution control craft built by Lunde 1980-83. Have bow ramp
KBV 047	230	Pollution control craft built by Lunde 1980-83. Have bow ramp
KBV 048	230	Pollution control craft built by Lunde 1980-83. Have bow ramp
KBV 049	230	Pollution control craft built by Lunde 1980-83. Have bow ramp
KBV 050	340	Enlarged version of KBV 045 class with bow ramp. Built by Lunde in 1983
KBV 051	340	Enlarged version of KBV 045 class with bow ramp. Built by Lunde in 1983

Comment: The KBV 031 Project is for a class of four 50 m multipurpose environmental protection craft to replace older oil-recovery vessels. Built by Peene Werft, Wolgast, the first is to be delivered in April 2011.



KBV 048

5/2006, E & M Laursen / 1150940



KBV 051

5/2007, Per Körnefeldt / 1166897

GOVERNMENT MARITIME FORCES

CIVILIAN SURVEY AND RESEARCH SHIPS

Notes: (1) Owned and manned (since 1 January 2002) by the National Maritime Administration
 (2) There is a research ship *Argos*. Civilian manned and owned by the National Board of Fisheries. A second civilian ship *Ocean Surveyor* belongs to the Geological Investigation but has been leased as a Support Ship on occasions.
 (3) The Board of Navigation owns two buoy tenders *Scandica* and *Baltica* built in 1982 and two lighthouse tenders *Fyrbyggaren* and *Fyrbjörn*.



SCANDICA

6/2000, Curt Borgenstam / 0106585

1 SURVEY SHIP (AGS)

JACOB HÄGG

Displacement, tons: 192 standard
 Dimensions, feet (metres): 119.8 × 24.6 × 5.6 (36.5 × 7.5 × 1.7)
 Main machinery: 4 Saab Scania DSI 14 diesels; 1,592 hp(m) (1.17 MW) sustained; 2 shafts
 Speed, knots: 16
 Complement: 13 (5 officers)

Comment: Laid down April 1982 at Djupviks Shipyard. Launched 12 March 1983. Completed 16 May 1983. Aluminium hull



JACOB HÄGG

5/1988, J Cielak / 0050199

1 SURVEY SHIP (AGS)

NILS STRÖMCRONA

Displacement, tons: 210 full load
 Dimensions, feet (metres): 98.4 × 32.8 × 5.9 (30 × 10 × 1.8)
 Main machinery: 4 Saab Scania DSI 14 diesels; 1,592 hp(m) (1.17 MW) sustained; 2 shafts; bow and stern thrusters
 Speed, knots: 12
 Complement: 14 (5 officers)

Comment: Completed 28 June 1985. Of catamaran construction—each hull of 3.9 m made of aluminium.



NILS STRÖMCRONA

9/2001, Per Körnefeldt / 0131143

Switzerland



Country Overview

A landlocked western European country, the Swiss Confederation has an area of 15,940 square miles and is bordered by France, Germany, Austria, Liechtenstein and Italy. The largest city is Zurich and the capital is Bern. The principal lakes are Lake Geneva in the southwest and Lake

Constance in the northeast. Others not wholly within Swiss borders are Lake Lugano and Lake Maggiore. The river Rhine, whose source is in the Swiss Alps, is navigable northwards and downstream from the port of Basel. One company of patrol boats, part of the Swiss Army, is available for operations on lakes Constance, Geneva and Maggiore.

Diplomatic Representation

Defence Attaché in London:
Colonel D P Bader

ARMY

Notes: (1) There are also large numbers of flat bottomed raiding craft powered by single 40 hp outboard engines.
(2) There are a number of 6 m rescue craft equipped with a hydraulic ramp.

11 AQUARIUS CLASS (PATROUILLENBOOT 80) (PBR)

ANTARES	SATURN	PERSEUS	MARS
AQUARIUS	URANUS	SIRIUS	POLLUX
ORION	CASTOR	VENUS	

Displacement, tons: 7 full load
Dimensions, feet (metres): 35.1 x 10.8 x 3.6 (10.7 x 3.3 x 1.1)
Main machinery: 2 Volvo KAD 3 diesels; 460 hp(m) (338 kW); 2 shafts
Speed, knots: 35
Complement: 7
Guns: 2 - 12.7 mm MGs
Radars: Surface search: JFS Electronic 364, I band

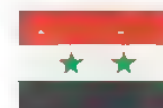
Comment: Builders Müller AG, Spiez. GRP hulls, wooden superstructure. *Aquarius* commissioned in 1978, *Pollux* in 1984, the remainder in 1981. Re-engined with diesels which have replaced the former petrol engines.



AQUARIUS

10/1997, Swiss Army / 0019223

Syria



Country Overview

The Syrian Arab Republic was proclaimed in 1961 following brief federation with Egypt as the United Arab Republic from 1958. Situated in the Middle East, the country has an area of 71,498 square miles and is bordered to the north by Turkey, to the east by Iraq, to the south by Jordan and Israel and to the west by Lebanon. It has a 104 n mile coastline with the Mediterranean Sea. The capital and largest city is Damascus while the principal ports are Latakia and Tartous. It is the only country to claim 35 n mile Territorial seas. An EEZ is not claimed.

Headquarters Appointments

Commander-in-Chief Navy:
Major General Wae, Nasser

Organisation

Naval Forces come under the command of the Chief of General Staff, Commander of Land Forces.

Personnel

(a) 2009: 3,200 officers and men (2,500 reserves)
(b) 18 months' national service

Bases

Latakia, Tartous, Al-Mina-al-Bayda, Baniyas

Coast Defence

Coastal defence has been under naval control since 1984. A missile brigade is equipped with SS-C-1 Sepal and SS-C-3 Styx with sites at Tartous (2), Baniyas and Latakia. Two artillery battalions have a total of 36-130 mm guns and 12-100 mm guns. Coastal observation sites are manned by an Observation Battalion. There are two infantry brigades each of which is assigned to a coastal zone.

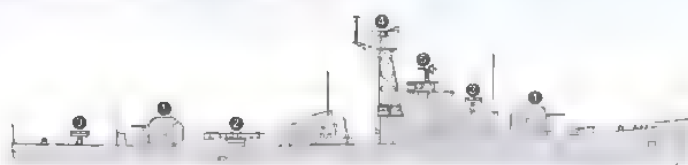
FRIGATES

2 PETYA III (PROJECT 159A) CLASS (FFL)

1-508 (ex-12) AL HIRASA 2-508 (ex-14)

Displacement, tons: 950 standard; 1,180 full load
Dimensions, feet (metres): 268.3 x 29.9 x 9.5
(81.8 x 9.1 x 2.9)
Main machinery: CODAG: 2 gas turbines; 30,000 hp(m)
(22 MW); 1 Type 61V-3 diesel; 5,400 hp(m) (3.97 MW)
sustained (centre shaft); 3 shafts
Speed, knots: 32
Range, n miles: 4,870 at 10 kt, 450 at 29 kt
Complement: 98 (8 officers)

Guns: 4-3 in (76 mm)/59 AK 726 (2 twin) ●; 90 rds/min to 16 km (8.5 n miles); weight of shell 5.9 kg.
Torpedoes: 3-21 in (533 mm) (triple) tubes ● SAET-60; active/passive homing to 15 km (8.1 n miles) at 40 kt; warhead 100 kg.
A/S mortars: 4 RBU 2500 16-tubed transab.e ●; range 2,500 m; warhead 21 kg



PETYA 1-508

(Scale 1 : 900), Ian Sturton / 050611/1

Depth charges: 2 racks.
Mines: Can carry 22.
Radars: Surface search, Slim Net ●, E/F-band.
Navigation: Don 2; I-band.
Fire control: Hawk Scream ●; I-band
IFF: High Pole B. 2 Square Head
Sonars: Herkules; hull-mounted, active search and attack, high frequency.

Programmes: Transferred by the USSR in July 1975 and March 1975.
Operational: Based at Tartous. 2-508 in dock in mid-1998 to 2000 and reported to be sea-going. 1-508 reported non-operational in 2008.



AL HIRASA

6/2001 / 0121400

For details of the latest updates to *Jane's Fighting Ships* online and to discover the additional information available exclusively to online subscribers please visit
jfs.janes.com

LAND-BASED MARITIME AIRCRAFT

Numbers/Type: 11/2 Mil Mi-14P Haze A/Mi-14P Haze C.

Operational speed: 124 kt (230 km/h).

Service ceiling: 15,000 ft (4,570 m).

Range: 432 n miles (800 km).

Role/Weapon systems: Medium-range ASW helicopter. Sensors: Short Horn search radar, dipping sonar, MAD, sonobuoys. Weapons: ASW; internally stored torpedoes, depth mines and bombs.

Numbers/Type: 2 Kamov Ka-28 Helix.

Operational speed: 135 kt (250 km/h).

Service ceiling: 19,685 ft (6,000 m).

Range: 432 n miles (800 km).

Role/Weapon systems: ASW helicopter. Delivered in February 1990. Sensors: Splash Drop search radar, dipping sonar, sonobuoys, MAD, ECM. Weapons: ASW; 3 torpedoes, depth bombs, mines.

PATROL FORCES

Notes: (1) Five Szkwal 12 m patrol launches are reported to be in service. Previously in service with the Polish Coast Guard, they were transferred in 1995.
(2) There is an unarmed 18 m diving tender *Palmyra* built by Ocea de Saint-Nazaire in 2005.

16 OSA (PROJECT 205) CLASS
(FAST ATTACK CRAFT—MISSILE) (PTFG)

21–26 (Osa I)

31–40 (Osa II)

Displacement, tons: 245 full load

Dimensions, feet (metres): 126.6 × 24.9 × 8.8 (39.6 × 7.6 × 2.7)

Main machinery: 3 Type M 504 (Osa II)/M 503 (Osa I) diesels; 8,025/10,900 hp(m) (6.0/8.1 MW) sustained; 3 shafts

Speed, knots: 35 (Osa I), 37 (Osa II) **Range, n miles:** 500 at 35 kt

Complement: 25 (3 officers)

Missiles: SSM: 4 SS-N-2C; active radar or IR homing to 83 km (43 n miles) at 0.9 Mach; warhead 513 kg; sea-skimmer at end of run.

Guns: 4–30 mm/65 (2 twin); 500 rds/min to 5 km (2.7 n miles); weight of shell 0.54 kg.

Countermeasures: Decoys: PK 16 chaff launcher.

Radars: Surface search: Square Tie; I-band

Fire control: Drum Tilt, H/I-band.

IFF: 2 Square Head High Pole A or B.

Programmes: Delivered: October 1979 (two), November 1979 (two), August 1982 (one), September 1982 (one) and May 1984 (two). Further craft acquired.

Structure: Two are modified (Nos 39 and 40).

Operational: Osa I are based at Tartous and Osa II based at Latakia. All are still fully operational and active. The Osa Is are fitted with SSN 2A/B.



OSA II 38

6/1998 / 0050214

6 TIR II (IPS 18) CLASS (INSHORE PATROL CRAFT) (PTFG)

Displacement, tons: 28.1 standard

Dimensions, feet (metres): 69.4 × 18.9 × 2.8 (21.1 × 5.8 × 0.9)

Speed, knots: 52

Complement: 6

Missiles: SSM: 2 Noor (C-802); active radar homing to 120 km (66 n miles) at 0.9 Mach; warhead 185 kg.

Comment: The first three craft with missile racks, but without missiles, were delivered in mid-2006. Probably built in Iran and based on those supplied in December 2002 by North Korea.



TIR II (artist's impression)

6/2007 / 1167967

8 ZHUK (GRIF) (PROJECT 1400M) CLASS
(COASTAL PATROL CRAFT) (PB)

1-8 2-8 3-8 4-8 5-8 6-8 7-8 8-8

Displacement, tons: 39 full load

Dimensions, feet (metres): 78.7 × 16.4 × 3.9 (24 × 5 × 1.2)

Main machinery: 2 Type M 401B diesels; 2,200 hp(m) (1.6 MW) sustained; 2 shafts

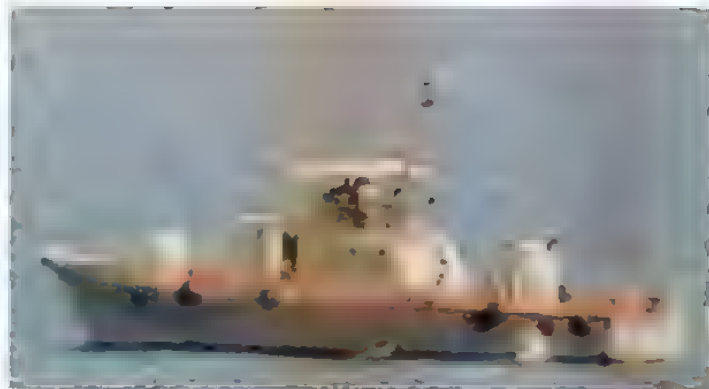
Speed, knots: 30 **Range, n miles:** 1,100 at 15 kt

Complement: 11 (3 officers)

Guns: 4–14.5 mm (2 twin) MGs

Radars: Surface search. Spin Trough; I-band.

Comment: Three transferred from USSR in August 1981, three on 25 December 1984 and two more in the late 1980s. Based at Tartous and Latakia. About half the craft are operational.



ZHUK 5-8

6/1998 / 0050215

AMPHIBIOUS FORCES

3 POLNOCHNY B CLASS (PROJECT 771) (LSM)

1-114

2-114

3-114

Displacement, tons: 760 standard; 834 full load

Dimensions, feet (metres): 246.1 × 31.5 × 7.5 (75 × 8.6 × 2.3)

Main machinery: 2 Kolomna Type 40-D diesels; 4,400 hp(m) (3.2 MW) sustained; 2 shafts

Speed, knots: 19

Range, n miles: 1,500 at 15 kt

Complement: 40

Military lift: 180 troops, 350 tons cargo

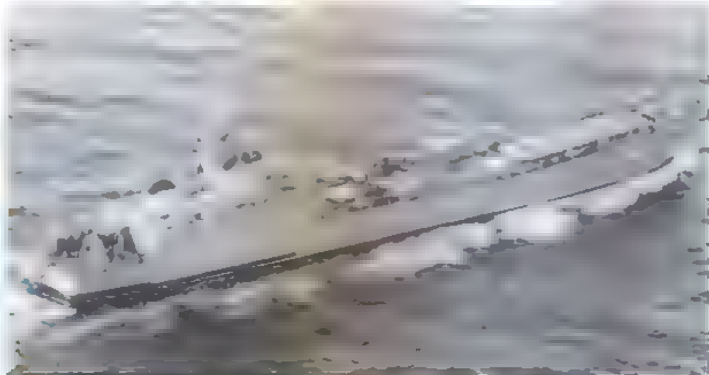
Guns: 4–30 mm/65 (2 twin), 500 rds/min to 5 km (2.7 n miles); weight of shell 0.54 kg.

2–140 mm rocket launchers; 18 barrels per launcher; range 9 km (5 n miles)

Radars: Surface search: Spin Trough, I-band

Fire control: Drum Tilt, H/I-band.

Comment: Built at Northern Shipyard, Gdansk. First transferred from USSR January 1984, two in February 1985 from Black Sea. All based at Tartous and still active.



POLNOCHNY B (Russian colours)

1988 / 0506104

MINE WARFARE FORCES

1 SONYA (YAKHONT) (PROJECT 12650) CLASS
(COASTAL MINEHUNTER) (MHC)

532

Displacement, tons: 450 full load

Dimensions, feet (metres): 157.4 × 28.9 × 6.6 (48 × 8.8 × 2)

Main machinery: 2 Kolomna Type 9-D-8 diesels; 2,000 hp(m) (1.47 MW) sustained; 2 shafts

Speed, knots: 15

Range, n miles: 3,000 at 10 kt

Complement: 43 (5 officers)

Missiles: SAM: 2 quad SA-N-6 launchers

Guns: 2–30 mm/65 AK 630 or 2–30 mm/65 (twin) and 2–25 mm/80 (twin).

Mines: 8

Radars: Surface search: Don 2 or Kivach or Nayada, I-band.

IFF: 2 Square Head, High Pole B.

Sonars: MG 69/79; hull-mounted; active minehunting; high frequency.

Comment: Wooden hull with GRP sheath. Transferred to Syria in 1986. Reported decommissioned in 2004 but apparently operational again in 2006.



SONYA CLASS (Russian colours)

6/2003, Guy Torrens / 0570933

1 NATYA (PROJECT 266M) CLASS (MSC/AGORM)

642
 Displacement, tons: 804 full load
 Dimensions, feet (metres): 200.1 x 33.5 x 10.8 (61 x 10.2 x 3)
 Main machinery: 2 Type 504 diesels; 5,000 hp(m) (3.67 MW) sustained; 2 shafts
 Speed, knots: 16
 Range, n miles: 3,000 at 12 kt
 Complement: 65
 Missiles: SAM: 2 SA-N-6 Grail quad launchers; manual aiming; IR homing to 6 km (3.2 n miles) at 1.5 Mach; altitude to 2,500 m (8,000 ft); warhead 1.5 kg; 18 missiles.
 Guns: 4–30 mm/65 (2 twin) can be fitted.
 Radars: Surface search: Don 2; I-band
 Fire control: Drum Tilt; H/I-band.

Comment: Arrived in Tartous from USSR in January 1985. Has had sweeping gear and guns removed and converted to serve as an AGOR. Painted white. Based at Latakia in reasonable condition. Reported active.



NATYA 642 6/1996 / 0080/54

5 YEVGENYA (PROJECT 1258) CLASS (MINESWEEPERS—INSHORE) (MSI/PC)

4-507 5-507 6-507 7-507 8-507
 Displacement, tons: 77 standard; 90 full load
 Dimensions, feet (metres): 80.7 x 18 x 4.9 (24.6 x 5.5 x 1.5)
 Main machinery: 2 Type 3-D-12 diesels; 600 hp(m) (444 kW); 2 shafts
 Speed, knots: 11
 Range, n miles: 300 at 10 kt
 Complement: 10
 Guns: 2–14.5 mm (twin) MGs (first pair). 2–25 mm/80 (twin) (second pair)
 Radars: Surface search: Spin Trough; I-band.
 IFF: High Pole.
 Sonars: MG-7, stern-mounted VDS; active; high frequency.

Comment: First transferred from USSR 1978, two in 1985 and two in 1986. Second pair by Ro-flow from Baltic in February 1985 being new construction with tripod mast. Based at Tartous, at least two are operational. Both 4-507 and 5-507, thought to have been deleted, were reported operational in 2006.



YEVGENYA (Ukraine colours) 6/2003, Ships of the World / 0572652

TRAINING SHIPS

1 TRAINING SHIP (AX/AKR)

AL ASSAD
 Displacement, tons: 3,500 full load
 Dimensions, feet (metres): 344.5 x 56.4 x 13.1 (105 x 17.2 x 4)
 Main machinery: 2 Zgoda-Sulzer 6ZL40/48 diesels; 8,700 hp(m) (6.4 MW); 2 shafts; bow thruster
 Speed, knots: 16
 Range, n miles: 4,500 at 15 kt
 Complement: 56 plus 140 cadets
 Radars: Navigation: Decca Seamaster; E/F- and I-band.

Comment: Built in Polnochny Shipyard, Gdansk and launched 18 February 1987. Delivered in late 1988. Ro-ro design used as a naval training ship. Unarmed but has minelaying potential. Based at Latakia and occasionally deploys on cruises.

AL ASSAD 6/2007, Camil Busquets / Vilanova 1167859



AL ASSAD 7/2003, B Prézelin / 0570897



**Taiwan
 REPUBLIC OF CHINA**



Country Overview

The Republic of China was established in 1949 when the Nationalist government of China withdrew to Taiwan (Formosa) and established its headquarters. Though in practice an autonomous state, Taiwan is still formally a province of China and, as such, is claimed by the People's Republic of China. The country comprises the island of Taiwan (area 13,900 square miles), the Pescadores, or P'eng-hu Islands, the Quemoy Islands off the mainland city of Amoy (Xiamen), and the Matsu group off Fuzhou (Fochow). It has a 783 n mile coastline with East China Sea, Pacific Ocean and South China Sea. The capital and largest city of Taiwan is Taipei while Chi-lung (Keelung), Hualien, Kao-hsiung and T'ai-chung are the principal ports. Territorial seas (12 n miles) are claimed. A 200 n mile EEZ and Fishery Zone have also been claimed.

Headquarters Appointments

Commander-in-Chief:
 Admiral Wang Li-Sheng
Commandant of Marine Corps:
 Lieutenant General Yu Shang-Wen

Senior Flag Officers

Fleet Commander:
 Vice Admiral Hu Chai-Kwei

Senior Flag Officers—continued

Director of Logistics:
 Vice Admiral Gan Ke-Chiang
Commander East Command:
 Vice Admiral Chang Hai-Ping

Personnel

(a) 2009: 46,500 in Navy, 15,000 in Marine Corps
 (b) 1 year 4 months conscript service

Bases

Tsoying HQ First Naval District (Southern Taiwan, Pratas and Spratly). Main Base, HQ of Fleet Command, Naval Aviation Group and Marine Corps. Base of southern patrol and transport squadrons. Officers and ratings training, Navy Academy, Naval shipyard
 Kaohsiung: Naval shipyard.
 Makung (Pescadores): HQ Second Naval District (Pescadores, Quemoy and Wu Ch'iu). Base for attack squadrons. Naval shipyard and training facilities.
 Keelung: HQ Third Naval District (Northern Taiwan and Matsu group) Base of northern patrol and transport squadrons. Naval shipyard.
 Hualien: Naval Aviation Command.
 Suao: East Coast Command, submarine depot and shipyard.

Minor bases at Hualien, Tamshui, Hsinchu, Wuchi and Anping. Building, Taitung.

Organisation

1 Fleet Command:
 124th Attack squadron, based at Tsoying
 142nd Support squadron, based at Kaohsiung
 146th Attack squadron, based at Pescadores
 151st Amphibious squadron, based at Tsoying
 168th Patrol squadron, based at Suao
 192nd Mine Warfare squadron, based at Tsoying
 256th Submarine Unit, based at Tsoying.
 2. Naval Aviation Command: There are two Groups. The fixed-wing Group based at Pingtung-North consists of two squadrons (133 and 134). The helicopter Group consists of three squadrons 501 squadron is based at Tsoying, 701 squadron at Hualien and 702 squadron at Tsoying

Coast Defence

The land-based SSM command has six squadrons equipped with Hsiung-Feng II SSM at Tonying Island of the Matsu Group, Siyu Island of the Pescadores, Shiao Liuchiu off Kaohsiung, north of Keelung harbour, Tsoying naval base and Hualien. The ROCMC deploy eight SAM Platoons, equipped with Chaparral SAM quad-launchers, to the offshore island of Wuchi, and Pratas islets in the South China Sea. There are also a number of 127 mm guns.

2 GUPPY II CLASS (SS)

Name	No	Builders	Laid down	Launched	Commissioned
HAI SHIH (ex-Cutlass SS 478)	791 (ex-SS 91)	Portsmouth Navy Yard	22 July 1944	5 Nov 1944	17 Mar 1945
HAI BAO (ex-Tusk SS 426)	792 (ex-SS 92)	Federal SB & DD Co, Kearney, New Jersey	23 Aug 1943	8 July 1945	11 Apr 1946

Displacement, tons: 1,870 standard; 2,420 dived
Dimensions, feet (metres): 307.5 × 27.2 × 18
 (93.7 × 8.3 × 5.5)

Main machinery: Diesel-electric; 3 Fairbanks-Morse diesels, 4,500 hp (3.3 MW); 2 Elliott motors; 5,400 hp (4 MW); 2 shafts

Speed, knots: 18 surfaced; 15 dived
Range, n miles: 8,000 at 12 kt surfaced
Complement: 75 (7 officers)

Torpedoes: 10–21 in (533 mm) (6 fwd, 4 aft) tubes. AEG SUT; active/passive homing to 12 km (6.5 n miles) at 35 kt; 28 km (15 n miles) at 23 kt; warhead 250 kg.
Countermeasures: ECM, WLR 1/3; radar warning.
Radars: Surface search US SS 2; I-band
Sonars: EDO BQR 2B, hull-mounted; passive search and attack; medium frequency.
 Raytheon/EDO BQS 4C; adds active capability to BQR 2B.
 Thomson Sintra DUUG 1B, passive ranging.

Programmes: Originally fleet-type submarines of the US Navy's Tench class, extensively modernised under the Guppy II programme. *Hai Shih* transferred in April 1973 and *Hai Bao* in October the same year.
Structure: After 56 years in service diving depth is very limited.
Operational: Kept in service because of difficulty in buying replacements, but operational status doubtful. Likely to have an alongside training role only. Belong to the 256th Submarine Unit based at Tsuying.



HAI BAO

11/2004, *Ships of the World* / 10/045/4

DESTROYERS

Notes: Acquisition of the Aegis Combat System remains a firm aspiration but, following the decision to procure the Kidd class DDGs as an interim measure, this is unlikely before 2012.

4 KEELUNG (KIDD) CLASS (DDGHM)

Name	No	Builders	Laid down	Launched	Commissioned
KEELUNG (ex-Chi Teh, ex-Scott)	1801 (ex-DD 995)	Inga's Shipbuilding	12 Feb 1979	1 Mar 1980	24 Oct 1981
SUAO (ex-Wu Teh, ex-Callaghan)	1802 (ex-DD 994)	Inga's Shipbuilding	23 Oct 1978	1 Dec 1979	28 Aug 1981
TSOYING (ex-Ming Teh, ex-Kidd)	1803 (ex-DD 993)	Inga's Shipbuilding	26 June 1978	11 Aug 1979	27 June 1981
MAKUNG (ex-Tong-Teh, ex-Chandler)	1805 (ex-DD 996)	Inga's Shipbuilding	7 May 1979	24 May 1980	13 Mar 1982

Displacement, tons: 6,950 light; 9,574 full load
Dimensions, feet (metres): 563.3 × 55 × 20
 (171.7 × 16.8 × 6.2)

Main machinery: 4 GE LM 2500 gas turbines, 86,000 hp (64.16 MW) sustained, 2 shafts

Speed, knots: 33. **Range, n miles:** 6,000 at 20 kt
Complement: 363 (31 officers)

Missiles: SSM. 4 McDonnell Douglas RGM 84L Block 2 Harpoon (1 quad) launchers; active radar homing to 124 km (67 n miles) at 0.9 Mach; warhead 227 kg

SAM: 37 Raytheon Standard SM 2 MR Block IIA, command/inertial guidance; semi-active radar homing to 167 km (90 n miles) at 2.5 Mach. 2 twin Mk 26 launchers

Guns: 2 FMC 5 in (127 mm)/54 Mk 45 Mod 0; 20 rds/min to 23 km (12.6 n miles); weight of shell 32 kg
 2 General Electric/General Dynamics 20 mm Vulcan Phalanx 6-barrelled Mk 15; 3,000 rds/min (4,500 in Block 1).
 4–12.7 mm MGs

Torpedoes: 6–324 mm Mk 32 (2 triple) tubes. Honeywell Mk 46 Mod 5; anti-submarine, active/passive homing to 11 km (5.9 n miles) at 40 kt; warhead 44 kg. Torpedoes fired from inside the hull under the hangar

Countermeasures: Decoys. 4 Loral Hycor SRBOC 6-barrelled fixed Mk 36; IR flares and chaff to 4 km (2.2 n miles) SLQ-25 Nixie; torpedo decoy.

Combat data systems: ACDS Block 1 Level 1 with datalinks

Weapons control: SWG-1A Harpoon LCS. 2 Mk 74 MFCS. Mk 86 Mod 5 GFCS. Mk 116 FCS for ASW. Mk 14 WDS SYS 2(V)2 IADT 4 SYR 3393 for SAM mid-course guidance

Radars: Air search: ITT SPS-48E; 3D, E/F-band Raytheon SPS-49(V)5; C/D-band.

Air/surface search: ISC Cardion SPS-55; I/J-band
Navigation: Raytheon SPS-64; I/J-band.

Fire control: 2 Raytheon SPG-51D; 1 Lockheed SPG-60; 1 Lockheed SPQ 9A

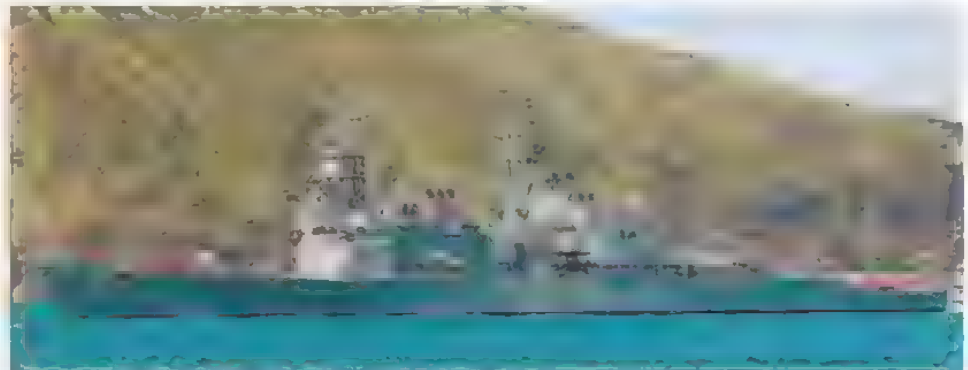
Sonars: General Electric/Hughes SQS-53D; bow-mounted; search and attack, medium frequency
 Gould SQR-19 (TACTAS), passive towed array (may be fitted).

Helicopters: 1 Sikorsky S-70C(M)



KEELUNG

(Scale 1 : 1,500), Ian Sturton / 116/441



KEELUNG

6/2006, *Defence International* / 116/511

Programmes: Originally ordered by the Iranian government in 1974, the contracts were taken over by the US Navy on 25 July 1979. All paid off from USN service in 1998–99. Offered to the Taiwan government, intention to buy confirmed on 2 October 2001.

Modernisation: All received major modernisation from 1988–90. Further package completed prior to transfer. ASROC has been removed.

Structure: Optimised for general warfare, mainmast and radar aerials are in different configuration than Spruance class.

Operational: *Keelung* and *Sua* arrived in Taiwan on 8 December 2005 and were recommissioned on 17 December 2005. *Tsoying* and *Makung* arrived in October 2006. All four ships are to be based initially at Suao while a deepwater jetty at Tsoying is completed.

FRIGATES

Notes: The Kuang Hua 7 programme has superseded the former Kuang Hua 5 programme for the procurement of a new class of frigates/corvettes to replace the Knox class frigates. It is understood that there is a requirement for up to eight new ships of above 2,000 tons with a main armament of Hsiung Feng II missiles. It is not clear whether the ships are to be procured abroad (ex-US Spruance class are a possibility) or built locally.

8 CHENG KUNG CLASS (KWANG HUA 1 PROJECT) (FFGHM)

Name	No	Builders	Laid down	Launched	Commissioned
CHENG KUNG	1101	China SB Corporation, Kaohsiung	7 Jan 1990	5 Oct 1991	7 May 1993
CHENG HO	1103	China SB Corporation, Kaohsiung	21 Dec 1990	15 Oct 1992	28 Mar 1994
CHI KUANG	1105	China SB Corporation, Kaohsiung	4 Oct 1991	27 Sep 1993	4 Mar 1995
YUEH FEI	1106	China SB Corporation, Kaohsiung	5 Sep 1992	26 Aug 1994	7 Feb 1996
TZUJ	1107	China SB Corporation, Kaohsiung	7 Aug 1994	13 July 1995	9 Jan 1997
PAN CHAO	1108	China SB Corporation, Kaohsiung	25 July 1995	4 July 1996	16 Dec 1997
CHANG CHEN	1109	China SB Corporation, Kaohsiung	4 Dec 1995	14 May 1997	1 Dec 1998
TIENTAN	1110	China SB Corporation, Kaohsiung	21 Feb 2001	15 Oct 2002	11 Mar 2004

Displacement, tons: 2,750 light; 4,105 full load
Dimensions, feet (metres): 453 × 45 × 14.8; 24.5 (sonar)
 (138.7 × 13.7 × 4.5, 7.5)
Main machinery: 2 GE LM 2500 gas turbines; 41,000 hp (30.59 MW) sustained, 1 shaft; cp prop
 2 auxiliary retractable props; 650 hp (484 kW)
Speed, knots. 29 Range, n miles: 4,500 at 20 kt
Complement: 234 (15 officers) including 19 aircrew

Missiles: SSM: 8 Hsiung Feng II/III (2 quad); inertial guidance; active radar/IR homing to 80 (200 Hsiung Feng III) km (43.2 (108) n miles) at 0.85 Mach (2 Mach); warhead 190 kg.

SAM: 40 Raytheon Standard SM-1 MR Block VIA; Mk 13 launcher (command guidance; semi-active radar homing to 38 km (20.5 n miles) at 2 Mach.

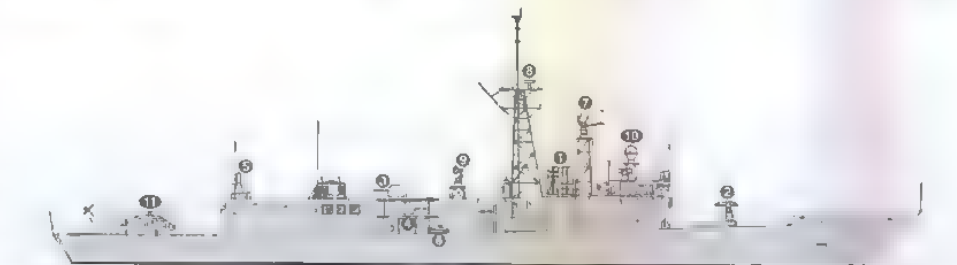
Guns: 1 OTO Melara 76 mm/62 Mk 75 (85 rds/min to 16 km (8.7 n miles); weight of shell 6 kg.
 2 Bofors 40 mm/70 (3--20 mm Type 75 (on hangar roof when fitted)
 1 GE/GD 20 mm/76 Vulcan Phalanx 6-barrelled Mk 15 (3,000 rds/min combined to 15 km.

Torpedoes: 6—324 mm Mk 32 (2 triple) tubes (Honeywell/Alliant Mk 46 Mod 5; anti-submarine; active/passive homing to 11 km (5.9 n miles) at 40 kt; warhead 44 kg.

Countermeasures: Decoys: 4 Kung Fen 8 chaff launchers or locally produced version of RBOC (114 mm). SLQ-25A Nixie; torpedo decoy

ESM/ECM: Chang Feng IV (locally produced version of SLQ-32(V)2 with Sidcock); combined radar warning and jammers.

Combat data systems: Norden SYS-2(V)2 action data automation with UYK 43 computer. Te Chen link (from Chi Kuang onwards and being backfitted)



CHENG KUNG

(Scale 1 : 1,200, Ian Sturton / 0019776)

Weapons control: Loral Mk 92 Mod 6. Mk 13 Mod 4 weapon direction system. Mk 114 ASW 2 Mk 24 optical directors. Mk 309 TFCS.

Radars: Air search: Raytheon SPS-49(V)5 or SPS-49A (1108-9) (C/D-band.

Surface search: ISC Cardion SPS-55 or Raytheon Chang Ba; I/J-band.

Fire control: USN UD 417 STIR (I/J-band
 Unisys Mk 92 Mod 6 (I/J-band.

Sonars: Raytheon SQS-56/DE 1160F, hull-mounted; active search and attack; medium frequency.

SQR-18A(V)2; passive towed array or BAe/Thomson Sintra ATAS active towed array (from Chi Kuang onwards).

Helicopters: 2 Sikorsky S-70C(M) (only 1 embarked).

Programmes: First two ordered 8 May 1989. Named after Chinese generals and warriors. An eighth of class was ordered in late July 1999. Originally this ship was planned to be the first of a Flight II design, which was scrapped.

Modernisation: Hsiung Feng III supersonic missiles have been installed in some ships including Cheng Kung. All eight ships are to be fitted. A mid life upgrade for the class is likely to include the installation of RAM PDMS and the replacement of Standard SM-1 with SM-2. The Mk 86 direction system is also likely to be upgraded to Mod 12.

Structure: Similar to the USS Ingham. RAST helicopter hauldown. The area between the masts had to be strengthened to take the Hsiung Feng II missiles. Prairie Masker hull acoustic suppression system fitted.

Operational: Form the 146th Squadron based at Makung (Pescadore).



CHENG HO

10/2001, Chris Sattler / 0534104



TIEN TAN

4/2007, Chris Sattler / 110238

6 KANG DING (LA FAYETTE) CLASS (KWANG HUA 2 PROJECT) (FFGHM)

Name	No	Builders	Laid down	Launched	Commissioned
KANG DING	1202	Lorient Dockyard/Kaohsiung Shipyard	26 Aug 1993	12 Mar 1994	24 May 1996
SI NING	1203	Lorient Dockyard/Kaohsiung Shipyard	27 Apr 1994	5 Nov 1994	15 Sep 1996
KUN MING	1205	Lorient Dockyard/Kaohsiung Shipyard	7 Nov 1994	13 May 1995	26 Feb 1997
DI HUA	1206	Lorient Dockyard/Kaohsiung Shipyard	1 July 1995	27 Nov 1995	14 Aug 1997
WU CHANG	1207	Lorient Dockyard/Kaohsiung Shipyard	1 July 1995	27 Nov 1995	16 Dec 1997
CHEN TE	1208	Lorient Dockyard/Kaohsiung Shipyard	27 Dec 1995	2 Aug 1996	16 Jan 1998

Displacement, tons: 3,800 full load
Dimensions, feet (metres): 407.5 x 50.5 x 18 (screws)
(124.2 x 15.4 x 5.6)

Main machinery: CODAD: 4 SEMT-Pielstick 12 PA6 V 280
STC diesels; 23,228 hp(m) (17.08 MW); 2 shafts; LIPS
cp props

Speed, knots: 25

Range, n miles: 7,000 at 15 kt

Complement: 134 (16 officers) plus 25 spare

Missiles: SSM: 8 Hsiung Feng II (2 quad) ●; inertial
guidance; active radar/IR homing to 80 km (43.2 n miles)
at 0.85 Mach; warhead 190 kg.

SAM: 1 Sea Chaparral quad launcher ●; IR homing to 3 km
(1.6 n miles) supersonic; warhead 5 kg

Guns: 1 OTO Melara 76 mm/62 Mk 75 ●; 85 rds/min to
16 km (8.7 n miles); weight of shell 6 kg.

1 Hughes 20 mm/76 Vulcan Phalanx Mk 15 Mod 2 ●.

2 Bofors 40 mm/70 ● 2 CS 20 mm Type 75

Torpedoes: 6—324 mm Mk 32 (2 triple) tubes ●; Alliant
Mk 46 Mod 5, active/passive homing to 11 km (5.9 n miles)
at 40 kt; warhead 44 kg.

Countermeasures: Decoys: 2 CSEE Daga e chaff
launchers ●

ESM/ECM: Thomson-CSF DR 3000S; intercept and jammer.
Chang Feng IV (1206); intercept and jammer

Combat data systems: Thomson-CSF TACTICOS Link W
(Ta Chen)

Weapons control: CSEE Najir Mk 2 optronic director ●

KANG DING

Radars: Air/surface search: Thomson-CSF DRBV-26D

Jupiter II (with LW08 aerial) ●; D-band.

Surface search Thomson-CSF Triton G ●; G-band

Fire control: 2 Thomson-CSF Castor IIC ●; I/J-band.

Navigation/hero control: 2 Racal Decca 20V90; I-band.

Sonars: BAe/Thomson Sintra ATAS (V12); active towed

array

Thomson Sintra Spherion B; bow-mounted; active

search; medium frequency.

Helicopters: 1 Sikorsky S-70C(M)1 ● Thunderhawk.

Programmes: Sale of up to 16 of the class authorised by

the French government in August 1991. Contract for six

signed with Thomson-CSF in early 1992, manufactured

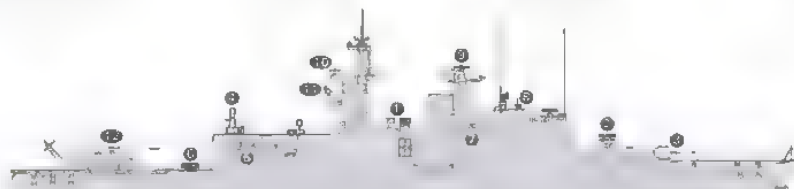
in France with some weapon assembly by China

SB Corporation at Kaohsiung in Taiwan. First one to
Taiwan in March 1996 and the last in January 1998.
Names are those of Chinese cities. Second batch of 10
to be built by China SB Corporation was planned but this
now seems unlikely.

Modemisation: There are plans to move Phalanx to the
bridge roof and fit two 10-round RAM launchers on the
hangar.

Structure: There are considerable differences with the
French 'La Fayette' design in both superstructure and
weapon systems. A comprehensive ASW fit has been
added as well as additional gun armament. There is also
no stern hatch for launching RIBs. Some of the weapons
were fitted after arrival in Taiwan. DCN Samahé helicopter
landing gear installed.

Operational: Form 124 Squadron based at Tsoying.



(Scale 1 : 1,200), Ian Sturton / 0121405



DI HUA

4/2006, Chris Settler / 1170237



KANG DING

4/2007, Chris Settler / 1170236

8 KNOX CLASS (FFGH)

Name	No	Builders	Laid down	Launched	Commissioned	Recommissioned
CHINYANG (ex-Robert E Peary)	932 (ex-FF 1073)	Lockheed Shipbuilding	20 Dec 1970	23 June 1971	23 Sep 1972	6 Oct 1993
FONG YANG (ex-Brewton)	933 (ex-FF 1086)	Avondale Shipyards	2 Oct 1970	24 July 1971	8 July 1972	6 Oct 1993
FENG YANG (ex-Kirk)	934 (ex-FF 1087)	Avondale Shipyards	4 Dec 1970	25 Sep 1971	9 Sep 1972	6 Oct 1993
LAN YANG (ex-Joseph Hewes)	935 (ex-FF 1078)	Avondale Shipyards	15 May 1969	7 Mar 1970	22 Apr 1971	4 Aug 1995
HAE YANG (ex-Cook)	936 (ex-FF 1083)	Avondale Shipyards	20 Mar 1970	23 Jan 1971	18 Dec 1971	4 Aug 1995
HWAY YANG (ex-Barbey)	937 (ex-FF 1088)	Avondale Shipyards	5 Feb 1971	5 Feb 1971	11 Nov 1972	4 Aug 1995
NING YANG (ex-Aylwin)	938 (ex-FF 1081)	Avondale Shipyards	13 Nov 1969	29 Aug 1970	18 Sep 1971	18 Oct 1999
YI YANG (ex-Valdez)	939 (ex-FF 1096)	Avondale Shipyards	30 June 1972	24 Mar 1973	27 July 1974	18 Oct 1999

Displacement, tons: 3,011 standard; 3,877 (932, 935), 4,260 (933, 934) full load

Dimensions, feet (metres): 439.6 × 46.8 × 15; 24.8 (sonar) (134 × 14.3 × 4.6; 7.8)

Main machinery: 2 Combustion Engineering/Babcock & Wilcox boilers; 1,200 psi (84.4 kg/cm²); 950°F (510°C); 1 turbine; 35,000 hp (26 MW); 1 shaft

Speed, knots: 27 **Range, n miles:** 4,000 at 22 kt on 1 boiler

Complement: 288 (17 officers) including aircrew

Missiles: SSM. 8 McDonnell Douglas Harpoon ●; active radar homing to 130 km (70 n miles) at 0.9 Mach, warhead 227 kg

SAM: 10 General Dynamics SM-1-MR (2 triple, 2 twin) ●; command guidance; semi-active radar homing to 46 km (25 n miles) at 2 Mach (fitted in all but 932 and 937).

A/S: Honeywell ASROC Mk 16 octuple launcher with reload system (has 2 cells modified to fire Harpoon) ●; inertial guidance from 1.6-10 km (1-5.4 n miles); payload Mk 46 Mod 5 Nearip.

Guns: 1 FMC 5 in (127 mm)/54 Mk 42 Mod 9 ●; 20-40 rds/min to 24 km (13 n miles) anti-surface; 14 km (7.7 n miles) anti-aircraft; weight of shell 32 kg to be replaced by 1 OTO Melara 3 in (76 mm)/62 Mk 75, 85 rds/min to 16 km (8.7 n miles); weight of shell 6 kg.

1 General Electric/General Dynamics 20 mm/76 6-barrelled Mk 15 Vulcan Phalanx ●; 3,000 rds/min combined to 15 km.

4 Type 75 20 mm

Countermeasures: Decoys: 2 Loral Hycor SRBOC 6-barrelled fixed Mk 36 ●; IR flares and chaff to 4 km (2.2 n miles).

7 Mk 6 Fanfare/SQ-25 Nixie; torpedo decoy. Prairie Masker hull and blade rate noise suppression.

ESM/ECM: SLQ-32(V)2 ●; radar warning. Sidekick modification adds jammer and deception system.

Combat data systems: Link 14 receive only. Link W may be fitted. FFISTS (Frigate Integrated Shipboard Tactical System). RADDSS (Radar Displays and Distribution System).

Weapons control: SWG-1A Harpoon LCS Mk 88 GFCS. Mk 114 ASW FCS. Mk 1 target designation system. SRQ-4 for LAMPS.

Radars: Air search: Lockheed SPS-40B (fitted in 932, 937) ●; B-band or Signal DA 08; E/F-band.

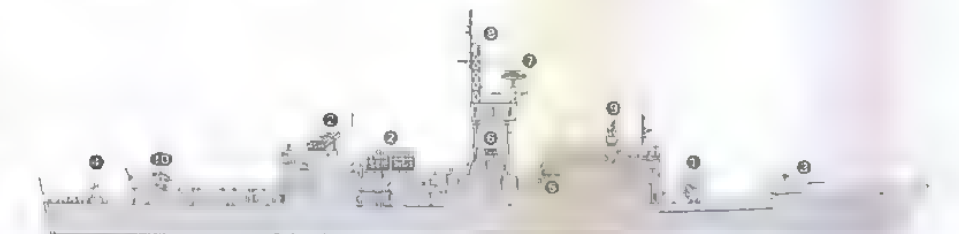
Surface search: Raytheon SPS-10 or Norden SPS-67 ●; G-band. Navigation: Marconi LN66; I-band.

Fire control: Western Electric SPG-53A/D/F (fitted in 932, 937) ●; or Signal STIR; VJ-band

Tacan: SRN 15. IFF: UPX-12.

Sonars: EDO/General Electric SQS-26CX; bow-mounted; active search and attack; medium frequency.

EDO SQR-18A(V)1; passive towed array.



FONG YANG

(Scale 1 : 1,200, Ian Sturton / 1293480)



FONG YANG

12/2005, Ships of the World / 1151164

Helicopters: 1 MD 500 ●

Programmes: Fong Yang leased from the US on 23 July 1992, Chin Yang 7 August 1992 and Fang Yang 6 August 1993. Hae Yang leased 31 May 1994; Hwai Yang 21 June 1994 and Lan Yang 30 June 1994. The second batch of three were overhauled and upgraded by Long Beach Shipyard, California. Ning Yang and Yi Yang transferred by sale on 29 April 1998, and refitted at Denton Shipyard, South Carolina. The transfer of a third (ex-Pharris 1094) was declined as were further offers of ex-Whipple (1062) and ex-Downes (1070) for use as spares.

Modernisation: A programme to equip all eight ships with a limited air-defence capability has been initiated. SPS-40 radar is being replaced by DA-08; SPG 53A is being

replaced by STIR; 10 standard SM-1 MR (ex-Gearing class) are being installed on top of the hangar. The 127 mm gun is being replaced by the OTO Melara 76 mm/62

Structure: ASROC-torpedo reloading capability (note slanting face of bridge structure immediately behind ASROC). Four Mk 32 torpedo tubes are fixed in the midships structure, two to a side, angled out at 45°. The arrangement provides improved loading capability over exposed triple Mk 32 torpedo tubes. A 4,000 lb lightweight anchor is fitted on the port side and an 8,000 lb anchor fits into the after section of the sonar.

Operational: Seasprite helicopters were planned to be embarked but this now seems unlikely. All of the class are assigned to 168 Patrol Squadron at Suao. Lan Yang is the Flagship

SHIPBORNE AIRCRAFT

Notes: Negotiations to acquire SH-2F Seasprite helicopters for the Knox class, conducted for several years, have not been satisfactorily concluded.

Numbers/Type: 21 Sikorsky S-70C(M)1 Thunderhawks

Operational speed: 145 kt (269 km/h)

Service ceiling: 19,000 ft (5,790 m)

Range: 324 n miles (600 km)

Role/Weapon systems: First delivered in 1991. This is a variant of the SH-60B and became seaborne with the first Cheng Kung and Kang Ding class frigates. 701 and 702 Squadrons. Two modified for EW and Sigint role. Another 14 S-70B/C SAR and assault aircraft belong to the Air Force. Sensors: APS 128 search radar; Litton ALR 606(V)2 ESM; ARR 84 sonobuoy receiver with Litton ASN 150 data link; Allied AQS 18(V)3 dipping sonar; ASQ 504 MAD. Ta Chen data link to be fitted. Weapons: ASW; two Hughes Mk 46 Mod 5 torpedoes or two Mk 64 depth bombs. ASV; could carry ASM.



THUNDERHAWK

1/2000, C Chung / 0106599

Numbers/Type: 9 Hughes MD 500/ASW

Operational speed: 110 kt (204 km/h)

Service ceiling: 16,000 ft (4,880 m)

Range: 203 n miles (376 km)

Role/Weapon systems: Short-range ASW helicopter with limited surface search capability. 501 ASW Squadron. Sensors: Search radar, Texas Instruments ASQ 81(V)2 MAD. Weapons: ASW; one Mk 46 Mod 5 torpedo or two depth bombs. ASV; could carry machine gun pods.



MD 500

1/1995, L J Lamb / 0080778

LAND-BASED MARITIME AIRCRAFT

Notes: (1) Four Grumman E-2T Hawkeye AEW aircraft were acquired by the Air Force in February 1995. These are to be upgraded to the Hawkeye 2000 configuration.

(2) Plans, under the 2001 US arms package, to acquire 12 P-3C maritime patrol aircraft were confirmed on 16 February 2008. Eight of the aircraft are to be manufactured in Taiwan. To be delivered from 2011.

(3) Plans to acquire 12 MH 53E Sea Dragon minehunting helicopters were also agreed in the 2001 agreement but continue to be delayed.

Numbers/Type: 3/21 Grumman S-2E/S-2T (Turbo) Trackers.

Operational speed: 130 kt (241 km/h).

Service ceiling: 25,000 ft (7,620 m).

Range: 1,350 n miles (2,500 km).

Role/Weapon systems: Patrol and ASW tasks transferred to the Navy in July 1998; 21 aircraft updated with turboprop engines and new sensors. Based at Pintung. To be replaced by P-3C when they enter service. Sensors: APS 504 search radar, ESM, MAD, AAS 40 FLIR, SSQ-41B, SSQ-47B sonobuoys; AQS 902F sonobuoy processor; ASN 150 datalink. Weapons: ASW; four Mk 44 torpedoes, Mk 54 depth charges or Mk 64 depth bombs or mines ASV; Hsiung Feng II ASM; six 127 mm rockets.



TRACKER

6/2002, Adolfo Ortigueira Gil / 0569245

PATROL FORCES

Notes: All coastal patrol craft were transferred to the Maritime Police on 8 December 1992. The Maritime Police became the Coast Guard 1 February 2000.

12 + (12) JIN CHIANG CLASS (LARGE PATROL CRAFT) (PCG)

Name	No	Builders	Launched	Commissioned
JIN CHIANG	603	Lien-Ho, Kaohsiung	1 May 1994	1 Dec 1994
TAN CHIANG	605	China SB, Kaohsiung	18 June 1998	7 Sep 1999
HSIN CHIANG	606	China SB, Kaohsiung	14 Aug 1998	7 Sep 1999
FENG CHIANG	607	China SB, Kaohsiung	22 Oct 1998	29 Oct 1999
TSENG CHIANG	608	China SB, Kaohsiung	16 Nov 1998	29 Oct 1999
KAO CHIANG	609	China SB, Kaohsiung	15 Dec 1998	29 Oct 1999
JING CHIANG	610	China SB, Kaohsiung	13 May 1999	15 Feb 2000
HSIAN CHIANG	611	China SB, Kaohsiung	16 July 1999	15 Feb 2000
TSI CHIANG	612	China SB, Kaohsiung	22 Dec 1999	15 Feb 2000
PO CHIANG	614	China SB, Kaohsiung	22 Dec 1999	21 July 2000
CHAN CHIANG	615	China SB, Kaohsiung	21 Jan 2000	21 July 2000
CHU CHIANG	617	China SB, Kaohsiung	25 Feb 2000	21 July 2000

Displacement, tons: 680 full load

Dimensions, feet (metres): 201.4 x 31.2 x 9.5 (61.4 x 9.5 x 2.9)

Main machinery: 2 MTU 20V 1163 TB93 diesels; 20,128 hp(m) (14.79 MW); 2 shafts

Speed, knots: 25

Range, n miles: 4,150 at 15 kt

Complement: 50 (7 officers)

Missiles: SSM: 4 Hsiung Feng I; radar or optical guidance to 36 km (19.4 n miles) at 0.7 Mach; warhead 75 kg or 4 Hsiung Feng II (606, 607); inertial guidance; active radar/IR homing to 80 km (43.2 n miles) at 0.85 Mach; warhead 190 kg.

4 Hsiung Feng II (in some); inertial guidance; active radar/IR homing to 80 km (43.2 n miles) at 0.85 Mach; warhead 190 kg

Guns: 1 Bofors 40 mm/70. 1 CS 20 mm Type 75. 2—12.7 mm MGs.

Depth charges: 2 racks

Mines: 2 rails for Mk 6.

Weapons control: Honeywell H 930 Mod 2 MFCS. Contraves WCS

Rafael Sea Eye FLIR; range out to 3 km.

Radars: Air/surface search: Marconi LN66, I-band.

Fire control: Hughes HR-76C5; I/J-band.

Navigation: Racal Decca Bridgemaster; I-band

Sonars: Simrad, search and attack; high frequency.

Programmes: Kwang Hua Project 3 design by United Ship Design Centre. First one laid down 25 June 1993. Eleven more ordered 26 June 1997. A further 12 were to have been delivered by 2010 but there have been no reports of progress.

Modernisation: Hsin Chiang and Feng Chiang have been upgraded with an Oto 76 mm gun and four Hsiung Feng II missiles. A mast to carry the datalink radome has also been added. All ships may be similarly modified in due course and it is likely that Hsiung Feng II missiles will be replaced with Hsiung Feng III.



PO CHIANG

12/2005, Ships of the World / 1151163



HSIN CHIANG

6/2006 / 1167508

2 LUNG CHIANG CLASS (FAST ATTACK CRAFT—MISSILE) (PGGF)

Name	No	Builders	Commissioned
LUNG CHIANG	601 (ex-PGG 581)	Tacoma Boatbuilding, WA	15 May 1978
SUI CHIANG	602 (ex-PGG 582)	China SB Corporation, Kaohsiung	31 Dec 1981

Displacement, tons: 270 full load

Dimensions, feet (metres): 164.5 x 23.1 x 9.5 (50.2 x 7.3 x 2.9)

Main machinery: CODAG; 3 Avco Lycoming TF-40A gas turbines; 12,000 hp (8.95 MW)

sustained; 3 Detroit 12V 149Ti diesels; 2,736 hp (2.04 MW) sustained; 3 shafts; cp props

Speed, knots: 20 kt diesels, 38 kt gas

Range, n miles: 3,100 at 12 kt on 1 diesel, 800 at 36 kt

Complement: 38 (5 officers)

Missiles: SSM: 4 Hsiung Feng I; radar or optical guidance to 36 km (19.4 n miles) at 0.7 Mach; warhead 75 kg.

Guns: 1 Oto Melara 3 in (76 mm)/62; 60 rds/min to 16 km (8.7 n miles); weight of shell 6 kg.

1 Bofors 40 mm/70. 2—12.7 mm MGs.

Countermessures: Decoys: 4 Israeli AV2 (601) or SMOC-4 (602) chaff launchers.

ESM: WD-2A; intercept.

Combat data systems: IPN 10 action data automation.

Weapons control: NA 10 Mod 0 GFCS. Honeywell H 930 Mod 2 MFCS (602)

Radars: Surface/air search: Selenia RAN 11 L/X; D/I-band.

Fire control: RCA HR 76; I/J-band (for SSM) (602)

Selenia RAN 11L/X; I/J-band for SSM (601).

Navigation: SPS-58(A); I-band

Programmes: Similar to the US Patrol Ship Multi-Mission Mk 5 (PSMM Mk 5). Second of class was built to an improved design. A much larger number of this class was intended, all to be armed with Harpoon. However at that time the US ban on export of Harpoon to Taiwan coupled with the high cost and doubts about seaworthiness caused the cancellation of this programme.

Structure: Fin stabilisers were fitted to help correct the poor sea-keeping qualities of the design. Both have had engine room fires caused by overheating in GT gearboxes.

Operational: Lung Chiang may be non-operational.



SUI CHIANG

4/1997, Ships of the World / 0019731

47 HAI OU CLASS (FAST ATTACK CRAFT—MISSILE) (PTG)

FABG 7-12	FABG 23-30	FABG 41-46	FABG 59
FABG 14-21	FABG 32-39	FABG 47-57	

Displacement, tons: 47 full load

Dimensions, feet (metres): 70.8 x 18 x 3.3 (21.6 x 5.5 x 1)

Main machinery: 2 MTU 12V 331TC82 diesels, 2,605 hp(m) (1.92 MW) sustained; 2 shafts

Speed, knots: 30

Range, n miles: 700 at 32 kt

Complement: 10 (2 officers)

Missiles: SSM: 2 Hsiung Feng I, radar or optical guidance to 36 km (19.4 n miles) at 0.7 Mach; warhead 75 kg

Guns: 1 CS 20 mm Type 75. 2—12.7 mm MGs.

Countermessures: Decoys: 4 Israeli AV2 chaff launchers.

ESM: WD-2A; intercept.

Weapons control: Kollmorgen Mk 35 optical director.

Radars: Surface search: Marconi LN66, I-band

Fire control: RCA R76 C5; I-band.

Programmes: This design was developed by Sun Yat Sen Scientific Research Institute from the basic Israeli Dvora plans. Built by China SB Corporation (Tsoying SY), Kaohsiung except for the first pair (FABG 5-6) which were the original Dvora class hulls and were commissioned on 31 December 1977.

Structure: Aluminium alloy hulls. The first series had a solid mast and the missiles were nearer the stern. Second series changed to a lattice mast and moved the missiles further forward allowing room for two 12.7 mm MGs right aft. One 20 mm has been added on the stern.

Operational: The prototype reached 45 kt on trials but top speeds are now reported as being much reduced. These craft often carry shoulder-launched SAMs. One task is to provide exercise high-speed targets in shallow waters. From 1997 organised in five divisions based at Makung, Tamsui, Tsoying, Suao and Keelung. Not all are operational and the class is likely to be paid off as the Kwang Hua 6 class enter service.

Sales: Two similar craft to Paraguay in 1996.



FABG 50

12/2005, Ships of the World / 1151167

1 + 2 (27) KWANG HUA 6 CLASS (PTG)

FACG 60

Displacement, tons: 180 standard
Dimensions, feet (metres): 112.2 x 24.9 x 6.2 (34.2 x 7.6 x 1.9)
Main machinery: 3 MTU 16V 4000 diesels; 9,600 hp (7.2 MW); 3 shafts
Speed, knots: 33 **Range, n miles:** 1,150 at 22 kt
Complement: 14
Missiles: SSM: 4 Hsiung Feng II; inertial guidance; active radar/IR homing to 80 km (43.2 n miles) at 0.85 Mach; warhead 190 kg
Guns: 2 CS 20 mm Type 75
Countermeasures: Decoys: Chaff launchers. ESM.
Weapons control: Optronic director.
Radars: Surface search. Fire control.

Comment: Funds allocated for the budget period July 1998 to June 2003 to build these craft in Taiwan to replace the Hai Ou class. First of class laid down in early 2001 and launched on 26 September 2002. Commissioned in October 2003 but subsequently damaged by typhoon in September 2008. Construction of remaining craft was delayed into 2007 when work on two boats was reportedly initiated.



FACG 60 12/2005, Ships of the World / 1151161

8 NING HAI CLASS (LARGE PATROL CRAFT) (PCF)

NING HAI PCL 1 AN HAI PCL 2 PCL 3 PCL 5-9

Displacement, tons: 143 full load
Dimensions, feet (metres): 105 x 29.5 x 5.9 (32 x 9 x 1.8)
Main machinery: 3 MTU 12V 396TB93 diesels; 4,890 hp (3.6 MW) sustained; 3 shafts
Speed, knots: 40
Complement: 18 (2 officers)
Guns: 1 Bofors 40 mm/60. 1 CS 20 mm Type 75.
Depth charges: 2 racks.
Radars: Surface search: Decca; I-band
Sonars: Hull-mounted; active search and attack; high frequency.

Comment: Built to Vosper QAF design by China SB Corporation, Kaohsiung in 1987-90. Previously reported numbers had been exaggerated. They are used mainly for harbour defence against midget submarines and frogmen and also for Fishery protection tasks.



PCL 5 6/2002, Ships of the World / 0569243

AMPHIBIOUS FORCES

1 CABILDO CLASS (LSDM)

Name	No	Builders	Commissioned
CHUNG CHENG (ex-Cornstock)	191 (ex-LSD 19)	Newport News, Virginia	2 July 1945

Displacement, tons: 4,790 standard; 9,375 full load
Dimensions, feet (metres): 475 x 76.2 x 18 (144.8 x 23.2 x 5.5)
Main machinery: 2 boilers; 435 psi (30.6 kg/cm²); 740°F (393°C); 2 turbines; 7,000 hp (5.22 MW); 2 shafts
Speed, knots: 15.4 **Range, n miles:** 8,000 at 15 kt
Complement: 316
Military lift: 3 LCUs or 18 LCMs or 32 LVTs in docking well
Missiles: SAM: 1 Sea Chaparral quadruple launcher.
Guns: 12 Bofors 40 mm/56 (2 quad, 2 twin).
Weapons control: US Mk 26 Mod 4.
Radars: Surface search: Raytheon SPS-5; G/H-band.
Navigation: Marconi LN66; I-band.

Comment: Launched 28 April 1945 and transferred to Taiwan on 1 October 1985 having been bought from a ship breaker. SAM system fitted in 1992. Collision with merchant ship on 28 June 2001 resulted in five months repair work. Second of class scrapped in mid-1999.



CHUNG CHENG 6/2000, Ships of the World / 1190409

1 ANCHORAGE CLASS (LSDH)

Name	No	Builders	Commissioned
SHIU HAI (ex-Pensacola)	LSD 193 (ex-LSD 38)	General Dynamics, Quincy	27 Mar 1971

Displacement, tons: 8,600 light; 13,700 full load
Dimensions, feet (metres): 553.3 x 84 x 20 (168.6 x 25.6 x 6)
Main machinery: 2 Foster-Wheeler boilers; 600 psi (42.3 kg/cm²); 870°F (467°C); 2 De Laval turbines; 24,000 hp (18 MW); 2 shafts
Speed, knots: 22
Range, n miles: 14,800 at 12 kt
Complement: 374 (24 officers)
Military lift: 366 troops (18 officers); 2 LCU or 18 LCM 6 or 9 LCM 8 or 50 LVT; 1 LCM 6 on deck; 2 LCPL and 1 LCVP on davits. Aviation fuel, 90 tons
Guns: 2 General Electric/General Dynamics 20 mm/76 6-barrelled Vulcan Phalanx Mk 15; 3,000 rds/min combined to 1.5 km. 2-25 mm Mk 38 8-12.7 mm MGs
Countermeasures: Decoys: 4 Loral Hyco SRBOC 6-barrelled Mk 36; IR flares and chaff to 4 km (2.2 n miles).
ESM: SLQ-32(V)1; intercept
Radars: Air search: Lockheed SPS-40B, B-band.
 Surface search: Raytheon SPS-10F; G-band.
Navigation: Marconi LN66, I-band.
Helicopters: Platform only

Comment: First one acquired from US Navy 30 September 1999 and arrived in Taiwan on 2 June 2000. Transfer of ex-Anchorage (LSD 36) did not take place as expected in 2004 although procurement of a further amphibious ship remains a requirement. Has a docking well 131.1 x 15.2 m and two 50 ton cranes. Based at Tsoying.



SHIU HAI 6/2000, Ships of the World / 1167449

2 NEWPORT CLASS (LSTH)

Name	No	Builders	Commissioned
CHUNG HO (ex-Manitowic)	232 (ex-LST 1180)	Philadelphia Shipyard	24 Jan 1970
CHUNG PING (ex-Sumter)	233 (ex-LST 1181)	Philadelphia Shipyard	20 June 1970

Displacement, tons: 4,975 light; 8,450 full load
Dimensions, feet (metres): 522.3 x 69.5 x 17.5 (159.2 x 21.2 x 5.3)
Main machinery: 6 ALCO 18-251 diesels; 16,500 hp (12.3 MW) sustained; 2 shafts; cp props; bow thruster
Speed, knots: 20
Range, n miles: 14,250 at 14 kt
Complement: 257 (13 officers)
Military lift: 400 troops; 500 tons vehicles; 3 LCVPs and 1 LCPL on davits
Guns: 1 General Electric/General Dynamics 20 mm Vulcan Phalanx Mk 15. 4-40 mm/60 (2 twin)
Countermeasures: ESM: WD-2A (233); intercept
ESM/ECM: Chang Feng III (232); intercept and jammer
Radars: Surface search: Raytheon SPS-67; G-band.
Navigation: Marconi LN66, I-band.
Helicopters: Platform only.

Comment: First pair transferred from USA by lease confirmed for both ships on 1 July 1995. Refitted at Newport News and recommissioned 8 May 1997, sailing for Taiwan after a short operational work-up. Purchased outright on 29 September 2000. Transfer of further ships is unlikely. These ships unload by a 112 ft ramp over their bow. The ramp is supported by twin derrick arms. A ramp just forward of the superstructure connects the lower tank deck with the main deck and a vehicle passage through the superstructure provides access to the parking area amidships. A stern gate to the tank deck permits unloading of amphibious tractors into the water, or unloading of other vehicles into an LCU or on to a pier. Vehicle stowage covers 19,000 sq ft. Length over derrick arms is 562 ft (171.3 m); full load draught is 11.5 ft forward and 17.5 ft aft. Bow thruster fitted to hold position offshore while unloading amphibious tractors.



CHUNG HO 6/2000, Sattler/Steale / 0106802

11 LST 1-510 AND 512-1152 CLASSES (LST)

CHUNG HAI (ex-LST 755) 201 (ex-697)
 CHUNG CHIEN (ex-LST 716) 205 (ex-679)
 CHUNG SHUN (ex-LST 732) 208 (ex-624)
 CHUNG KUANG (ex-LST 503) 216 (ex-646)
 CHUNG SUO (ex-Bradley County LST 400) 217 (ex-667)
 CHUNG CHI (ex-LST 279) 218
 CHUNG CHUAN (ex-LST 1030) 221 (ex-651)

CHUNG CHIH (ex-Sagadahoc County LST 1091) 226 (ex-655)
 CHUNG MING (ex-Sweetwater County LST 1152) 227 (ex-681)
 CHUNG PANG (ex-LST 578) 230 (ex-629)
 CHUNG YEH (ex-Sublette County LST 1144) 231 (ex-699)

Displacement, tons: 1,653 standard; 4,080 (3,640, 1-510 class) full load
Dimensions, feet (metres): 328 × 50 × 14 (100 × 15.2 × 4.3)
Main machinery: 2 GM 12-567A diesels; 1,800 hp (1.34 MW); 2 shafts
Speed, knots: 11.6. **Range, n miles:** 15,000 at 10 kt
Complement: Varies-100-125 in most ships
Guns: Varies-up to 10 Bofors 40 mm/56 (2 twin, 6 single) with some modernised ships rearmed with 2 USN 3 in (76 mm)/50 and 6-40 mm (3 twin) Several Oerlikon 20 mm (twin or single).
Radars: Navigation: US SO 1, 2 or 8, 1-band.

Comment: Constructed between 1943 and 1945. These ships have been rebuilt in Taiwan. Six transferred from US in 1946; two in 1947; one in 1948; eight in 1958, one in 1959, two in 1960, and one in 1961. Some have davits forward and aft. Pennant numbers have reverted to those used in the 1960s. One deleted in 1990, six more in 1993, one more in 1995 after going aground, and two more in 1997. The midships dock is occasionally used as a helicopter platform. These last 11 may be retained due to the cancellation of the programme for more locally built AKs.



CHUNG SUO 6/2000, DTM / D126196

1 LST 512-1152 CLASS (FLAGSHIP) (AGF)

Name	No	Builders	Commissioned
KAO HSIUNG (ex-Chung Hai, ex-Dukes County LST 735)	LCC 1 (ex-219, ex-663)	Dravo Corporation, Neville Island, Penn	26 Apr 1944

Displacement, tons: 1,653 standard; 3,675 full load
Dimensions, feet (metres): 328 × 50 × 14 (100 × 15.2 × 4.3)
Main machinery: 2 GM 12-567A diesels; 1,800 hp (1.34 MW); 2 shafts
Speed, knots: 11.6. **Range, n miles:** 11,200 at 10 kt
Complement: 195
Guns: 8 Bofors 40 mm/56 (3 twin, 2 single)
Radars: Air search: Raytheon SPS 58, D-band.
 Surface search: Raytheon SPS-10, G-band

Comment: Launched on 11 March 1944. Transferred from US in May 1957 for service as an LST. Converted to a flagship for amphibious operations and renamed and redesignated (AGC) in 1964. Purchased November 1974. Note lattice mast above bridge structure, modified bridge levels, and antenna mountings on main deck. Redesignated as Command and Control Ship LCC 1.



KAO HSIUNG 6/1999, U080783

170 LCM 6 CLASS (LCM)

Displacement, tons: 57 full load
Dimensions, feet (metres): 56.4 × 13.8 × 3.9 (17.2 × 4.2 × 1.2)
Main machinery: 2 diesels; 450 hp (336 kW); 2 shafts
Speed, knots: 9
Military lift: 34 tons
Guns: 1-12.7 mm MG

Comment: Some built in the US, some in Taiwan. 20 were exchanged for torpedoes with Indonesia. Some 55 have been deleted in the last four years. Form part of 151 Squadron.



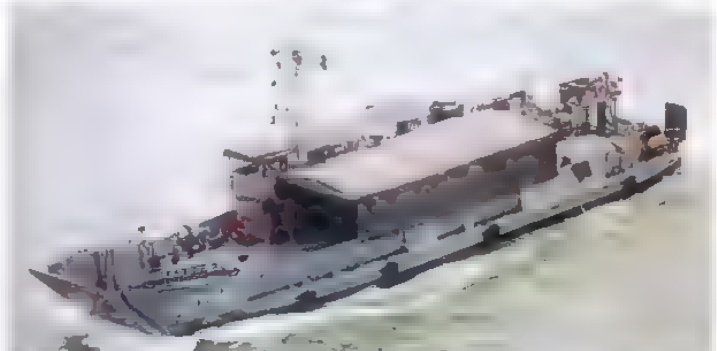
LCM 6 7/2000, C Chung / 0106603

10 LCU 501 CLASS (LCU)

HO CHI (ex-LCU 1212) 401
 HO HUEI (ex-LCU 1218) 402
 HO YAO (ex-LCU 1244) 403
 HO CHAO (ex-LCU 1429) 408
 HO SHUN (ex-LCU 1225) 461
 HO CHUNG (ex-LCU 849) 484
 HO CHUN (ex-LCU 892) 494
 HO YUNG (ex-LCU 1277) 495
 HO CHIE (ex-LCU 700) SB 1
 HOTEN (ex-LCU 1367) SB 2

Displacement, tons: 158 light, 309 full load
Dimensions, feet (metres): 119 × 32.7 × 5 (36.3 × 10 × 1.5)
Main machinery: 3 GM 6-71 diesels; 522 hp (390 kW) sustained; 3 shafts
Speed, knots: 10
Complement: 10-25
Guns: 2 Oerlikon 20 mm. Some also may have 2-12.7 mm MGs.

Comment: Built in US in the 1940s and transferred in 1959. SB 1 and SB 2 are used as auxiliaries. Ho Feng 405 converted for ferry duties in 1998 and serves Matzu island.



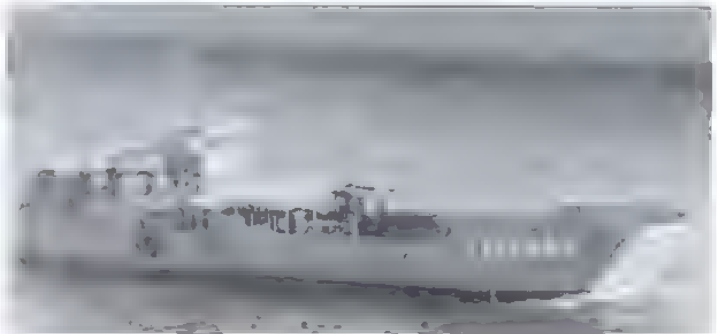
HO SHUN 6/2000, DTM 0569238

6 LCU 1466 CLASS (LCU)

HO SHAN (ex-LCU 1596) 488
 HO CHUAN (ex-LCU 1597) 489
 HO SENG (ex-LCU 1598) 490
 HO MENG (ex-LCU 1599) 491
 HO MOU (ex-LCU 1600) 492
 HO SHOU (ex-LCU 1601) 493

Displacement, tons: 180 light; 360 full load
Dimensions, feet (metres): 119 × 34 × 6 (36.3 × 10.4 × 1.8)
Main machinery: 3 Gray Marine 64 YTL diesels; 675 hp (504 kW); 3 shafts
Speed, knots: 10
Range, n miles: 800 at 11 kt
Complement: 15-25
Military lift: 167 tons or 300 troops
Guns: 3 Oerlikon 20 mm. Some may also have 2-12.7 mm MGs.

Comment: Built by Ishikawajima Heavy Industries Co, Tokyo, Japan, for transfer to Taiwan; completed in March 1955. All originally numbered in 200 series; subsequently changed to 400 series.



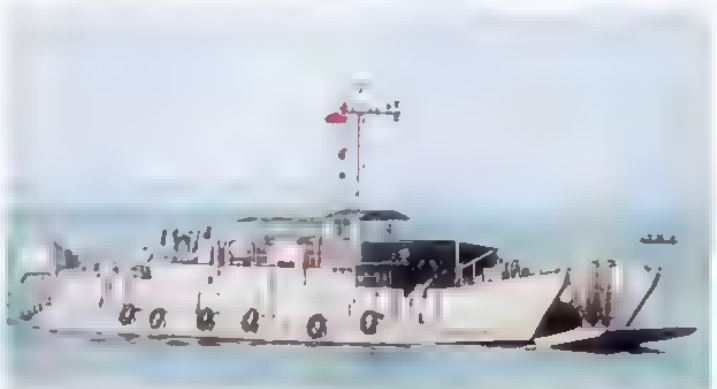
HO CHUAN 1991 / 0506105

2 TAIWAN TYPE LCU (LCU)

HO FONG LCU 497 HO HU LCU 498

Displacement, tons: 190 light, 439 full load
Dimensions, feet (metres): 135.5 × 29.9 × 6.9 (41.3 × 9.1 × 2.1)
Main machinery: 4 Detroit diesels; 1,200 hp (895 kW); 2 Kort nozzle props
Speed, knots: 11
Range, n miles: 1,200 at 10 kt
Complement: 16
Military lift: 180 tons or 350 troops
Guns: 2-12.7 mm MGs.

Comment: Locally built versions of US types. Ramps at both ends.



HO FONG 6/2000, DTM / 0569237

100 LCVPS AND ASSAULT CRAFT

Comment: Some ex-US, and some built in Taiwan. Most are armed with one or two 7.62 mm MGs. Two transferred to Indonesia in 1988. About 20 deleted in the last three years and 30 transferred to Honduras in 1996 for River operations. There are also a number of amphibious reconnaissance boats in the ARP 1000, 2000 and 3000 series. Form part of 151 Squadron.



TYPE 272

1989, (DTM (Raymond Cheung)) / 0506106

MINE WARFARE FORCES

Notes: There are plans to acquire eight GRP minehunters to replace the inventory of ageing wooden-hull minesweepers. The first two ships are to be two Osprey class, transferred from the US Navy, while a further six, probably based on the Lerici class, are to be built in Taiwan.

4 AGGRESSIVE CLASS (MINESWEEPERS) (MSO)

Name	No	Builders	Commissioned
YUNG YANG (ex- <i>Implicit</i>)	1306 (ex-455)	Wilmington Boat	10 Mar 1954
YUNG TZU (ex- <i>Conquest</i>)	1307 (ex-488)	Martenac, Tacoma	20 July 1955
YUNG KU (ex- <i>Gallant</i>)	1308 (ex-489)	Martenac, Tacoma	14 Sep 1956
YUNG TEH (ex- <i>Pledge</i>)	1309 (ex-492)	Martenac, Tacoma	20 Apr 1956

Displacement, tons: 720 standard; 780 full load
Dimensions, feet (metres): 172.5 x 35.1 x 14.1 (52.6 x 10.7 x 4.3)
Main machinery: 4 Packard ID-1700 or Waukesha diesels; 2,280 hp (1.7 MW); 2 shafts; cp props
Speed, knots: 14. **Range, n miles:** 3,000 at 10 kt
Complement: 86 (7 officers)
Guns: 2—12.7 mm MGs.
Radars: Navigation. Sperry SPS-53L; I-band.
Sonars: General Electric SQQ-14; VDS; active minehunting, high frequency.

Comment: Transferred by sale to Taiwan from the LSN 3 August and 30 September 1994. Delivery was delayed into 1995 while replanking work was carried out in the US. All recommissioned 1 March 1995. Second batch of three planned to transfer but were subsequently scrapped after cannibalisation for spares. All are fitted with SLQ-37 mechanical acoustic and magnetic sweeps and can carry an ROV. Plans to update the class with a Unisys SYQ-12 minehunting system and Pluto ROVs have probably been overtaken by the new MCMV programme.



YUNG KU

6/2000, DTM / 0569242

4 ADJUTANT AND MSC 268 CLASSES (MINESWEEPERS—COASTAL) (MSC)

YUNG CHUAN (ex- <i>MSC 278</i>) 158	YUNG REN (ex- <i>St Nicholas</i> , ex- <i>MSC 64</i>) 167
YUNG FU (ex- <i>Macaw</i> , ex- <i>MSC 77</i>) 162	YUNG SUI (ex- <i>Diskmude</i> , ex- <i>MSC 66</i>) 168

Displacement, tons: 375 full load
Dimensions, feet (metres): 144 x 27.9 x 8 (43.9 x 8.5 x 2.4)
Main machinery: 2 GM 8-268A diesels, 880 hp (656 kW); 2 shafts
Speed, knots: 13. **Range, n miles:** 2,500 at 12 kt
Complement: 35
Guns: 1 Oerlikon 20 mm.
Radars: Navigation: Decca 707; I-band.
Sonars: Simrad 950, hull-mounted, minehunting; high frequency

Comment: Non-magnetic, wood-hulled minesweepers built in the US in the 1950s specifically for transfer to allied navies. All refitted 1984-86. All are in very poor condition. Several deleted so far. Two put back in service in 1996 and one in 1997 to replace three others paid off.



YUNG CHUAN

6/2000, DTM / 0569241

4 YUNG FENG (MWV 50) CLASS (MINEHUNTERS—COASTAL) (MHC)

YUNG FENG 1301 YUNG CHIA 1302 YUNG TING 1303 YUNG SHUN 1305

Displacement, tons: 500 full load
Dimensions, feet (metres): 163.1 x 28.5 x 10.2 (49.7 x 8.7 x 3.1)
Main machinery: 2 MTU 8V 396 TB93 diesels; 2,180 hp(m) (1.6 MW) sustained; 2 shafts
Speed, knots: 14. **Range, n miles:** 3,500 at 14 kt
Complement: 45 (5 officers)
Guns: 1—20 mm, 2—12.7 mm MGs.
Radars: Navigation: I-band.
Sonars: TSM-2022; hull-mounted; active minehunting; high frequency.

Comment: Built for the Chinese Petroleum Corporation by Abeking & Rasmussen at Lemwerder, Germany. First four delivered in 1991 as offshore oil rig support ships and then converted for minehunting in Taiwan. Thomson Sintra IBIS V minehunting system is fitted and two STN Pinguin B3 ROVs are carried.



YUNG FENG

6/2000, DTM / 0569240

0 + 2 OSPREY CLASS (MINEHUNTERS—COASTAL) (MHC)

Name	No	Builders	Launched	Commissioned
— (ex- <i>Oriole</i>)	— (ex-MHC 55)	Intermarine, Savannah	22 May 1993	16 Sep 1995
— (ex- <i>Falcon</i>)	— (ex-MHC 59)	Intermarine, Savannah	3 June 1995	26 Oct 1997

Displacement, tons: 930 full load
Dimensions, feet (metres): 187.8 x 35.9 x 9.5 (57.2 x 11 x 2.9)
Main machinery: 2 Isotta Fraschini ID 36 SS 8V AM diesels; 1,600 hp(m) (1.18 MW) sustained; 2 Voith-Schneider props; 3 Isotta Fraschini ID 36 diesel generators; 984 kW
Speed, knots: 10. **Range, n miles:** 1,500 at 10 kt
Complement: 51 (5 officers)
Guns: 2—12.7 mm MGs.
Countermeasures: MCM: Alliant SLQ-48 mine neutralisation system ROV (with 1,070 m cable). Degeussing DGM-4.
Combat data systems: Unisys SYQ 13 and SYQ 109; integrated combat and machinery control system. USQ 119E(V), UHF Dama, and OTCIXS provide GCCS connectivity.
Radars: Surface search. Raytheon SPS-64(V)9; I-band.
Navigation: R41XX; I-band.
Sonars: Raytheon/Thomson Sintra SQQ 32(V)3; VDS; active minehunting; high frequency.

Programmes: Original design contract for Lerici-class minehunters was awarded in August 1986 to Intermarine USA which built eight of the 12 ships of the class for the US Navy. Authority to transfer both vessels to Taiwan was sought in 2007 and both are likely to be delivered in 2009.

Structure: Construction is of monocoque GRP throughout hull, with frames eliminated. Main machinery is mounted on GRP cradles and provided with acoustic enclosures. SQQ-32 is deployed from a central well forward. Fitted with Voith cycloidal propellers which eliminate need for forward thrusters during station keeping.

SURVEY AND RESEARCH SHIPS

1 ALLIANCE CLASS (AGOR)

Name	No	Builders	Launched	Commissioned
TA KUAN	1601	Fincantieri, Muggiano	17 Dec 1994	27 Sep 1995

Displacement, tons: 2,466 standard; 3,180 full load
Dimensions, feet (metres): 305.1 x 49.9 x 16.7 (93 x 15.2 x 5.1)
Main machinery: Diesel-electric; 3 MTU/AEG diesel generators, 5,712 hp(m) (4.2 MW); 2 AEG motors; 5,100 hp(m) (3.75 MW); 2 shafts; bow thruster; stern trainable and retractable thruster
Speed, knots: 15. **Range, n miles:** 12,000 at 12 kt
Complement: 82
Guns: 2—12.7 mm MGs
Radars: Navigation: H/I-band.

Comment: Ordered in June 1993 and laid down 8 April 1994. Almost identical to the NATO vessel. Designed for oceanography and hydrographic research. Facilities include laboratories, position location systems, and overside deployment equipment. Equipment includes a Simrad side scan sonar EM 1200, deep and shallow echo-sounders, two radars, Navsat and Satcom, an ROV for remote inspection, and a dynamic positioning system with bow thruster and stern positioning propeller.



TA KUAN

8/1997, C Chung / 0019239

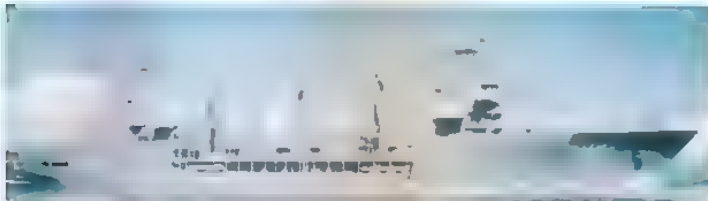
AUXILIARIES

1 COMBAT SUPPORT SHIP (AOEHM)

Name	No	Builders	Launched	Commissioned
WU YI	530	China SB Corporation, Keelung	4 Mar 1989	23 June 1990

Displacement, tons: 7,700 light; 17,000 full load
Dimensions, feet (metres): 531.8 × 72.2 × 28 (162.1 × 22.2 × 8.6)
Main machinery: 2 MAN 14-cyl diesels; 25,000 hp(m) (18.37 MW); 2 shafts
Speed, knots: 21. **Range, n miles:** 9,200 at 10 kt
Cargo capacity: 9,300 tons
Missiles: SAM: 1 Sea Chaparral quad launcher.
Guns: 2 Bofors 40 mm/70, 2 Oerlikon 20 mm GAM-BO1, 4—12.7 mm MGs.
Countermeasures: Decoys: 2 chaff launchers.
ESM: Radar warning.
Radars: 2 navigation; I-band.
Helicopters: Platform for CH-47 or S-70C(M)1.

Comment: Largest unit built so far for the Taiwanese Navy. Design assisted by the United Shipping Design Center in the US. Beam replenishment rigs on both sides. SAM system on forecastle, 40 mm guns aft of the funnels.



WU YI 3/2004, Chris Sattler / 1044573

3 WU KANG CLASS (ATTACK TRANSPORTS) (AKM)

Name	No	Builders	Commissioned
YUEN FENG	524	China SB Corporation, Keelung	10 Sep 1982
WU KANG	525	China SB Corporation, Keelung	9 Oct 1984
HSIN KANG	526	China SB Corporation, Keelung	30 Nov 1988

Displacement, tons: 2,804 standard; 4,845 full load
Dimensions, feet (metres): 334 × 59.1 × 16.4 (101.8 × 18 × 5)
Main machinery: 2 diesels; 2 shafts; bow thruster
Speed, knots: 20. **Range, n miles:** 6,500 at 12 kt
Complement: 61 (11 officers)
Military lift: 1,400 troops
Missiles: SAM: 1 Sea Chaparral quad launcher
Guns: 2 Bofors 40 mm/60, 2 or 4—12.7 mm MGs
Countermeasures: ESM: WD-2A (524 only), Intercept

Comment: First three were built and then the programme stopped. Restarted with the fourth of class laid down in July 1994. The plan was to build at about one a year to a final total of seven, but the programme has been cancelled without the fourth ship being completed. With a helicopter platform, stern docking facility and davits for four LCVP, the design resembles an LPD. Used mostly for supplying garrisons in offshore islands, and on the Spratley and Pratas islands in the South China Sea. SAM launcher is mounted aft of the foremast. Accommodation is air conditioned. *Hsin Kang* was badly damaged in harbour in collision with a merchant ship in March 1996, but was back in service by mid-1999



HSIN KANG 6/2002, Ships of the World / 0569239

1 SALVAGE SHIP (ARS)

Name	No	Builders	Commissioned
TA HU (ex-Grapple)	552 (ex-ARS 7)	Basalt Rock, USA	16 Dec 1943

Displacement, tons: 1,557 standard; 1,745 full load
Dimensions, feet (metres): 213.5 × 39 × 15 (65.1 × 11.9 × 4.6)
Main machinery: Diesel-electric; 4 Cooper Bessemer GSB-8 diesels; 3,420 hp (2.55 MW); 2 generators; 2 motors; 2 shafts
Speed, knots: 14. **Range, n miles:** 8,500 at 13 kt
Complement: 85
Guns: 2 Oerlikon 20 mm.
Radars: Navigation: SPS-53; I-band.

Comment: Fitted for salvage, towing and compressed-air diving. *Ta Hu* transferred from US 1 December 1977 by sale. The reported transfer from the US of *ex-Conservator* did not take place



TA HU 6/2005, C Chung / 1151389

6 FLOATING DOCKS (YFD)

HAY TAN (ex-AFDL 36) AFDL 1	FO WU 5 (ex-ARD 9) ARD 5
KIM MEN (ex-AFDL 5) AFDL 2	FO WU 6 (ex-Windsor ARD 22) ARD 6
HAN JIH (ex-AFDL 34) AFDL 3	FO WU 7 (ex-AFDM 5)

Comment: Former US Navy floating dry docks. *Hay Tan* transferred in March 1947, *Kim Men* in January 1948, *Han Jih* in July 1959, *Fo Wu 5* in June 1971, *Fo Wu 6* in June 1971. *Fo Wu 6* by sale 19 May 1976 and *Fo Wu 5* on 12 January 1977. *Fo Wu 7* transferred by sale in 1989

TUGS

5 CHEROKEE CLASS (ATF/ARS)

TA WAN (ex- <i>Apache</i>) ATF 551	TA FUNG (ex- <i>Narragansett</i>) ATF 555
TA HAN (ex- <i>Tawakoni</i>) ATF 553	TA TAI (ex- <i>Shakori</i>) ATF 553
TA KANG (ex- <i>Achomawi</i>) ATF 554	

Displacement, tons: 1,235 standard, 1,731 full load
Dimensions, feet (metres): 205 × 38.5 × 17 (62.5 × 11.7 × 5.2)
Main machinery: Diesel-electric; 4 GM 12-278 diesels; 4,400 hp (3.28 MW); 4 generators; 1 motor; 3,000 hp (2.24 MW); 1 shaft
Speed, knots: 15
Range, n miles: 6,000 at 14 kt
Complement: 85
Guns: 1 Bofors 40 mm/60. Several 12.7 mm MGs.

Comment: All built between 1943 and 1945. *Ta Wan* transferred from US in June 1974, *Ta Han* in June 1978; and the last three in June 1991 together with two more which were cannibalised for spares.



TA HAN 4/1995, 0086/90

11 HARBOUR TUGS (YTL)

YTL 16-17	YTL 27-30	YTL 32-36
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Comment: Replacements for the old US Army type which were scrapped in 1990/91. Some are used for fire fighting



YTL 36 5/1997, van Ginderen Collection / 0019247

19 LARGE HARBOUR TUGS (YTB)

YTB 37-38	YTL 41-43	YTB 45-49	YTB 150-157
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Comment: Various types of about 30 m length.



YTL 45 10/2006, Bob Fildes / 11/0275

COAST GUARD

Headquarters Appointments

Director General of Maritime Patrol Directorate (Maritime Patrol):
Lin Fu-An

Director General of Coastal Patrol Directorate (Coastal Patrol):
Heh Shiang Tai

Notes: The Taiwan Coast Guard was established on 1 February 2000 by merging the former agencies of Maritime Police, Customs and Coastal Defense Command. It is responsible for the safety and security of Taiwan's coastline and waters. The missions are: coastal and harbour security, maritime law enforcement, anti-smuggling, anti-terrorism, SAR, fishery protection and pollution control. It consists of two major wings. The Maritime Patrol wing has 3,000 personnel in 21 patrol detachments around the coast. The Coastal Patrol wing has 14,701 personnel in four local coastal patrol offices: Northern, Central, Southern and Eastern.

Bases

HQ: Wunshan District, Taipei

2 HO HSING CLASS (OFFSHORE PATROL CRAFT) (WPSO)

HO HSING 101 WEI HSING 102

Displacement, tons: 1,823 full load
Dimensions, feet (metres): 270 × 38.1 × 13.5 (82.3 × 11.6 × 4.1)
Main machinery: 2 MTU 16V 1163 TB93 diesels; 15,470 hp(m) (11.5 MW) sustained; 2 shafts; cp props; bow thruster
Speed, knots: 22
Range, n miles: 6,000 at 16 kt
Complement: 80 (18 officers)
Guns: 1—20 mm, 2—12.7 mm MGs
Radars: Surface search/navigation: Furuno; E/F/I-bands

Comment: Built by the China SB Corporation, Keelung, to a Tacoma design and both delivered 26 December 1991. Four high-speed interceptor boats are carried on individual davits. This is a variant of the US Coast Guard Bear class.



HO HSING 6/2008*, Taiwan Coast Guard / 1353377

1 OFFSHORE PATROL VESSEL (WPSO)

SHUN HU 1

Displacement, tons: 1,126 full load
Dimensions, feet (metres): 193.2 × 31.5 × 12.8 (58.9 × 9.6 × 3.9)
Main machinery: 2 Yanmar T 260-ET diesels; 3,000 hp(m) (2.2 MW); 2 shafts
Speed, knots: 16
Range, n miles: 1,500 at 12 kt
Complement: 25
Radars: To be announced.

Comment: Commissioned in 1992



SHUN HU 1 6/2008*, Taiwan Coast Guard / 1353374

2 OFFSHORE PATROL CRAFT (WPSO)

MOU HSING 105 FU HSING 106

Displacement, tons: 866 full load
Dimensions, feet (metres): 223.1 × 31.5 × 10.5 (68.0 × 9.6 × 3.2)
Main machinery: 2 MTU 16V 1163 TB93 diesels; 15,470 hp(m) (11.5 MW) sustained; 2 shafts
Speed, knots: 28
Range, n miles: 4,500 at 12 kt
Complement: 50
Guns: 2—12.7 mm MGs
Radars: Surface search/navigation: Furuno; E/F/I-bands.

Comment: Ordered from Wilton Fijenoord in September 1986, and commissioned 14 June 1988.



FU HSING 9/2002, C Chung / 0534122

2 OFFSHORE PATROL VESSELS (WPBO)

SHUN HU 2 SHUN HU 3

Displacement, tons: 839 full load
Dimensions, feet (metres): 169.0 × 27.5 × 12.1 (51.5 × 8.4 × 3.7)
Main machinery: 1 DAIHATSU 6DLM-32F diesel; 2,500 hp(m) (1.8 MW); 1 shaft
Speed, knots: 16. **Range, n miles:** 10,000 at 12 kt
Complement: 22
Radars: To be announced

Comment: Commissioned in 1992



SHUN HU 2 9/2008*, Naruhito Sato / 1353373

2 PAO HSING CLASS (OFFSHORE PATROL CRAFT) (WPSO)

CHIN HSING 108 TEH HSING 109

Displacement, tons: 591 full load
Dimensions, feet (metres): 199.5 × 25.6 × 11.5 (60.8 × 7.8 × 3.5)
Main machinery: 2 MAN 12V25/30 diesels; 6,480 hp(m) (4.8 MW) sustained; 2 shafts
Speed, knots: 20. **Range, n miles:** 2,000 at 14 kt
Complement: 50
Guns: 2—12.7 mm MGs
Radars: Surface search. JRC; I-band

Comment: Delivered 23 May 1985. Built by Keelung yard of China SB Corporation.



CHIN HSING 6/2008*, Taiwan Coast Guard / 1353378

2 OFFSHORE PATROL CRAFT (WPSO)

KINMEN 123 LIENCHIANG 125

Displacement, tons: 688 full load
Dimensions, feet (metres): 213.5 × 38.4 × 10.1 (65.1 × 11.7 × 3.1)
Main machinery: 4 MTU 16V 4000 M90 diesels; 13,080 hp(m) (9.7 MW); 4 waterjets
Speed, knots: 30. **Range, n miles:** 4,600 at 12 kt
Complement: 38
Guns: 1—20 mm.
Radars: Surface search/navigation. Furuno; E/F/I-bands.

Comment: Built by Jong Shyn Ship Building Corporation. Both launched in May 2007 and commissioned on 28 January 2008



LIENCHIANG 6/2008*, Taiwan Coast Guard / 1353381

4 OFFSHORE PATROL CRAFT (WPSO)

TAICHUNG 117 KEELUNG 118 HUALIEN 119 PENHU 120

Displacement, tons: 620 full load
 Dimensions, feet (metres): 208.3 x 30.4 x 12.5 (63.5 x 9.28 x 3.8)
 Main machinery: 2 MTU 1163 TB93 diesels; 15,470 hp(m) (11.5 MW) sustained; 2 shafts
 Speed, knots: 30
 Range, n miles: 4,500 at 22 kt
 Complement: 40
 Guns: 1—20 mm T 75. 2—12.7 mm MGs.
 Radars: Surface search/navigation: Furuno; E/F/I-bands.

Comment: Built by Ching-Fu SB Corporation in Kaohsiung, to Lürssen Asia design. Delivered 28 June 2001. Two high-speed interceptor boats are carried on individual davits.



KEELUNG 6/2008*, Taiwan Coast Guard / 1353379

1 COASTAL PATROL VESSEL (WPB)

SHUN HU 6

Displacement, tons: 204 full load
 Dimensions, feet (metres): 125.0 x 23.0 x 8.5 (38.1 x 7.0 x 2.6)
 Main machinery: 2 MTU 396TE84 diesels; 3,640 hp(m) (2.7 MW); 2 shafts
 Speed, knots: 20
 Range, n miles: 4,000 at 15 kt
 Complement: 15
 Radars: To be announced.

Comment: Commissioned in 1992.



SHUN HU 6 6/2008*, Taiwan Coast Guard / 1353376

1 COASTAL PATROL VESSEL (WPB)

SHUN HU 5

Displacement, tons: 139 full load
 Dimensions, feet (metres): 103.3 x 19.7 x 4.1 (31.5 x 6.0 x 1.25)
 Main machinery: 2 MTU 331TC92 diesels; 2,920 hp(m) (2.2 MW); 2 shafts
 Speed, knots: 20
 Range, n miles: 2,000 at 15 kt
 Complement: 15
 Radars: To be announced.

Comment: Commissioned in 1992.



SHUN HU 5 6/2008*, Taiwan Coast Guard / 1353375

2 OFFSHORE PATROL VESSEL (WPSO)

TAIPEI 116 NANTOU 122

Displacement, tons: 700 full load
 Dimensions, feet (metres): 201.4 x 31.2 x 11.8 (61.4 x 9.5 x 3.6)
 Main machinery: 2 MTU 20V 1163 TB93 diesels; 15,470 hp(m) (11.5 MW); 2 shafts
 Speed, knots: 30 Range, n miles: 4,600 at 22 kt
 Complement: 33
 Guns: 2—20 mm T75. 2—12.7 mm MGs
 Radars: Surface search/navigation: Furuno; E/F/I-bands.

Comment: Based on the naval Jin Chiang class, ship built by Chung-Hsin Ship Building Corporation. *Taipei* launched in November 1999 and commissioned on 20 March 2000. *Nantou* commissioned on 29 April 2005.



NANTOU 6/2008*, Taiwan Coast Guard / 1353380

5 COASTAL PATROL CRAFT (WPB)

PP 10025-10029

Displacement, tons: 118 full load
 Dimensions, feet (metres): 112.5 x 23.0 x 4.9 (34.3 x 7.0 x 1.5)
 Main machinery: 2 MTU 16V 4000 M70 diesels; 6,220 hp (4.6 MW); 2 waterjets
 Speed, knots: 34 Range, n miles: 1,400 at 20 kt
 Guns: 2—12.7 mm MGs.
 Radars: Surface search/navigation: Furuno; E/F/I-bands.

Comment: Larger variants of the PP 10001 class.



PP 10028 6/2008*, Taiwan Coast Guard / 1353382

15 COASTAL PATROL CRAFT (WPB)

PP 10001 PP 10003 10005-10009 10013 10017-10019

Displacement, tons: 103 full load
 Dimensions, feet (metres): 100.0 x 22.3 x 8.8 (30.6 x 6.8 x 3.0)
 Main machinery: 2 MTU 396 diesels; 6,000 hp(m) (4.4 MW); 2 shafts
 Speed, knots: 30 Range, n miles: 600 at 22 kt
 Guns: 2—12.7 mm MGs (aft).
 Radars: Surface search/navigation: Furuno; E/F/I-bands.

Comment: The first pair were former naval craft transferred 8 December 1992. Two more completed in October 1994, three more by February 1995.



PP 10017 10/2001, C Chung / 0126205

798 Taiwan/Coast guard – Customs

13 COASTAL PATROL CRAFT (WPBF)

PP 6001–6003 6005–6007 6009–6012 6014–6016

Displacement, tons: 68 full load
Dimensions, feet (metres): 91.9 × 20.3 × 7.9 (28 × 6.2 × 2.4)
Main machinery: 2 Paxman 12V P185 diesels; 6,645 hp(m) (4.89 MW) sustained; 2 shafts; cp props
Speed, knots: 40. **Range, n miles:** 600 at 25 kt
Complement: 13
Guns: 1–12.7 mm MG.
Radars: Surface search: 2 Furuno; I-band.

Comment: Built by Lung Teh Shipyard, Taiwan from March 1996. First six delivered in 1997 and following seven in 2001. GRP hulls with some Kevlar protection. Can carry a 6.5 m RIB.



PP 6006 6/2008*, Taiwan Coast Guard / 1353383

16 COASTAL PATROL CRAFT (WPB)

PP 3516–3522 PP 3525 PP 3527 PP 3530–3531 PP 3535–3539

Displacement, tons: 56 full load
Dimensions, feet (metres): 68.9 × 16.4 × 4.9 (21.0 × 5.0 × 1.5)
Main machinery: 2 MAN 12V183 diesels; 2,300 hp(m) (1.7 MW); 2 shafts
Speed, knots: 30.2 **Range, n miles:** 400 at 22 kt
Complement: 8
Guns: 1–12.7 mm MG
Radars: To be announced



PP 3537 6/2008*, Taiwan Coast Guard / 1353385

9 COASTAL PATROL CRAFT (WPB)

PP 5033 PP 5035 PP 5037–5039 PP 5050–5053

Displacement, tons: 52 full load
Dimensions, feet (metres): 86.6 × 20.3 × 3.6 (26.4 × 6.2 × 1.1)
Main machinery: 2 MAN 2842LE 410 diesels; 4,400 hp(m) (3.3 MW); 4 waterjets
Speed, knots: 37
Range, n miles: 600 at 22 kt
Complement: 17
Guns: 1–12.7 mm MG.
Radars: To be announced.



PP 5050 6/2008*, Taiwan Coast Guard / 1353384

3 COASTAL RESCUE CRAFT (AVR)

RB 01–03

Displacement, tons: 43 full load
Dimensions, feet (metres): 62.3 × 18.4 × 3.9 (19.0 × 5.6 × 1.2)
Main machinery: 2 MAN D2482 LE406 diesels; 1,400 hp(m) (1.0 MW); 2 shafts
Speed, knots: 25
Range, n miles: 260 at 18 kt
Complement: 6
Radars: Surface search/navigation: 2 Furuno, I-band.

Comment: Self-righting built by Lung Teh Shipyard, Taiwan and delivered in 2002. Equipped with fire-fighting and towing capabilities.



RB 01 6/2008*, Taiwan Coast Guard / 1353386

14 COASTAL PATROL CRAFT

PP 3002–3003 PP 3005–3009 PP 3011–3012 PP 3015–3019

Displacement, tons: 29 full load
Dimensions, feet (metres): 65.6 × 15.7 × 6.5 (20.0 × 4.8 × 2.0)
Main machinery: 3 MAN 2842LE 402 diesels; 3,300 hp(m) (2.5 MW); 3 shafts
Speed, knots: 45 **Range, n miles:** 600 at 33 kt
Complement: 8
Guns: 1–12.7 mm MG.
Radars: To be announced.



PP 3007 6/2008*, Taiwan Coast Guard / 1353386

47 INSHORE PATROL CRAFT (WPBR)

PP 2001 PP 2005–2010 PP 2021–2023 PP 2035–2038 PP 2055–2056 PP 2065–2067
 PP 2003 PP 2012–2019 PP 2025–2033 PP 2050–2053 PP 2058–2063

Displacement, tons: 21 full load
Dimensions, feet (metres): 48.4 × 12.6 × 6.5 (14.7 × 3.8 × 2.0)
Main machinery: 2 MAN 2840LE401 diesels; 1,640 hp(m) (1.2 MW); 2 shafts
Speed, knots: 35 **Range, n miles:** 250 at 26 kt
Complement: 6
Guns: 1–12.7 mm MG
Radars: To be announced.



PP 2029 6/2008*, Taiwan Coast Guard / 1353387

CUSTOMS

4 HAI CHENG CLASS (COASTAL PATROL CRAFT) (WPB)

HAI CHENG HAI EN HAI LIANG HAI CHING

Displacement, tons: 147 full load
Dimensions, feet (metres): 100 × 22.3 × 11.6 (30.5 × 6.8 × 3.6)
Main machinery: 2 MTU diesels; 6,000 hp(m) (4.4 MW); 2 shafts
Speed, knots: 30
Complement: 8
Guns: 2–9 mm T75
Radars: Surface search: Decca; I-band

Comment: Transferred to Customs on 26 December 2000



HAI CHENG CLASS 12/2000, Taiwan Customs / 0114556

1 YUN HSING CLASS (COASTAL PATROL CRAFT) (ABU)

YUN HSING

Displacement, tons: 964 full load
Dimensions, feet (metres): 213.3 x 32.8 x 9.5 (68 x 10 x 2.9)
Main machinery: 2 MAN 12V 26/30 diesels; 7,183 hp(m) (5.28 MW); 2 shafts
Speed, knots: 18
Complement: 67
Guns: 2—12.7 mm MGs
Radars: Surface search: JRC; I-band.

Comment: Built by China SB Corporation and delivered 28 December 1987. Operated by Customs as a light-house tender.



YUN HSING 1/2000, C Chung / 0106606

4 HAI YING CLASS (COASTAL PATROL CRAFT) (WPB)

HAI YING HAI TUNG HAI KO HAI TA

Displacement, tons: 99 43 full load
Dimensions, feet (metres): 82.8 x 19.0 x 10.7 (25.25 x 5.8 x 3.3)
Main machinery: 2 Deutz MWM TBD 620 V12 diesels; 4,314 bhp (2,646 kW); 2 shafts
Speed, knots: 32.6
Complement: 7
Guns: 2—9 mm T75
Radars: Surface search: Furuno; I-band.

Comment: Transferred to Customs on 28 December 2000.



HAI YING CLASS 12/2000, Taiwan Customs 0114555

Tanzania



Country Overview

The United Republic of Tanzania was formed by the federation of the former British protectorates of Tanganyika and Zanzibar in 1984. It also includes Pemba, Mafia and other offshore islands. Situated in south-eastern Africa, it has a total area of 364,900 square miles and is bordered to the north by Uganda and Kenya, to the west by Rwanda, Burundi, Democratic Republic of Congo and Zambia and to the south by Mozambique and Malawi. It has a 767 n mile coastline with the Indian Ocean. The country also includes parts of Lake Tanganyika, Lake Victoria and Lake Malawi. Dodoma is the capital while the former capital, Dar es Salaam, is the largest city and principal port. Territorial seas (12 n miles) are claimed. A 200 n mile EEZ has also been

claimed but the limits are not fully defined by boundary agreements.

Headquarters Appointments

Chief of Naval Operations:
 Brigadier General Said Omar

General

The Tanzanian People's Defence Force includes the Army, Air Defence Command and a naval wing. There is a small Coastguard Service (KMKM), based on Zanzibar, which uses small boats for anti-smuggling patrols.

Personnel

(a) 2009: 1,050 (including Zanzibar)
 (b) Voluntary service

Coast Defence

85 mm mobile gun battery.

Bases

Dar Es Salaam, Zanzibar, Mtwara, Kigoma (Lake Tanganyika) and Mwanza (Lake Victoria).

PATROL FORCES

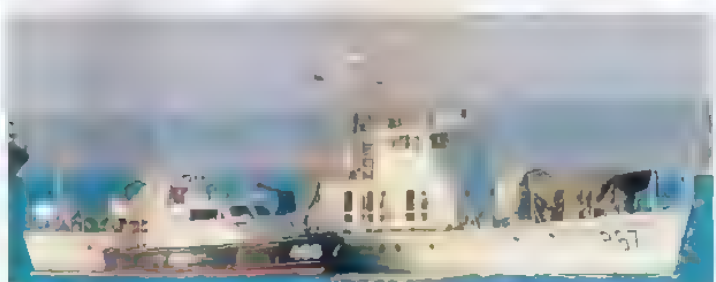
Notes: The Police have four Yulin class patrol boats which are probably non-operational.

2 SHANGHAI II CLASS (FAST ATTACK CRAFT—GUN) (PB)

MZIZI P 67 MZIA P 68

Displacement, tons: 134 full load
Dimensions, feet (metres): 127.3 x 17.7 x 5.6 (38.8 x 5.4 x 1.7)
Main machinery: 2 Type L12-180 diesels; 2,400 hp(m) (1.76 MW, (forward); 2 Type 12-D-6 diesels; 1,820 hp(m) (1.34 MW) (aft); 4 shafts
Speed, knots: 30. **Range, n miles:** 700 at 16.5 kt
Complement: 38
Guns: 4—37 mm/63 (2 twin). 4—25 mm/80 (2 twin).
Radars: Surface search: Skin Head; E/F-band.

Comment: Two transferred from China in June 1992. Based at Dar Es Salaam



MZIZI 11/2005, Rob Cabo / 1151073

2 HUCHUAN CLASS (FAST ATTACK CRAFT—TORPEDO) (PTK)

P 43-44

Displacement, tons: 39 standard; 45.8 full load
Dimensions, feet (metres): 71.5 x 20.7 oa x 11.8 (hullborne) (21.8 x 6.3 x 3.6)
Main machinery: 3 Type M 50 diesels; 3,300 hp(m) (2.4 MW); sustained; 3 shafts
Speed, knots: 50. **Range, n miles:** 500 at 30 kt
Complement: 16
Guns: 4—14.5 mm (2 twin) MGs.
Torpedoes: 2—21 in (533 mm) tubes
Radars: Surface search: Skin Head; E/F-band

Comment: Four transferred from the People's Republic of China 1975. After a major effort in 1992, were all operational and reported to be in good condition but by 1998 two had been laid up. Present operational status is unclear but one at least appears to have had torpedo tubes removed. Based at Dar Es Salaam.



HUCHUAN 6/2003, 058, / 794

2 PROTECTOR CLASS (PATROL CRAFT) (PB)

NGUNGURI (ex-Vincant) P 19 MAMBA (ex-Vigilant) P 20

Displacement, tons: 100 full load
Dimensions, feet (metres): 84.3 x 20.3 x 5.6 (25.7 x 6.2 x 1.7)
Main machinery: 2 Paxman diesels; 2,880 hp (2.15 MW); 2 shafts. 1 Perkins diesel; 200 hp (150 kW); 1 waterjet
Speed, knots: 25
Complement: 4
Radars: Navigation: 2 Decca; I-band.

Comment: Both built for UK Customs by FBM Marine in 1998 (ex-Vigilant) and 1993 (ex-Vincant). Subsequently sold to Damen Shipyards, Netherlands, in September 2004. Following refit, entered Tanzanian service in 2005. Based at Dar Es Salaam.



NGUNGURI 11/2005, Rob Cabo / 1151081

SUBMARINES

Notes: Acquisition of a submarine force remains a high priority but funding difficulties continue to frustrate plans.

AIRCRAFT CARRIERS

1 CHAKRI NARUEBET CLASS (CVM)

Name	No	Builders	Laid down	Launched	Commissioned
CHAKRI NARUEBET	911	Bazán, Ferrol	12 July 1994	20 Jan 1996	27 Mar 1997

Displacement, tons: 11,485 full load
Dimensions, feet (metres): 599.1 oa; 538.4 wl > 100.1 oa;
 73.8 wl × 20.3 (182.6; 164.1 × 30.5, 22.5 × 6.2)
Flight deck, feet (metres): 572.8 × 90.2 (174.6 × 27.5)
Main machinery: CODLOG; 2 GE LM 2500 gas turbines;
 44,250 hp (33 MW) sustained; 2 MTU 16V 1163 TB83
 diesels; 11,780 hp(m) (8.67 MW); 2 shafts; LIPS cp props
Speed, knots: 28; 16 (diesels) **Range, n miles:** 10,000 at 12 kt
Complement: 455 (62 officers) plus 146 aircrew plus
 4 (Royal family)

Missiles: SAM: 1 Mk 41 LCHR 8 cell VLS launcher (fitted for
 but not with) ●
 3 Matra Sadral sextuple launchers for Mistral ●,
 IR homing to 4 km (2.2 n miles); warhead 3 kg.
Guns: 2 30 mm. To be fitted
Combat data systems: Tritan derivative with Unisys UYK-3
 and 20 computers.
Radars: Air search: Hughes SPS-52C ●, E/F-band.
 Surface search: SPS-64 ●, I-band. To be fitted.
 Fire control, to be fitted.

Navigation: Kelvin Hughes; I-band
Aircraft control: Kelvin Hughes, E/F-band.
 Tacan: URN 25.

Fixed-wing aircraft: 6 AV-8S Matador (Harrier)
Helicopters: 6 S-708-7 Seahawk; Chinook capable

Programmes: An initial contract for a 7,800 ton vessel
 with Bremer Vulcan was cancelled on 22 July 1991
 and replaced on 27 March 1992 with a government
 to government contract for a larger ship to be built
 by Bazán. Fabrication started in October 1993. Sea
 trials conducted from November 1996 to January 1997
 followed by an aviation work-up at Rota from April 1997.
 The ship arrived in Thailand on 10 August 1997.

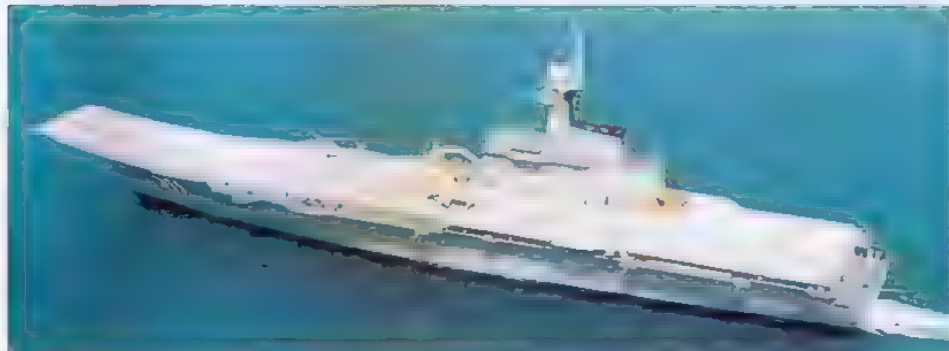
Structure: Similar to Spanish *Principe de Asturias*. 12' ski
 jump and two 20 ton aircraft lifts. Provision made to fit a
 Mk 41 VLS launcher, a surface search radar, EW systems,
 a hull mounted sonar and CIWS. Matra Sadral fitted in
 2001. Hangar can take up 10 Sea Harrier or Seahawk
 aircraft.

Operational: Main tasks are SAR co-ordination and
 EEZ surveillance. Secondary role is air support for all
 maritime operations. Due to funding shortages, the
 ship rarely goes to sea and fixed-wing flying has been
 conducted from shore bases.



CHAKRI NARUEBET

(Scale 1 : 1,500), Ian Sturton / 0080799



CHAKRI NARUEBET

1/2004, Thai Navy League / 0589816



CHAKRI NARUEBET

5/1997, S G Gaya / 0019250



CHAKRI NARUEBET

1/2004, Thai Navy League / 0589816

FRIGATES

Notes: It was announced on 22 July 2003 that two frigates were to be procured from the UK. These were likely to be based on the design of those acquired by the Royal Malaysian Navy. This programme is likely to have been superseded by plans to acquire offshore patrol vessels for which UK shipbuilder BVT Surface Fleet is reported to be a leading, but not the only, contender.

2 NARESUAN CLASS (TYPE 25T) (FFGHM)

Name	No	Builders	Laid down	Launched	Commissioned
NARESUAN	421 (ex-621)	Zhonghua SY, Shanghai	Feb 1992	24 July 1993	15 Dec 1994
TAKSIN	422 (ex-622)	Zhonghua SY, Shanghai	Nov 1992	14 May 1994	28 Sep 1995

Displacement, tons: 2,500 standard; 2,980 full load
Dimensions, feet (metres): 393.7 × 42.7 × 12.5
 (120 × 13 × 3.8)

Main machinery: CODOG; 2 GE LM 2500 gas turbines, 44,250 hp (33 MW) sustained; 2 MTU 20 V 1163 TB83 diesels; 11,780 hp (m) (8.67 MW) sustained, 2 shafts; LIPS cp props

Speed, knots: 32

Range, n miles: 4,000 at 18 kt

Complement: 150

Missiles: SSM: 8 McDonnell Douglas Harpoon (2 quad) launchers; active radar homing to 130 km (70 n miles) at 0.9 Mach; warhead 227 kg.

SAM: Mk 41 LCHR 8 cell VLS launcher; Sea Sparrow RIM-7M, semi-active radar homing to 16 km (8.5 n miles) at 2.5 Mach; warhead 38 kg (fitted for but not with).

Guns: 1 FMC 5 in (127 mm)/54 Mk 45 Mod 2; 20 rds/min to 23 km (12.6 n miles); weight of shell 32 kg.
 4 China 37 mm/76 (2 twin) H/PJ 76 A; 180 rds/min to 8.5 km (4.6 n miles) anti-aircraft; weight of shell 1.42 kg

Torpedoes: 6—324 mm Mk 32 Mod 5 (2 triple) tubes; Honeywell Mk 46; active/passive homing to 11 km (5.9 n miles); at 40 kt, warhead 44 kg.

Countermeasures: Decoys: 4 China Type 945 GPJ 26-barrelled launchers; chaff and IR.

ESM/ECM: Elettronica Newton Beta EW System; intercept and jammer.

Weapons control: 1 JM-83H Optical Director

Radars: Air search: Signaal LW08; D-band.

Surface search: China Type 360; E/F-band.

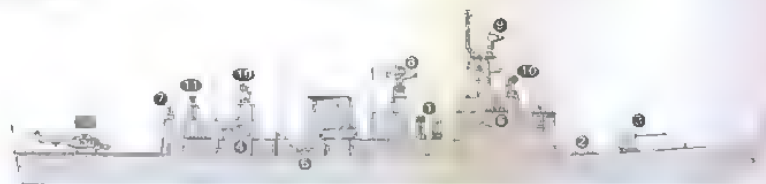
Navigation: 2 Raytheon SPS-64(V)5; I-band.

Fire control: 2 Signaal STIR; I/J/K-band (for SSM and 127 mm). After one to be fitted.
 China 374 G (for 37 mm).

Sonars: China SJD-7; hull-mounted; active search and attack; medium frequency.

Helicopters: 1 Super Lynx in due course or 1 Sikorsky S-70B-7 Seahawk.

Programmes: Contract signed 21 September 1989 for construction of two ships by the China State SB



NARESUAN

(Scale 1 : 1,200), Ian Sturton 0543398



TAKSIN

8/2005, Chris Sattler / 1153917

Corporation (CSSC) with delivery in 1994. US and European weapon systems were fitted as funds became available. The first ship sailed for Bangkok without most weapon systems in January 1995 with the second following in October 1995.

Structure: Jointly designed by the Royal Thai Navy and China State Shipbuilding Corporation (CSSC). This is a design incorporating much Western machinery and

equipment and provides enhanced capabilities by comparison with the four Type 053 class. The anti-aircraft guns are Breda 40 mm types with 37 mm ammunition and they are controlled by a Chinese RTN-20 Dardo tracker.

Operational: Naresuan acted as one of the escorts for the aircraft carrier during her aviation work-up in Spanish waters in 1997.



TAKSIN

8/2005, Chris Sattler / 1153916



NARESUAN

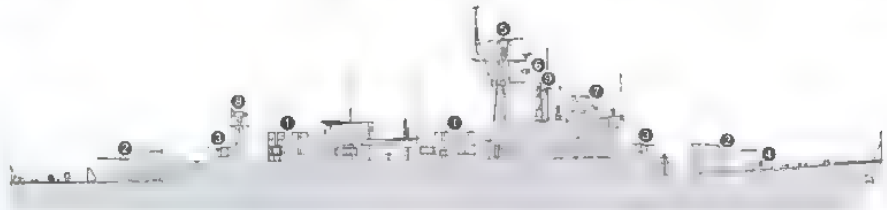
10/2008, Michael Nitz / 1353391

4 CHAO PHRAYA CLASS (TYPES 053 HT AND 053 HT (H)) (FFG/FFGH)

Name	No	Builders	Laid down	Launched	Commissioned
CHAO PHRAYA	455	Hudong SY, Shanghai	1989	24 June 1990	5 Apr 1991
BANGPAKONG	456	Hudong SY, Shanghai	1989	25 July 1990	20 July 1991
KRABURI	457	Hudong SY, Shanghai	1990	28 Dec 1990	16 Jan 1992
SAIBURI	458	Hudong SY, Shanghai	1990	27 Aug 1991	4 Aug 1992

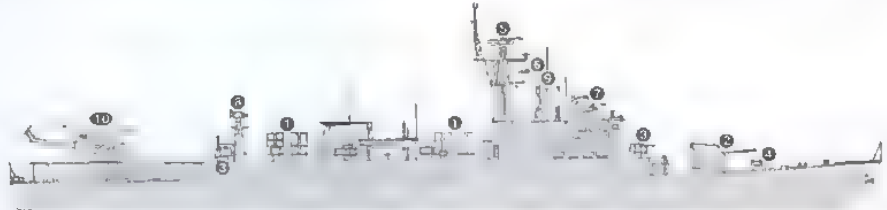
Displacement, tons: 1,676 standard; 1,924 full load
Dimensions, feet (metres): 338.5 x 37.1 x 10.2
 (103.2 x 11.3 x 3.1)
Main machinery: 4 MTU 20V 1163 TB83 diesels; 29,440 hp(m) (21.6 MW) sustained; 2 shafts; LIPS cp props
Speed, knots: 30
Range, n miles: 3,500 at 18 kt
Complement: 168 (22 officers)

Missiles: SSM 8 Ying Ji (Eagle Strike) (C-801) ●, active radar/IR homing to 85 km (45.9 n miles) at 0.9 Mach; warhead 165 kg; sea-skimmer This is the extended range version.
SAM 1 HQ-61 launcher for PL-9 or Matra Sadral for Mistral to be fitted
Guns: 2 (457 and 458) or 4 China 100 mm/56 (1 or 2 twin) ● 25 rds/min to 22 km (12 n miles); weight of shell 15.9 kg. 8 China 37 mm/76 (4 twin) H/PJ 76 A ●, 180 rds/min to 8.5 km (4.6 n miles) anti-aircraft; weight of shell 1.42 kg.
A/S mortars: 2 RBU 1200 (China Type 86) 5-tubed fixed launchers ●; range 1,200 m.
Depth charges: 2 BMB racks.
Countermeasures: Decoys: 2 China Type 945 GPJ 26-barrelled chaff launchers
ESM China Type 923(1), intercept.
ECM China Type 981(3); jammer
Combat data systems: China Type ZKJ-3 or STN Atlas mini COSYS action data automation being fitted
Radars: Air/surface search: China Type 354 Eye Shield ●, G-band
 Surface search/fire control: China Type 352C Square Tie ●, I-band (for SSM)
 Fire control: China Type 343 Sun Visor ●, I-band (for 100 mm) China Type 341 Rice Lamp ●, I-band (for 37 mm).
Navigation: Racal Decca 1290 A/D ARPA and Anritsu RA 71CA ●, I band.
IFF: Type 651
Sonars: China Type SJD-5A; hull-mounted, active search and attack; medium frequency



CHAO PHRAYA

(Scale 1 : 900), Ian Sturton / DORNDIEP

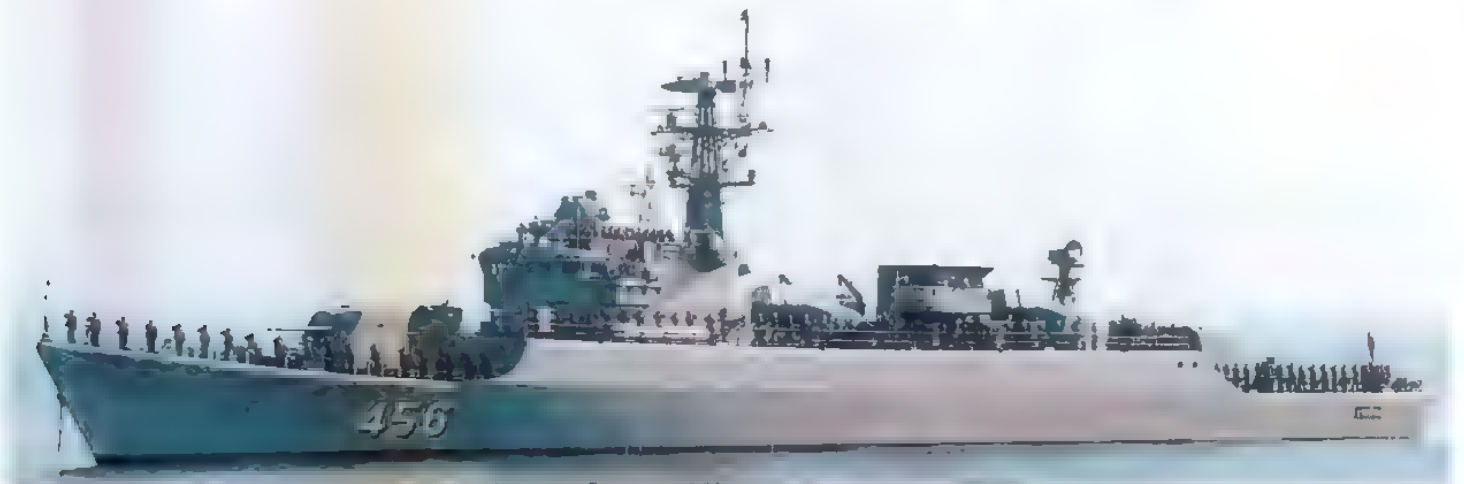


KRABURI

(Scale 1 : 900), Ian Sturton / DORNDIEP

Helicopters: Platform for 1 Bell 212 (457 and 458) ●
Programmes: Contract signed 18 July 1988 for four modified Jianghu class ships to be built by the China State SB Corporation (CSSC).
Modernisation: A mini COSYS system was acquired for two of the class in 1999
Structure: Thailand would have preferred only the hulls but China insisted on full armament. The first two ships are the Type III variant with 100 mm guns, fore and aft, and the second two are a variation with a helicopter platform

replacing the after 100 mm gun German communication equipment fitted. The EW fit is Italian designed.
Operational: On arrival in Thailand each ship was docked to make good poor shipbuilding standards and improve damage control capabilities. The ships are mostly used for rotating monthly to the Coast Guard, and for training, although Kraburi was part of the escort force for the aircraft carrier in Spanish waters in 1997. Kraburi damaged by the tsunami on 26 December 2004 but had been restored to operational service by February 2005.



BANGPAKONG

10/2002, John Mortimer / 0529998



SAIBURI

6/2008, Ships of the World / 1353389

For details of the latest updates to *Jane's Fighting Ships* online and to discover the additional information available exclusively to online subscribers please visit jfs.janes.com

2 KNOX CLASS (FFGHM)

Name	No	Builders	Laid down	Launched	Commissioned
PHUTTHA YOTFA CHULALOK (ex-Truett)	461 (ex-FF 1095)	Avondale Shipyards	27 Apr 1972	3 Feb 1973	1 June 1974
PHUTTHA LOETLA NAPHALAI (ex-Quellet)	462 (ex-FF 1077)	Avondale Shipyards	15 Jan 1969	17 Jan 1970	12 Dec 1970

Displacement, tons: 3,011 standard, 4,260 full load
Dimensions, feet (metres): 439.8 x 46.8 x 15; 24.8 (sonar) (134 x 14.3 x 4.6; 7.8)
Main machinery: 2 Combustion Engineering/Babcock & Wilcox boilers; 1,200 psi (84.4 kg/cm²); 950°F (510°C); 1 turbine; 36,000 hp (26 MW); 1 shaft
Speed, knots: 27. **Range, n miles:** 4,000 at 22 kt on 1 boiler
Complement: 288 (17 officers)

Missiles: SSM 8 McDonnell Douglas Harpoon, active radar homing to 130 km (70 n miles) at 0.9 Mach; warhead 227 kg

AS: Honeywell ASROC Mk 16 octuple launcher with reload system (has 2 starboard cells modified to fire Harpoon); inertial guidance to 1.6-10 km (1-5.4 n miles); payload Mk 46.

Guns: 1 FMC 5 in (127 mm)/54 Mk 42 Mod 9; 20-40 rds/min to 24 km (13 n miles) anti-surface; 14 km (7.7 n miles) anti-aircraft; weight of shell 32 kg.

1 General Electric/General Dynamics 20 mm/76 6-barrelled Mk 15 Vulcan Phalanx; 3,000 rds/min combined to 1.5 km.

Torpedoes: 4=324 mm Mk 32 (2 twin) fixed tubes; 22 Honeywell Mk 46; anti-submarine; active/passive homing to 11 km (5.9 n miles) at 40 kt; warhead 44 kg.

Countermeasures: Decoys: 2 Loral Hycor SRBOC 6-barrelled fixed Mk 36; IR flares and chaff to 4 km (2.2 n miles). T Mk-6 Fanfare/SLQ-25 Nixie; torpedo decoy, Prairie Masker hull and blade rate noise suppression.

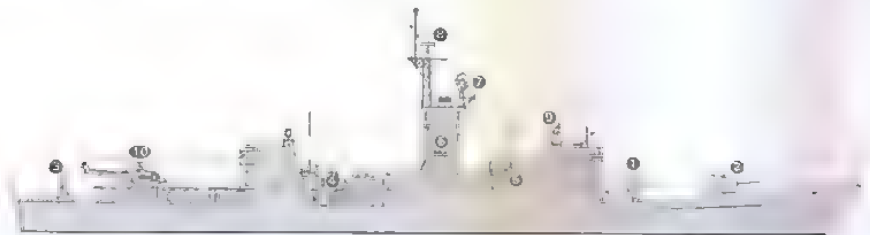
ESM/ECM: SLQ-32(V)2; radar warning. Sidetick modification adds jammer and deception system.

Combat data systems: Link 14 receive only.
Weapons control: SWG-1A Harpoon LCS Mk 68 GFCS. Mk 114 ASW FCS Mk 1 target designation system. MMS target acquisition sight (for mines, small craft and low-flying aircraft).

Radars: Air search: Lockheed SPS-40B; B-band; range 320 km (175 n miles).
 Surface search: Raytheon SPS-10 or Norden SPS-67; G-band.
 Navigation: Marconi LN66; I-band.

Fire control: Western Electric SPG-53A/D/F; I/J-band.
 Tacan: SRN 15. IFF: UFX-12

Sonars: EDO/General Electric SQS-26CX, bow-mounted; active search and attack; medium frequency.
 EDO SQR-18(V) TACTASS; passive; low frequency.



PHUTTHA YOTFA CHULALOK

(Scale 1 : 1,200), Ian Sturton / 0543397



PHUTTHA LOETLA NAPHALAI

1/2001, Thai Navy League / 0105841

Helicopters: 1 Bell 212

Structure: Four Mk 32 torpedo tubes are fixed in the midships structure, two to a side, angled out at 45°. The arrangement provides improved loading capability over exposed triple Mk 32 torpedo tubes. A 4,000 lb lightweight anchor is fitted on the port side and an 8,000 lb anchor fits into the after section of the sonar dome.

Programmes: The first ship transferred on five year lease from the USA on 30 July 1994. This was renewed by grant in 1999. The second transferred on lease 27 November 1996 and arrived in Thailand in November 1998.

1 YARROW TYPE (FFH)

Name	No	Builders	Laid down	Launched	Commissioned
MAKUT RAJAKUMARN	433 (ex-7)	Yarrow Shipbuilders	11 Jan 1970	18 Nov 1971	7 May 1973

Displacement, tons: 1,650 standard, 1,900 full load
Dimensions, feet (metres): 320 x 36 x 18.1 (97.6 x 11 x 5.5)

Main machinery: CODOG; 1 RR Olympus TM3B gas turbine; 22,500 hp (16.8 MW) sustained; 1 Crossley-SEMT-Pielstick 12 PC2.2 V 400 diesel; 6,000 hp (4.4 MW) sustained; 2 shafts

Speed, knots: 26 gas; 18 diesel
Range, n miles: 5,000 at 18 kt; 1,200 at 26 kt
Complement: 140 (16 officers)

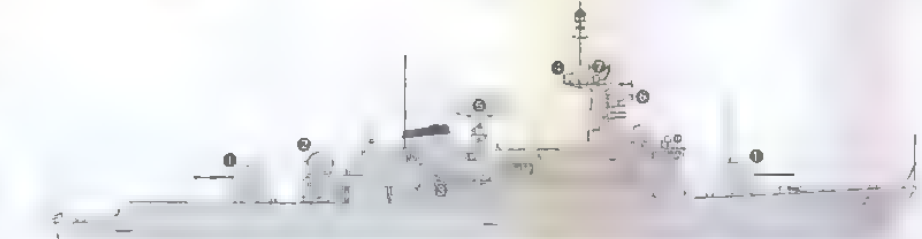
Guns: 2 Vickers 4.5 in (114 mm)/55 Mk 8; 25 rds/min to 22 km (12 n miles) anti-surface; 6 km (3.3 n miles) anti-aircraft; weight of shell 21 kg

2 Breda 40 mm/70 (twin); 300 rds/min to 12.5 km (6.8 n miles); weight of shell 0.98 kg
 2 Derlikon 20 mm.

Torpedoes: 6 Plessey PMW 49A tubes Mk 46; active/passive homing to 11 km (5.9 n miles) at 40 kt; warhead 44 kg

Depth charges: 1 rack.
Countermeasures: Decoys: 2 Loral Mk 135 chaff launchers
 ESM/ECM: Electronica Newton; intercept and jammer. WLR-1, radar warning

Combat data systems: Signal Sewaco TH.
Radars: Air/surface search: Signaal DA05; E/F-band; range 137 km (75 n miles); for 2 m² target.
 Surface search: Signaal ZW06; I-band.



MAKUT RAJAKUMARN

(Scale 1 : 900), Ian Sturton / 1167964

Fire control: Signaal WM22/61; I/J-band; range 46 km (25 n miles).
 Navigation: Racal Decca; I-band.

Sonars: Atlas Elektronik DSQS-21C; hull-mounted; active search and attack; medium frequency.

Helicopters: A small helicopter can land when the Mortar Mk 10 well is closed

Programmes: Ordered on 21 August 1969
Modernisation: A severe fire in February 1984 resulted in extensive work including replacement of the Olympus

gas turbine, a new ER control room and central electric switchboard. Further modifications included the removal of Seacat SAM system and the installation of new EW equipment in 1993. In 1997 two Bofors 40 mm were fitted on the old Seacat mounting, and torpedo tubes replaced the old Bofors abreast the funnel. The Limbo mortar mountings have been removed.

Operational: The ship is largely automated with a consequent saving in complement, and has been most successful in service. Has lost its Flagship role to one of the Chinese-built frigates and is employed on general duties rather than as a training ship as previously reported.



MAKUT RAJAKUMARN

2/2004, Bob Fildes / 0589813

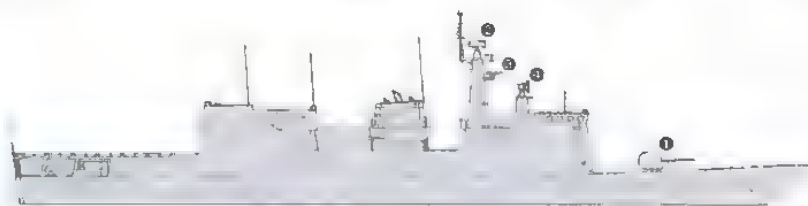
CORVETTES

2 + (2) PATTANI CLASS (OFFSHORE PATROL VESSELS) (PBOH)

Name	No	Builders	Laid down	Launched	Commissioned
PATTANI	511	Hudong Shipyard, Shanghai	2003	19 Sep 2004	16 Dec 2005
NARATHIWAT	512	Hudong Shipyard, Shanghai	2004	Mar 2005	16 Apr 2006

Displacement, tons: 1,300; 1,440 full load
 Dimensions, feet (metres): 313.3 × 38.0 × 10.2
 (95.5 × 11.6 × 3.1)
 Main machinery: 2 Ruston diesels; 15,660 hp (11.7 MW);
 2 shafts; cp props
 Speed, knots, 25
 Range, n miles: 3,500 at 15 kt
 Complement: 78 (18 officers)

Guns: 1 OTO Melara 3 in (76 mm)/62 ①; 85 rds/min to 16 km
 (8.6 n miles) 2—20 mm.
 Combat data systems: COSYS
 Weapons control: Optronic director combined with TMX.
 Radars: Air/surface search: Alenia Marconi SPS 791
 (RAN-30X/I) ②; I-band.
 Surface search ③: To be announced
 Fire control: Oerlikon/Contraves TMX ④; I/J-band.
 Navigation: I-band.



PATTANI

(Scale 1 : 900), Ian Sturton / 1353390

Helicopters: Platform for one medium.

Programmes: The contract for two Offshore Patrol Vessels was signed with China Shipbuilding Trading Company on 20 December 2002. A further two vessels are projected

Structure: Space and weight provision for the addition of eight SSM, CIWS (probably Matra Sadral) and ASW capabilities at a later date

Operational: *Pattani* arrived at Sattahip on 16 December 2005. *Narathiwat* followed on 4 May 2006.



PATTANI

10/2008, Michael Nitz / 1353392



NARATHIWAT

3/2007, Thai Navy League / 1353393

2 RATTANAKOSIN CLASS (FSGM)

Name	No	Builders	Laid down	Launched	Commissioned
RATTANAKOSIN	441 (ex-1)	Tacoma Boatbuilders, WA	6 Feb 1984	11 Mar 1986	26 Sep 1986
SUKHOTHAJ	442 (ex-2)	Tacoma Boatbuilders, WA	26 Mar 1984	20 July 1986	10 June 1987

Displacement, tons: 960 full load
Dimensions, feet (metres): 252 x 31.5 x 8
(76.8 x 9.6 x 2.4)

Main machinery: 2 MTU 20V 1163T883 diesels; 14,730 hp (m)

(10.83 MW) sustained; 2 shafts, Kamewa cp props

Speed, knots: 26. Range, n miles: 3,000 at 18 kt

Complement: 87 (15 officers) plus Flag Staff

Missiles: SSM: 8 McDonnell Douglas Harpoon (2 quad launchers) ●; active radar homing to 130 km (70 n miles) at 0.9 Mach; warhead 227 kg (84A) or 258 kg (84B/C).

SAM: Selenia Elsig Albatros octuple launcher ●; 24 Aspide, semi-active radar homing to 13 km (7 n miles) at 2.6 Mach, height envelope 15-5,000 m (49.2-16,405 ft); warhead 30 kg.

Guns: 1 OTO Melara 3 in (76 mm)/62 ●; 60 rds/min to 16 km (8.7 n miles); weight of shell 6 kg.

2 Breda 40 mm/70 (twin) ●; 300 rds/min to 12.5 km (6.8 n miles); weight of shell 0.96 kg.

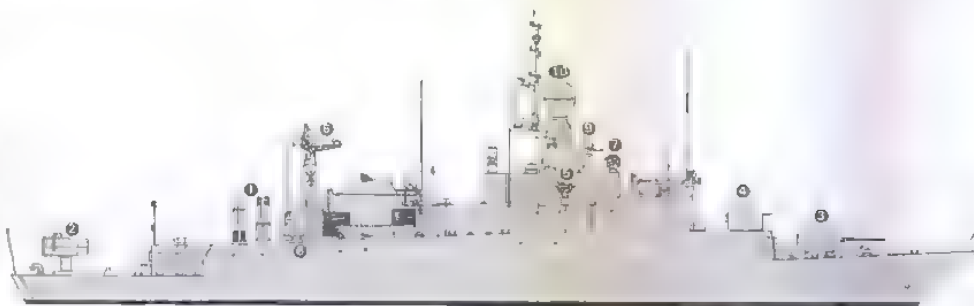
2 Rheinmetall 20 mm ●

Torpedoes: 6-324 mm US Mk 32 (2 triple tubes) ● MUSL Stingray; active/passive homing to 11 km (5.9 n miles) at 45 kt; warhead 35 kg (shaped charge); depth to 750 m (2,460 ft)

Countermasures: Decoys: CSEE Dagaie 6- or 10-tubed trainable, IR flares and chaff; H- to J-band.

ESM: Electronica; intercept.

Weapons control: Signaal Sewaco TH action data automation. Lirod 8 optronic director ●.



RATTANAKOSIN

(Scale 1 : 600), Ian Sturton / 0506173

Radars: Air/surface search: Signaal DA05 ●; E/F-band; range 137 km (75 n miles) for 2 m² target.

Surface search: Signaal ZW06 ●; I-band.

Navigation: Decca 1226, I-band

Fire control: Signaal WM25/41 ●; UJ-band; range 48 km (25 n miles)

Sonars: Atlas Elektronik DSQS-21C; hull-mounted, active search and attack; medium frequency

Programmes: Contract signed with Tacoma on 9 May 1983. Intentions to build a third were overtaken by the Vosper corvettes.

Structure: There are some similarities with the missile corvettes built for Saudi Arabia five years earlier. Space for Phalanx aft of the Harpoon launchers, but there are no plans to fit.



SUKHOTHAJ

7/2008*, John Mortimer / 1353394

3 KHAMRONSIN CLASS (FS)

Name	No	Builders	Laid down	Launched	Commissioned
KHAMRONSIN	531 (ex-1)	Ital/Thai Marine, Bangkok	15 Mar 1988	15 Aug 1989	29 July 1992
THAYANCHON	532 (ex-2)	Ital/Thai Marine, Bangkok	20 Apr 1988	7 Dec 1989	5 Sep 1992
LONGLOM	533 (ex-3)	Bangkok Naval Dockyard	15 Mar 1988	8 Aug 1989	2 Oct 1992

Displacement, tons: 630 full load

Dimensions, feet (metres): 203.4 oa, 186 wl x 26.9 x 8.2
(62, 56.7 x 8.2 x 2.5)

Main machinery: 2 MTU 12V 1163 TB93; 9,980 hp (m)

(7.34 MW) sustained; 2 Kamewa cp props

Speed, knots: 25. Range, n miles: 2,500 at 15 kt

Complement: 57 (6 officers)

Guns: 1 OTO Melara 76 mm/62 Mod 7 ●; 60 rds/min to 16 km (8.7 n miles); weight of shell 6 kg.

2 Breda 30 mm/70 (twin) ●; 800 rds/min to 12.5 km (6.8 n miles); weight of shell 0.37 kg

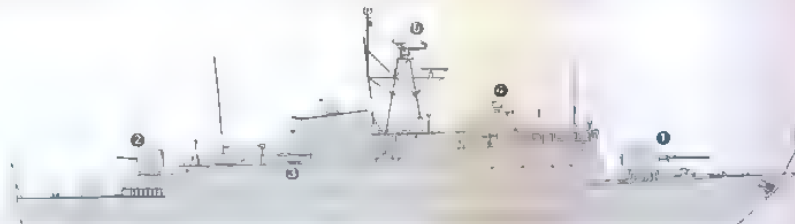
2-12.7 mm MGs

Torpedoes: 6 Plessey PMW 49A (2 triple launchers) ●; MUSL Stingray; active/passive homing to 11 km (5.9 n miles) at 45 kt; warhead 35 kg shaped charge

Combat data systems: Plessey Nautis P action data automation

Weapons control: British Aerospace Sea Archer 1A Mod 2 optronic GFCS ●

Radars: Air/surface search: Plessey AWS 4 ●; E/F-band. Navigation: Racal Decca 1226; I-band.



KHAMRONSIN

(Scale 1 : 600), Ian Sturton / 0577649

Sonars: Atlas Elektronik DSQS-21C; hull-mounted; active search and attack; medium frequency.

Programmes: Contract signed on 29 September 1987 with Ital Thai Marine of Bangkok for the construction of two ASW corvettes and for technical assistance with a third to be built in Bangkok Naval Dockyard. A fourth of the class with a different superstructure

and less armament was ordered by the Police in September 1989

Structure: The vessels are based on a Vosper Thornycroft Province class 56 m design stretched by increasing the frame spacing along the whole length of the hull. Depth charge racks and mine rails may be added.



THAYANCHON

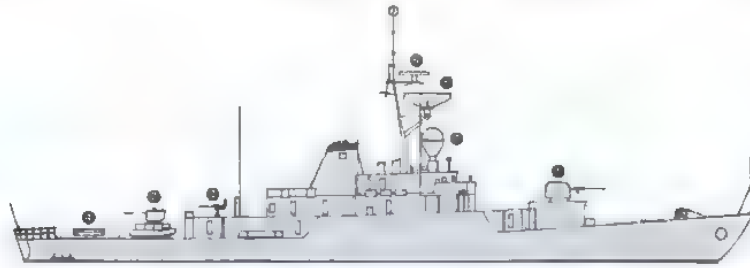
12/2007, Michael Nitz / 1353395

2 TAPI (PF 103) CLASS (FS)

Name	No	Builders	Laid down	Launched	Commissioned
TAPI	431 (ex-5)	American SB Co, Toledo, OH	1 July 1970	17 Oct 1970	19 Nov 1971
KHIRIRAT	432 (ex-6)	Norfolk SB & DD Co	18 Feb 1972	2 June 1973	10 Aug 1974

Displacement, tons: 885 standard; 1,172 full load
Dimensions, feet (metres): 275 × 33 × 10, 14.1 (sonar)
 (83.8 × 10 × 3; 4.3)
Main machinery: 2 Fairbanks-Morse 38TD8-1/B-9 diesels,
 5,250 hp (3.9 MW) sustained; 2 shafts
Speed, knots: 20
Range, n miles: 2,400 at 18 kt
Complement: 135 (15 officers)

Guns: 1 OTO Melara 3 in (76 mm)/62 compact ①; 85 rds/min to 16 km (8.7 n miles) anti-surface; 12 km (6.6 n miles) anti-aircraft; weight of shell 6 kg.
 1 Bofors 40 mm/70 ②; 300 rds/min to 12.5 km (6.8 n miles); weight of shell 0.96 kg.
 2 Oerlikon 20 mm ③; 2—12.7 mm MGs.
Torpedoes: 6—324 mm US Mk 32 (2 triple) tubes ④.
 Honeywell Mk 46; anti-submarine; active/passive homing to 11 km (5.9 n miles) at 40 kt; warhead 44 kg.
Depth charges: 1 rack.
Combat data systems: Signaal Sewaco TH.
Radars: Air/surface search: Signaal LW04 ⑤; D-band; range 137 km (75 n miles) for 2 m² target
 Surface search: Raytheon SPS-53E ⑥; I-band.



TAPI

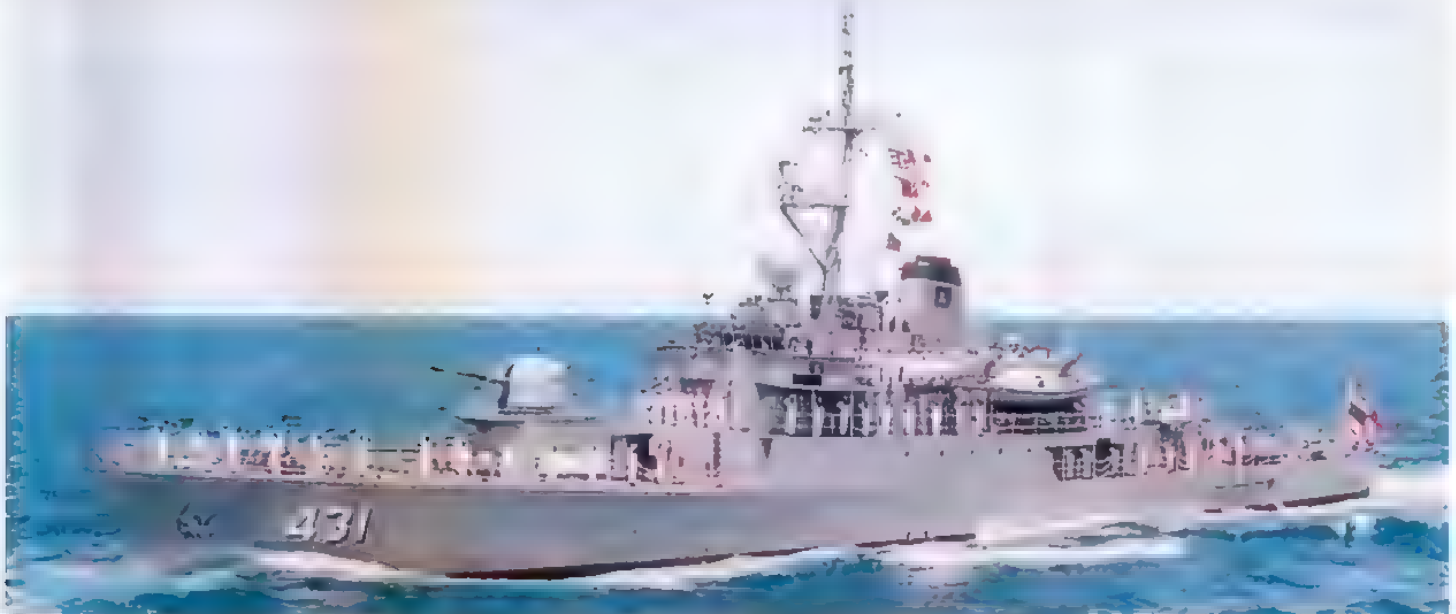
(Scale 1 : 900), Ian Sturton / 0506109

Fire control: Signaal WM22-81 ⑦; I/J-band; range 46 km (25 n miles).
 IFF UPX-23
Sonars: Atlas Elektronik DSQS-21C; hull-mounted; active search and attack; medium frequency.

Programmes: TAPI was ordered on 27 June 1969. KHIRIRAT was ordered on 25 June 1971.

Modernisation: TAPI completed 1983 and KHIRIRAT in 1987. This included new gunnery and radars and a slight heightening of the funnel. Further modernisation in 1988–89 mainly to external and internal communications.
Structure: Of similar design to the Iranian ships of the Bayandor class.

Operational: Used for EEZ patrols



TAPI

6/2001, Royal Thai Navy / 0130171

SHIPBORNE AIRCRAFT

Numbers/Type: 4 Bell 214 ST.
Operational speed: 120 kt (228 km/h).
Service ceiling: 13,200 ft (4,025 m).
Range: 400 n miles (740 km).
Role/Weapon systems: Procured in 1987 for maritime surveillance and utility roles.



BELL 214

6/2004, Royal Thai Navy / 1044195

Numbers/Type: 7/2 BAe/McDonnell Douglas AV-8A (Harrier)/TAV-8A (Harrier).
Operational speed: 640 kt (1,186 km/h).
Service ceiling: 51,200 ft (15,600 m).
Range: 800 n miles (1,480 km).
Role/Weapon systems: AV-8S supplied via USA to Spain and transferred in 1996. Sensors: None. Weapons: Strike, two 30 mm Aden cannon, two AIM-9 Sidewinder or 20 mm/127 mm rockets and 'iron' bombs



HARRIER

1/2001, Thai Navy League / 0130153

Numbers/Type: 2 AgustaWestland Super Lynx 300.
Operational speed: 125 kt (231 km/h).
Service ceiling: 12,000 ft (3,660 m).
Range: 340 n miles (630 km).
Role/Weapon systems: Two helicopters ordered 7 August 2001 for ASW, ASV and surveillance roles. Delivered in 2005.



SUPER LYNX

9/2004, AgustaWestland / 0556704

Numbers/Type: 6 Sikorsky S-70B7 Seahawk.
Operational speed: 135 kt (250 km/h).
Service ceiling: 10,000 ft (3,050 m).
Range: 600 n miles (1,110 km).
Role/Weapon systems: Multimission helicopters delivered by June 1997. Plans to acquire ASW equipment have been abandoned. Sensors: Telephonics APS-143(V)3 radar; ASN 150 databus; provision for sonobuoys and dipping sonar; ALR 606(V)2 ESM. Weapons: Provision for ASM and MUSL Stingray torpedoes.



SEAHAWK

7/2005, Thai Navy League / 1153913

Numbers/Type: 4 Bell 212.
Operational speed: 100 kt (185 km/h).
Service ceiling: 13,200 ft (4,025 m).
Range: 200 n miles (370 km).

Role/Weapon systems: Commando assault and general support. At least two transferred from Army. May be sold to help pay for new shipborne helicopter. Mostly based ashore but operate from Normed class and frigates. Weapons: Pintle-mounted M60 machine guns.



BELL 212 6/2000, Thai Navy League / 0105847

Numbers/Type: 3/2 Fokker F27 Maritime 200ME/F27 Maritime 400M
Operational speed: 250 kt (463 km/h).
Service ceiling: 25,000 ft (7,620 m).
Range: 2,700 n miles (5,000 km).

Role/Weapon systems: Increased coastal surveillance and response is provided, including ASW and ASV action by 200ME. 400M is for transport. Sensors: APS-604 search radar, Bendix weather radar, ESM and MAD equipment. Weapons: ASW; four Mk 46 or Stingray torpedoes or depth bombs or mines. ASV; two Harpoon ASM



FOKKER 400 1994, Royal Thai Navy / 0053452

LAND-BASED MARITIME AIRCRAFT (FRONT LINE)

Notes: There are also five Cessna Bird Dog light reconnaissance aircraft, 9 Cessna Skywagon and two UH-1H helicopters.

Numbers/Type: 4 Sikorsky S-76B.
Operational speed: 145 kt (269 km/h).
Service ceiling: 6,500 ft (1,980 m).
Range: 357 n miles (661 km).

Role/Weapon systems: Six originally acquired in 1996 for maritime surveillance and utility purposes. Sensors: Weather radar. Weapons: Unarmed.



S-76 8/1996, Royal Thai Navy / 0050241

Numbers/Type: 5 GAF N24A Searchmaster B (Nomad).
Operational speed: 168 kt (311 km/h).
Service ceiling: 21,000 ft (6,400 m).
Range: 730 n miles (1,352 km).

Role/Weapon systems: Short-range MR for EEZ protection and anti-smuggling operations. Sensors: Search radar, cameras. Weapons: Unarmed



NOMAD (US colours) 2/2004, ASTA / 0010167

Numbers/Type: 6 Dornier 228.
Operational speed: 200 kt (370 km/h).
Service ceiling: 28,000 ft (8,535 m).
Range: 940 n miles (1,740 km).

Role/Weapon systems: Coastal surveillance and EEZ protection. Three acquired in 1991, three more in 1996. Sensors: APS-128/504 search radar



DORNIER 228 6/1996, Royal Thai Navy / 0019267

Numbers/Type: 2/1 Lockheed P-3T Orion/UP-3T Orion.
Operational speed: 411 kt (761 km/h).
Service ceiling: 28,300 ft (8,625 m).
Range: 4,000 n miles (7,410 km).

Role/Weapon systems: Delivered in 1996. Two for ASW and one utility. Two more are required. Sensors: APS-116 radar, ECM/ESM. Weapons: ASW; Mk 46 or Stingray torpedoes. ASV; four Harpoon.



ORION 8/1997, Royal Thai Navy / 0019261

Numbers/Type: 2 Canadair CL-215.
Operational speed: 206 kt (382 km/h).
Service ceiling: 10,000 ft (3,050 m).
Range: 1,125 n miles (2,085 km).

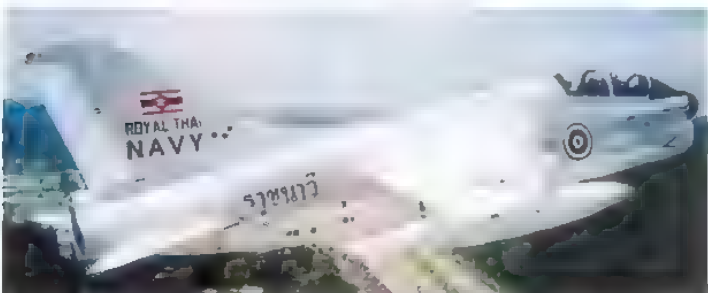
Role/Weapon systems: Used for general purpose transport, SAR and fire-fighting.



CL-215 1993, Royal Thai Navy / 0053453

Numbers/Type: 13/4 Vought A-7E Corsair II/TA-7E Corsair II.
Operational speed: 600 kt (1,112 km/h).
Service ceiling: 50,000 ft (15,240 m).
Range: 2,000 n miles (3,705 km).

Role/Weapon systems: Delivered in 1996-97 from the US. Reconditioning programme in progress 2004. Weapons: AIM-9L Sidewinder; 1-20 mm cannon.



CORSAIR II 8/1996, Royal Thai Navy / 0053451

Numbers/Type: 7/2 Summit T-337SP/T-337G.
Operational speed: 200 kt (364 km/h).
Service ceiling: 20,000 ft (6,100 m).
Range: 900 n miles (1,650 km).

Role/Weapon systems: Maritime surveillance and targeting. Weapons: LAU 32 and 59A rocket launchers, CBU-14 bomblets and 12.7 mm MG

PATROL FORCES

3 HUA HIN CLASS (PSO)

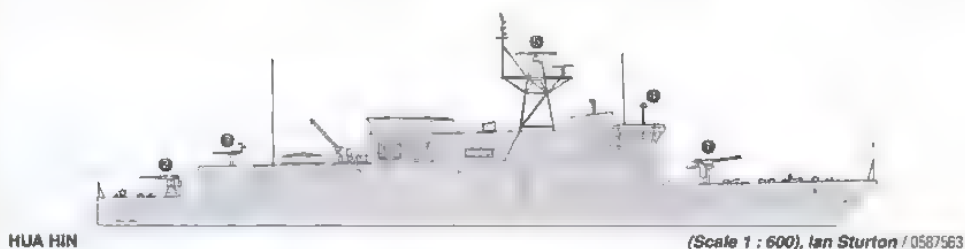
Name	No	Builders	Laid down	Launched	Commissioned
HUA HIN	541	Asimar, Samut Prakarn	Mar 1997	3 Mar 1999	25 Mar 2000
KLAENG	542	Asimar, Samut Prakarn	May 1997	19 Apr 1999	17 Jan 2001
SI RACHA	543	Bangkok Naval Dockyard	Dec 1997	6 Sep 1999	17 Jan 2001

Displacement, tons: 645 full load
Dimensions, feet (metres): 203.4 × 29.2 × 8.9
 (62 × 8.9 × 2.7)
Main machinery: 3 Paxman 12VP 185 diesels; 10,372 hp(m)
 (7.63 MW) sustained; 3 shafts; 1 LIPS cp prop (centreline)
Speed, knots: 25. **Range, n miles:** 2,500 at 15 kt
Complement: 45 (11 officers)

Guns: 1—3 in (76 mm)/50 Mk 22 ●, 50 rds/min to 12 km
 (6.5 n miles); weight of shell 6 kg.
 1 Bofors 40 mm/60 ●, 2 Oerlikon 20 mm GAM-BO1 ●
 2—12.7 mm MGs.

Weapons control: Optronic director ●.
Radars: Surface search: Sperry Rascar ●, E/F-band.
Navigation: Sperry Apar; I-band.

Programmes: Ordered in September 1996 from Asian Marine. Delayed and reported cancelled by the Thai Navy



HUA HIN

(Scale 1 : 600), Ian Sturton / 0587563

In late 1997 but, despite being beset by building delays, all three ships had entered service by 2001.

Modernisation: Due to budgetary constraints, older weapon systems have been installed as a temporary measure.

A new 76 mm/62 gun and 40 mm/70 are planned to be fitted.

Structure: Derived from the Khamronsin design.



KLAENG

6/2001, Royal Thai Navy / 0130174

3 RATCHARIT CLASS (FAST ATTACK CRAFT—MISSILE) (PGGF)

Name	No	Builders	Commissioned
RATCHARIT	321 (ex-4)	CN Breda (Venezia)	10 Aug 1979
WITTHAYAKHOM	322 (ex-5)	CN Breda (Venezia)	12 Nov 1979
UDOMDET	323 (ex-6)	CN Breda (Venezia)	21 Feb 1980

Displacement, tons: 235 standard; 270 full load
Dimensions, feet (metres): 163.4 × 24.6 × 7.5 (49.8 × 7.5 × 2.3)
Main machinery: 3 MTU MD 20V 538 TB91 diesels; 11,520 hp(m) (8.47 MW) sustained,
 3 shafts; Kamewa cp props
Speed, knots: 37
Range, n miles: 2,000 at 15 kt
Complement: 45 (7 officers)

Missiles: SSM: 4 Aerospatiale MM 38 Exocet; inertial cruise; active radar homing to 42 km
 (23 n miles) at 0.9 Mach; warhead 165 kg; sea-skimmer.

Guns: 1 OTD Melara 3 in (76 mm)/62 compact; 85 rds/min to 16 km (8.7 n miles)
 anti-surface; 12 km (6.5 n miles) anti-aircraft; weight of shell 6 kg.
 1 Bofors 40 mm/70; 300 rds/min to 12.5 km (6.8 n miles); weight of shell 0.96 kg.
 2—12.7 mm MGs.

Countermeasures: ESM: Racal RDL-2; intercept

Radars: Surface search: Decca; I-band.

Fire control: Signaal WM25; I/J-band; range 46 km (25 n miles).

Programmes: Ordered June 1976. *Ratcharit* launched 30 July 1976, *Witthayakhom*
 2 September 1976 and *Udomdet* 28 September 1976.

Structure: Standard Breda BMB 230 design.



WITTHAYAKHOM

6/2007, Thai Navy League / 116/917

3 PRABPARAPAK CLASS (FAST ATTACK CRAFT—MISSILE) (PTFG)

Name	No	Builders	Commissioned
PRABPARAPAK	311 (ex-1)	Singapore SBEC	28 July 1976
HANHAQ SATTRU	312 (ex-2)	Singapore SBEC	6 Nov 1976
SUPHAIRIN	313 (ex-3)	Singapore SBEC	1 Feb 1977

Displacement, tons: 224 standard; 268 full load
Dimensions, feet (metres): 149 × 24.3 × 7.5 (45.4 × 7.4 × 2.3)
Main machinery: 4 MTU 16V 538 TB92 diesels; 13,640 hp(m) (10 MW) sustained; 4 shafts
Speed, knots: 40
Range, n miles: 2,000 at 15 kt; 750 at 37 kt
Complement: 41 (5 officers)

Missiles: SSM: 5 IAI Gabriel I (1 triple, 2 single) launchers; radar or optical guidance; semi-
 active radar homing to 20 km (10.8 n miles) at 0.7 Mach; warhead 75 kg.

Guns: 1 Bofors 57 mm/70; 200 rds/min to 17 km (9.3 n miles); weight of shell 2.4 kg.
 8 rocket illuminant launchers on either side of 57 mm gun.

1 Bofors 40 mm/70; 300 rds/min to 12 km (6.8 n miles); weight of shell 0.96 kg.

Countermeasures: ESM: Racal RDL-2; intercept.

Radars: Surface search: Kelvin Hughes Type 17; I-band.

Fire control: Signaal WM28/5 series; I/J-band.

Programmes: Ordered June 1973. Built under licence from Lürssen. Launch dates:
Prabparapak 29 July 1975, *Hanhak Sattru* 28 October 1975, *Suphairin* 20 February 1976.

Modernisation: There are plans to replace Gabriel possibly by RBS 15.

Structure: Same design as Lürssen standard 45 m class built for Singapore. Normally only
 three Gabriel SSM are carried.



PRABPARAPAK

6/2001, Royal Thai Navy / 0130172

3 CHON BURI CLASS (FAST ATTACK CRAFT—GUN) (PG)

Name	No	Builders	Commissioned
CHON BURI	331 (ex-1)	CN Breda (Venezia) Mestre	22 Feb 1983
SONGKHLA	332 (ex-2)	CN Breda (Venezia) Mestre	15 July 1983
PHUKET	333 (ex-3)	CN Breda (Venezia) Mestre	13 Jan 1984

Displacement, tons: 450 full load
Dimensions, feet (metres): 198 × 29 × 15 (60.4 × 8.8 × 4.5)
Main machinery: 3 MTU 20V 538TB92 diesels; 12,795 hp(m) (9.4 MW) sustained; 3 shafts, cp props
Speed, knots: 30
Range, n miles: 2,500 at 18 kt; 900 at 30 kt
Complement: 41 (6 officers)
Guns: 2 OTO Melara 3 in (76 mm)/62; 85 rds/min to 16 km (8.7 n miles); weight of shell 6 kg, 2 Breda 40 mm/70 (twin).
Countermeasures: Decoys, 4 Hycor Mk 135 chaff launchers.
ESM: Elettronica Newton; intercept
Weapons control: Signaal Lirod 8 optronic director.
Radars: Surface search: Signaal ZW06; I-band.
Fire control: Signaal WM22/61; VJ-band; range 46 km (25 n miles).

Comment: Ordered in 1979 (first pair) and 1981. Laid down – *Chon Buri* 15 August 1981 (launched 29 November 1982), *Songkhla* 15 September 1981 (launched 6 September 1982), *Phuket* 15 December 1981 (launched 3 February 1983). Steel hulls, alloy superstructure. Can be adapted to carry SSMs.



PHUKET

10/2001, Chris Sattler / 0130157



CHON BURI

9/2003, Hartmut Ehlers / 0572642

6 SATTAHIP (PSMM MK 5) CLASS (LARGE PATROL CRAFT) (PG)

Name	No	Builders	Commissioned
SATTAHIP	521 (ex-4)	Ital Thai (Samutprakarn) Ltd	16 Sep 1983
KLONGYAI	522 (ex-5)	Ital Thai (Samutprakarn) Ltd	7 May 1984
TAKBAI	523 (ex-6)	Ital Thai (Samutprakarn) Ltd	18 July 1984
KANTANG	524 (ex-7)	Ital Thai (Samutprakarn) Ltd	14 Oct 1985
THEPHA	525 (ex-8)	Ital Thai (Samutprakarn) Ltd	17 Apr 1986
TAIMUANG	526 (ex-9)	Ital Thai (Samutprakarn) Ltd	17 Apr 1986

Displacement, tons: 270 standard, 300 full load
Dimensions, feet (metres): 164.5 × 23.9 × 5.9 (50.1 × 7.3 × 1.8)
Main machinery: 2 MTU 16V 538TB92 diesels; 6,820 hp(m) (5 MW) sustained; 2 shafts
Speed, knots: 22
Range, n miles: 2,500 at 15 kt
Complement: 56
Guns: 1 OTO Melara 3 in (76 mm)/62 (in 521-523), 1 USN 3 in (76 mm)/50 Mk 26 (in 524-526), 1 Bofors 40 mm/70 or 40 mm/60, 2 Oerlikon 20 mm GAM-BO1 2–12.7 mm MGs.
Weapons control: NA 18 optronic director (in 521-523)
Radars: Surface search: Decca, I-band

Comment: First four ordered 9 September 1981, *Thepha* on 27 December 1983 and *Taimuang* on 31 August 1984.



TAKBAI

10/1999, Royal Thai Navy / 0080815

3 T 81 CLASS (COASTAL PATROL CRAFT) (PB)

T 81–83

Displacement, tons: 120 full load
Dimensions, feet (metres): 98.8 × 20.7 × 5.6 (30.1 × 6.3 × 1.7)
Main machinery: 2 MTU 16V 2000TE90 diesels; 3,600 hp(m) (2.56 MW); 2 shafts
Speed, knots: 25. **Range, n miles:** 1,300 at 15 kt
Complement: 28 (3 officers)
Guns: 1 Bofors 40 mm/70, 1 Oerlikon 20 mm, 2–12.7 mm MGs.
Radars: Surface search: Sperry SM 5000; I-band.

Comment: Ordered in October 1996 from ASC Silktine in Pranburi. First one commissioned 5 August 1999, second 9 December 1999 and the third in 2000. Plans for seven more have been shelved.



T 83

3/2004, Bob Fildes / 0589810

10 PGM 71 CLASS (COASTAL PATROL CRAFT) (PB)

T 11–19 T 110

Displacement, tons: 130 standard; 147 full load
Dimensions, feet (metres): 101 × 21 × 6 (30.8 × 6.4 × 1.9)
Main machinery: 2 GM diesels; 1,800 hp (1.34 MW); 2 shafts
Speed, knots: 18.5. **Range, n miles:** 1,500 at 10 kt
Complement: 30
Guns: 1 Bofors 40 mm/60, 1 Oerlikon 20 mm, 2–12.7 mm MGs.
 In some craft the 20 mm gun has been replaced by an 81 mm mortar/12.7 mm combined mounting aft
Radars: Surface search: Decca 303 (T 11 and 12) or Decca 202 (remainder); I-band

Comment: Built by Peterson Inc between 1966 and 1970. Transferred from US. Likely to be decommissioned as modified T 81 class enter service.



T 16

10/1999, Royal Thai Navy / 0080815

9 T 91 CLASS (COASTAL PATROL CRAFT) (PB)

T 91–99

Displacement, tons: 87.5 (T 91-92), 117 (remainder) standard
Dimensions, feet (metres): 103.4 × 17.6 × 4.9 (31.5 × 5.4 × 1.5) (T 91-92)
 111.6 × 18.7 × 4.9 (34.0 × 5.7 × 1.5) (remainder)
Main machinery: 2 MTU 12V 538TB81/82 diesels; 3,300 hp(m) (2.43 MW)/4,430 hp(m) (3.26 MW) sustained; 2 shafts
Speed, knots: 25. **Range, n miles:** 700 at 21 kt
Complement: 21 (T 91-92); 25 (remainder)
Guns: 2 or 1 Bofors 40 mm/60 (T 91 and T 99), 1 Oerlikon 20 mm GAM-BO1 (T 91 and T 99), 2–12.7 mm MGs (T 93-99).
Weapons control: Sea Archer 1A optronic director (T 99 only).
Radars: Surface search: Raytheon SPS 35 (1500B), I-band

Comment: Built by Royal Thai Naval Dockyard, Bangkok. T 91 commissioned in 1965; T 92-93 in 1973; T 94-98 between 1981 and 1984, T 99 in 1987. T 91 has an extended upperworks and a 20 mm gun in place of the after 40 mm. T 99 has a single Bofors 40/70, one Oerlikon 20 mm and two MGs. Major refits from 1983-86 for earlier vessels of the class.



T 96

10/2001, Chris Sattler / 0130457

3 + (6) T 991 CLASS (COASTAL PATROL CRAFT) (PB)

No	Builders	Launched	Commissioned
T 991	Bangkok Naval Dockyard	2006	30 Apr 2007
T 992	Marsun Shipyard	6 Sep 2007	Dec 2007
T 993	Marsun Shipyard	6 Sep 2007	Dec 2007

Displacement, tons: 186 full load
Dimensions, feet (metres): 127.0 x 21.2 x 5.9 (38.7 x 6.45 x 1.8)
Main machinery: 2 MTU 16V 4000 M 90 diesels, 7,400 hp (5.5 MW); 2 shafts
Speed, knots: 27
Complement: 30
Guns: 2 MSI DS-30M 30 mm 2-12.7 mm MGs
Weapons control: Thales Mirador optronic director.
Radars: Surface search/navigation. To be announced.

Comment: Modified versions of the T 91 class. First vessel laid down at Naval Dockyard on 9 September 2005. Two further craft delivered by December 2007. A further six craft are planned.



T 991 12/2007, M Mazumdar / 1353396

9 SWIFT CLASS (COASTAL PATROL CRAFT) (PB)

T 21-29
Displacement, tons: 22 full load
Dimensions, feet (metres): 50 x 13 x 3.5 (15.2 x 4 x 1.1)
Main machinery: 2 Detroit diesels, 480 hp (358 kW); 2 shafts
Speed, knots: 26
Range, n miles: 400 at 25 kt
Complement: 8 (1 officer)
Guns: 1 81 mm mortar 2-12.7 mm MGs
Radars: Surface search: Raytheon Pathfinder; I-band.

Comment: Transferred from US Navy from 1967-75.



T 21 7/2008, Thai Navy League / 1353397

13 T 213 CLASS (COASTAL PATROL CRAFT) (PB)

T 213-214 T 216-226
Displacement, tons: 35 standard
Dimensions, feet (metres): 64 x 17.5 x 5 (19.5 x 5.3 x 1.5)
Main machinery: 2 MTU diesels; 715 hp(m) (526 kW); 2 shafts
Speed, knots: 25
Complement: 8 (1 officer)
Guns: 1 Oerlikon 20 mm, 1-81 mm mortar with 12.7 mm MG.
Radars: Surface search, Racal Decca 110; I-band.

Comment: Built by Ital Thai Marine Ltd. Commissioned-T 213-214, 29 August 1980; T 216-218, 26 March 1981; T 219-223, 16 September 1981; T 224, 19 November 1982; T 225 and T 226, 28 March 1984. Construction of T 227-230 is not to have been completed. Of sloop construction. Used for fishery patrol and coastal control duties. T 215 damaged beyond repair by tsunami on 26 December 2004 and replaced by T 227



T 219 9/2003, Hartmut Ehlers / 0572643

1 T 227 CLASS (COASTAL PATROL CRAFT) (PB)

Displacement, tons: 42 full load
Dimensions, feet (metres): 70.0 x 17.4 x 4.9 (21.3 x 5.3 x 1.5)
Main machinery: 2 MTU diesels; 1,200 hp (895 kW); 2 shafts
Speed, knots: 28
Complement: 8 (1 officer)
Guns: 1-20 mm, 2-12.7 mm MGs
Radars: Surface search/navigation: I-band.

Comment: Larger variant of the T 213 class built by Marsun and launched on 1 September 2006 to replace T 215 which was lost in the tsunami of 26 December 2004.



T 227 12/2006, Marsun / 1190410

3 SEAL ASSAULT CRAFT (LCP)

Comment: Locally built for special forces operations. Details are not known but reported to be larger and faster than PBR Mk II craft. Equipped with stern ramp.



T 242 (SEAL) 5/1997, A Sharma / 0050242

13 PBR MK II (RIVER PATROL CRAFT) (PBR)

Displacement, tons: 8 full load
Dimensions, feet (metres): 32.1 x 11.5 x 2.3 (9.8 x 3.5 x 0.7)
Main machinery: 2 Detroit diesels; 430 hp (321 kW); 2 Jacuzzi water-jets
Speed, knots: 25
Range, n miles: 150 at 23 kt
Complement: 4
Guns: 2-7.62 mm MGs, 1-60 mm mortar.
Radars: Raytheon SPS-68, I-band.

Comment: Transferred from US from 1967-73. Employed on Mekong River. Reported to be getting old, numbers are reducing and maximum speed has been virtually halved. All belong to the Riverine and SEAL Squadron.



PBR MK II 6/2002, Thai Navy League / 0543380

3 SEA SPECTRE MK III CLASS (PB)

T 210-212
Displacement, tons: 28; 37 full load
Dimensions, feet (metres): 65.0 x 18.0 x 5.9 (19.8 x 5.5 x 1.8)
Main machinery: 3 Detroit diesels; 1,800 hp (1.34 MW); 3 shafts
Speed, knots: 30
Range, n miles: 450 at 20 kt
Complement: 9 (1 officer)
Guns: 2 Oerlikon 20 mm, 1-12.7 MG.
Radars: Surface search: Raytheon; I-band.

Comment: Aluminium hulled craft built by Peterson. Transferred from the US in 1975.

90 ASSAULT BOATS (LCP)

Displacement, tons: 0.4 full load
Dimensions, feet (metres): 16.4 x 6.2 x 1.3 (5 x 1.9 x 0.4)
Main machinery: 1 outboard; 150 hp (110 kW)
Speed, knots: 24
Complement: 2
Guns: 1—7.62 mm MG.

Comment: Part of the Riverine Squadron with the PBRs and two PCFs. Can carry six people. Numbers uncertain.



ASSAULT BOAT 6/2002, Thai Navy League / 0530060

AMPHIBIOUS FORCES

Note: There are approximately 24 landing craft of about 100 tons operated by the Army.

2 NORMED CLASS (LSTH)

Name	No	Builders	Launched	Commissioned
SICHANG	721 (ex-LST 6)	Ital Thai	14 Apr 1987	9 Oct 1987
SURIN	722 (ex-LST 7)	Bangkok Dock Co Ltd	12 Apr 1988	16 Dec 1988

Displacement, tons: 3,540 standard; 4,235 full load
Dimensions, feet (metres): 337.8; 357.6 (722) x 51.5 x 11.5 (103, 109 x 15.7 x 3.5)
Main machinery: 2 MTU 20V 1163 TB82 diesels; 11,000 hp(m) (8.1 MW) sustained; 2 shafts; cp props
Speed, knots: 16 **Range, n miles:** 7,000 at 12 kt
Complement: 53
Military lift: 348 troops; 14 tanks or 12 APCs or 850 tons cargo; 3 LCVP; 1 LCPL
Guns: 2 Bofors 40 mm/70. 2 Oerlikon GAM-CD¹ 20 mm. 2—12.7 mm MGs. 1—81 mm mortar.
Weapons control: 2 BAe Sea Archer Mk 1A optronic directors.
Radars: Navigation. Racal Decca 1226; I-band
Helicopters: Platform for 2 Bell 212.

Comment: First ordered 31 August 1984 to a Chantier du Nord (Normed) design. Second ordered to a modified design and lengthened to accommodate a battalion. The largest naval ships yet built in Thailand. Have bow doors and a 17 m ramp.



SURIN 11/2001, Maritime Photographic / 0130163



SICHANG 2/2004, Bob Fildes / 0589817

2 LSIL 351 CLASS

PRAB 741 (ex-LSIL 1)	SATAKUT 742 (ex-LSIL 2)
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Displacement, tons: 230 standard, 399 full load
Dimensions, feet (metres): 157 x 23 x 6 (47.9 x 7 x 1.8)
Main machinery: 4 GM diesels; 2,320 bhp (1.73 MW); 2 shafts
Speed, knots: 15. **Range, n miles:** 5,600 at 12.5 kt
Complement: 49 (7 officers)
Military lift: 101 tons or 76 troops
Guns: 1 US 3 in (76 mm)/50. 1 Bofors 40 mm/60. 2 Oerlikon 20 mm/70.
Radars: Surface search Raytheon SPS-35 (1500B); I-band.

Comment: Prab transferred to Thailand in October 1946. Satekut was refitted in the mid-1990s.



PRAB 6/2005, Thai Navy League / 1153910

4 LST 512-1152 CLASS (LST)

Name	No	Builders	Commissioned
CHANG (ex-Lincoln County LST 898)	712 (ex-LST 2)	Dravo Corporation	29 Dec 1944
PANGAN (ex-Stark County LST 1134)	713 (ex-LST 3)	Chicago Bridge and Iron Co, ILL	7 Apr 1945
LANTA (ex-Stone County LST 1141)	714 (ex-LST 4)	Chicago Bridge and Iron Co, ILL	9 May 1945
PRATHONG (ex-Dodge County LST 722)	715 (ex-LST 5)	Jefferson B & M Co, Ind	13 Sep 1944

Displacement, tons: 1,650 standard, 3,640/4,145 full load
Dimensions, feet (metres): 328 x 50 x 14 (100 x 15.2 x 4.4)
Main machinery: 2 GM 12-567A diesels; 1,800 hp (1.34 MW); 2 shafts
Speed, knots: 11.5 **Range, n miles:** 9,500 at 9 kt
Complement: 80; 157 (war)
Military lift: 1,230 tons max; 815 tons beaching
Guns: 1—3 in (76 mm).
 8 Bofors 40 mm/60 (2 twin, 4 single) (can be carried).
 2—12.7 mm MGs (Chang). 2 Oerlikon 20 mm (others).
Weapons control: 2 Mk 51 GFCS. 2 optical systems.
Radars: Navigation: Racal Decca 1229; IJ band.

Comment: Chang transferred from USA in August 1962. Pangan 16 May 1966, Lanta on 15 August 1973 (by sale 1 March 1979) and Prathong on 17 December 1975. Chang has a reinforced bow and waterline. Lanta, Prathong and Chang have mobile cranes on the well-deck. All have tripod mast.



LANTA 5/2002, Mick Prendergast / 0530001

3 MAN NOK CLASS (LCU)

Name	No	Builders	Launched	Commissioned
MAN NOK	781	Sahai Sant, Pratum Thani	1 May 2001	6 Dec 2001
MAN KLANG	782	Sahai Sant, Pratum Thani	1 May 2001	14 Nov 2001
MAN NAI	783	Sahai Sant, Pratum Thani	1 May 2001	6 Dec 2001

Displacement, tons: 170 light, 550 full load
Dimensions, feet (metres): 172 x 36.7 x 5.9 (52.4 x 11.2 x 1.8)
Main machinery: 2 Caterpillar 3432 DITA diesels; 700 hp(m) (515 kW); 2 shafts
Speed, knots: 12. **Range, n miles:** 1,500 at 10 kt
Complement: 30 (3 officers)
Military lift: 2 M80 tanks or 25 tons vehicles
Guns: 2 Oerlikon 20 mm.
Radars: Navigation: I-band.

Comment: Ordered from Sikline ASC in 1997. All three craft launched 1 May 2000.



MAN NAI 5/2002, Mick Prendergast / 0530000

0 + 1 ENDURANCE CLASS (LPD)

Displacement, tons: 8,500 full load
Dimensions, feet (metres): 462.6 pp x 68.9 x 16.4 (141 x 21 x 5)
Main machinery: 2 diesels; 12,000 hp(m) (8.82 MW); 2 shafts; Kamewa cp props; bow thruster
Speed, knots: 15. **Range, n miles:** 10,400 at 12 kt
Complement: 65 (8 officers)
Military lift: 350 troops; 18 tanks, 20 vehicles; 4 LCVP

Missiles: SAM. To be announced
Guns: To be announced
Radars: Air/surface search: To be announced
Navigation: To be announced.
Helicopters: Platform for 2.

Programmes: It was announced in November 2008 that ST Marine (Singapore) had been awarded the contract for the design and manufacture of an LPD that is reported to be similar to the Endurance class in service with the Singapore Navy. Construction is expected to start in 2009 with delivery planned for 2012.

Structure: The Endurance class is a US drive-through design with bow and stern ramps. Single intermediate deck with three hydraulic ramps. Helicopter platform aft. Indal ASIST helo handling system. Dockwell for four LCUs and davits for four LCVPs. Two 25 ton cranes. Four 36 m self-propelled pontoons can be secured to winching points on the ships' sides.

4 THONG KAEO CLASS (LCU)

Name	No	Builders	Commissioned
THONG KAEO	771 (ex-7)	Bangkok Dock Co Ltd	23 Dec 1982
THONG LANG	772 (ex-8)	Bangkok Dock Co Ltd	19 Apr 1983
WANG NOK	773 (ex-9)	Bangkok Dock Co Ltd	16 Sep 1983
WANG NAI	774 (ex-10)	Bangkok Dock Co Ltd	11 Nov 1983

Displacement, tons: 193 standard; 396 full load
 Dimensions, feet (metres): 134.5 × 29.5 × 6.9 (47 × 9 × 2.1)
 Main machinery: 2 GM 16V-71 diesels; 1,400 hp (1.04 MW); 2 shafts
 Speed, knots: 10
 Range, n miles: 1,200 at 10 kt
 Complement: 31 (3 officers)
 Military lift: 3 lorries; 150 tons equipment
 Guns: 2 Oerlikon 20 mm, 2—7.62 mm MGs.

Comment: Ordered in 1980



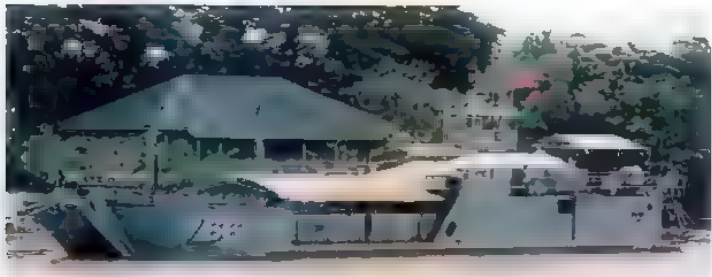
WANG NAI 5/1997, Maritime Photographic / 0019276

6 MATAPHON CLASS (LCM/LCVP/LCP)

MATAPHON 761 (ex-LCU 1260)	ADANG 763 (ex-LCU 861)	KOLAM 765 (ex-LCU 904)
RAWI 762 (ex-LCU 800)	PHETRA 764 (ex-LCU 1089)	TALIBONG 766 (ex-LCU 753)

Displacement, tons: 145 standard; 330 full load
 Dimensions, feet (metres): 120.4 × 32 × 4 (36.7 × 9.8 × 1.2)
 Main machinery: 3 Gray Marine 85 diesels; 675 hp (503 kW); 3 shafts
 Speed, knots: 10
 Range, n miles: 650 at 8 kt
 Complement: 13
 Military lift: 150 tons or 3-4 tanks or 250 troops
 Guns: 4 Oerlikon 20 mm (2 twin)
 Radars: Navigation: Raytheon Pathfinder; I-band

Comment: Transferred from US 1946-47 Employed as transport ferries.



TALIBONG 11/2001, Maritime Photographic / 0130180

40 LANDING CRAFT (LCM/LCVP/LCA)

Displacement, tons: 56 full load
 Dimensions, feet (metres): 56.1 × 14.1 × 3.9 (17.1 × 4.3 × 1.2)
 Main machinery: 2 Gray Marine 64 H93 diesels, 330 hp (264 kW); 2 shafts
 Speed, knots: 9. Range, n miles: 135 at 9 kt
 Complement: 5
 Military lift: 34 tons

Comment: Details given are for the 24 ex-US LCMs delivered in 1965-69. The 12 ex-US LCVPs can lift 40 troops and are of 1960s vintage. The four LCAs can lift 35 troops and were built in 1984 in Bangkok.



LCM 208 11/1998, Thai Navy League / 0050241

3 GRIFFON 1000 TD HOVERCRAFT (UCAC)

401-403

Dimensions, feet (metres): 27.6 × 12.5 (8.4 × 3.8)
 Main machinery: 1 Deutz BF6L913C diesel; 190 hp(m) (140 kW)
 Speed, knots: 33. Range, n miles: 200 at 27 kt
 Complement: 2
 Cargo capacity: 1,000 kg plus 9 troops
 Radars: Navigation: Raytheon; I-band.

Comment: Acquired in mid-1990 from Griffon Hovercraft. Although having an obvious amphibious capability they are also used for rescue and flood control

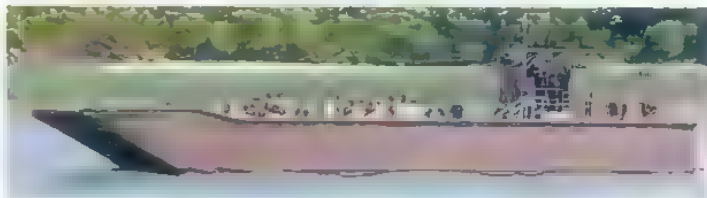


GRIFFON 401 6/1999, Royal Thai Navy / 0084413

0 + 2 LANDING CRAFT UTILITY (LCU)

Dimensions, feet (metres): 75.4 × 19.7 × 2.6 (23 × 6 × 0.8)
 Main machinery: 2 MAN 2842 LZE diesels; 4,400 hp(m) (3.23 MW); 2 Kamewa waterjets
 Speed, knots: 20. Range, n miles: 180 at 15 kt
 Complement: 4
 Military lift: 18 tons
 Guns: 2—12.7 mm MGs or 40 mm grenade launchers.

Comment: It was announced in November 2008 that ST Marine (Singapore) had been awarded the contract for the design and construction of two 23 m landing craft to be operated from the LPD, also under construction. The details of the craft are assumed to be similar to those in service in Singapore.



LCU (Singapore colours) 12/2005, Chris Sattler / 1164539

0 + 2 LANDING CRAFT (LCVP)

Displacement, tons: 4 full load
 Dimensions, feet (metres): 44.6 × 12.1 × 2 (13.6 × 3.7 × 0.6)
 Main machinery: 2 MAN D2866 LE diesels, 815 hp(m) (600 kW) sustained; 2 Hamilton 362 waterjets
 Speed, knots: 20. Range, n miles: 100 at 20 kt
 Complement: 3
 Military lift: 4 tons or 30 troops

Comment: It was announced in November 2008 that ST Marine (Singapore) had been awarded the contract for the design and construction of two 13 m landing craft to be operated from the LPD, also under construction. The details of the craft are assumed to be similar to those in service in Singapore. With a single bow ramp, they can carry a rifle platoon.



LCVPs 8/2003, David Boay / 0567534

MINE WARFARE FORCES**1 MCM SUPPORT SHIP (MCS)**

Name	No	Builders	Commissioned
THALANG	621 (ex-1)	Bangkok Dock Co Ltd	4 Aug 1980

Displacement, tons: 1,000 standard
 Dimensions, feet (metres): 185.5 × 33 × 10 (56.7 × 10 × 3.1)
 Main machinery: 2 MTU diesels; 1,310 hp(m) (963 kW); 2 shafts
 Speed, knots: 12
 Complement: 77
 Guns: 1 Bofors 40 mm/80. 2 Oerlikon 20 mm, 2—12.7 mm MGs.
 Radars: Surface search. Racal Decca 1226; I-band.

Comment: Has minesweeping capability. Two 3 ton cranes provided for change of minesweeping gear in MSCs—four sets carried. Design by Ferrostaal, Essen. Has dormant minelaying capability.



THALANG 11/2001, Maritime Photographic / 0130185

2 LAT YA (GAETA) CLASS (MINEHUNTERS/SWEEPERS) (MHSC)

Name	No	Builders	Launched	Commissioned
LAT YA	633	Intermarine, Sarzana	30 Mar 1998	18 June 1999
THA DIN DAENG	634	Intermarine, Sarzana	31 Oct 1998	18 Dec 1999

Displacement, tons: 680 full load
Dimensions, feet (metres): 172.1 x 32.4 x 9.4 (52.5 x 9.9 x 2.9)
Main machinery: 2 MTU 8V 396 TE74K diesels, 1,600 hp(m) (1.18 MW) sustained; 2 Vorth Schneider props, auxiliary propulsion; 2 hydraulic motors
Speed, knots: 14. **Range, n miles:** 2,000 at 12 kt
Complement: 50 (8 officers)
Guns: 1 MSI 30 mm.
Countermeasures: MCM: Atlas MWS 80-6 minehunting system. Magnetic, acoustic and mechanical sweeps; ADI Mini Dyad, Noise Maker, Bofors MS 106, 2 Pluto Plus ROVs
Radars: Navigation: Atlas Elektronik 9600M (ARPA); I-band.
Sonars: Atlas Elektronik DSQS-11M, hull-mounted; active; high frequency.

Comment: Invitations to tender lodged by 3 April 1996. Ordered 18 September 1996. Specifications include hunting at up to 6 kt and sweeping at 10 kt. No further ships are planned.



THA DIN DAENG 4/2004, John Mortimer / 1153969

2 BANG RACHAN CLASS (MINEHUNTERS/SWEEPERS) (MHSC)

Name	No	Builders	Commissioned
BANG RACHAN	631 (ex-2)	Lürssen Vegesack	29 Apr 1987
NONGSARAI	632 (ex-3)	Lürssen Vegesack	17 Nov 1987

Displacement, tons: 444 full load
Dimensions, feet (metres): 161.1 x 30.5 x 8.2 (49.1 x 9.3 x 2.5)
Main machinery: 2 MTU 12V 396 TB83 diesels; 3,120 hp(m) (2.3 MW) sustained, 2 shafts. Kamewa cp props; auxiliary propulsion; 1 motor
Speed, knots: 17; 7 (electric motor) **Range, n miles:** 3,100 at 12 kt
Complement: 33 (7 officers)
Guns: 3 Oerlikon GAM BO1 20 mm.
Countermeasures: MCM: MWS 80R minehunting system. Acoustic, magnetic and mechanical sweeps. 2 Gaymarine Pluto 15 remote-controlled submersibles.
Radars: Navigation: 2 Atlas Elektronik 8600 ARPA; I-band.
Sonars: Atlas Elektronik DSQS-11H; hull-mounted; minehunting; high frequency.

Comment: First ordered from Lürssen late 1984, arrived Bangkok 22 October 1987. Second ordered 5 August 1985 and arrived in Bangkok May 1988. Amagnetic steel frames and deckhouses, wooden hull. Motorola Miniranger MRS III precise navigation system. Draeger decompression chamber.



NONGSARAI 2/2005, Chris Sattler / 1153911

12 MSBS (MSR)

MLM 6-10 MSB 11-17

Displacement, tons: 25 full load
Dimensions, feet (metres): 50.2 x 13.1 x 3 (15.3 x 4 x 0.9)
Main machinery: 1 Gray Marine 64 H1N9 diesel; 165 hp (123 kW); 1 shaft
Speed, knots: 8
Complement: 10
Guns: 2—7.62 mm MGs.

Comment: Three transferred from USA in October 1963 and two in 1964. More were built locally from 1994. Wooden hulled, converted from small motor launches. Operated on Chao Phraya river.



MLM 11 10/1995, Royal Thai Navy / 00R027

2 BLUEBIRD CLASS (MINESWEEPERS—COASTAL) (MSC)

Name	No	Builders	Commissioned
BANGKEO (ex-MSC 303)	612 (ex-6)	Dorchester SB Corporation, Camden	9 July 1965
DONCHEDI (ex-MSC 313)	613 (ex-8)	Peterson Builders Inc, Sturgeon Bay, WI	17 Sep 1965

Displacement, tons: 317 standard; 384 full load
Dimensions, feet (metres): 145.3 x 27 x 8.5 (44.3 x 8.2 x 2.6)
Main machinery: 2 GM 8 268 diesels, 880 hp (656 kW); 2 shafts
Speed, knots: 13
Range, n miles: 2,750 at 12 kt
Complement: 43 (7 officers)
Guns: 2 Oerlikon 20 mm/80 (twin).
Countermeasures: MCM: UJS Mk 4 (V) Mk 6. US Type O2 magnetic.
Radars: Navigation: Decca TM 707; I-band
Sonars: UQS-1, hull-mounted; minehunting; high frequency.

Comment: Constructed for Thailand. One paid off in 1992 and one in 1995. The last two are in limited operational service and at least one is to be retained for training duties.



DONCHEDI 11/2001, Maritime Photographic / 0130164

SURVEY AND RESEARCH SHIPS

Notes: There is also a civilian research vessel *Chulab Horn* which completed in 1986.

1 SURVEY SHIP (AGSH)

Name	No	Builders	Laid down	Launched	Commissioned
PHARUEHATSABODI	813	Unithai Shipyard and Engineering, Laem Chabang	25 Aug 2006	14 Feb 2008	19 Aug 2008

Displacement, tons: To be announced
Dimensions, feet (metres): 217.5 x 50.2 x 10.2 (66.3 x 13.2 x 3.1)
Main machinery: Diesel-electric; 3 diesel generators; 2,652 hp(m) (1.95 MW); 1 motor; 1,073 hp(m) (800 kW); 2 azimuth thrusters; 1 bow thruster
Speed, knots: 12. **Range, n miles:** 3,000 at 12 kt
Complement: 13 (accommodation for 71)
Radars: Navigation: E/F- and I-band.
Sonars: Multi- and single-beam; high frequency; active.

Comment: Multipurpose hydrographic and oceanographic survey, training and mine countermeasures vessel ordered 22 December 2005 from a consortium comprising Scheide Naval Shipbuilding, Flushing, and Unithai Shipyard and Engineering, Thailand. The ship is a derivative of the Snellius class vessels built for the RNLN. The ship was built in Thailand. Hydrographic equipment includes an exploration computer system; multibeam echosounder; single beam echosounder; side-scan sonar; Ultra-Short Baseline (USBL); Motion and Reference Unit (MRU); draught indication system; tidal measurement system; seawater collection system; seawater measurement system; expendable bathythermograph/sound velocity meter; current flow measurement system; current meter system; sediment collection system; and oceanography equipment.



PHARUEHATSABODI 2/2008, Thai Navy League / 1353399

1 OCEANOGRAPHIC SHIP (AGOR)

Name	No	Builders	Commissioned
SUK	812	Bangkok Dock Co Ltd	3 Mar 1982

Displacement, tons: 1,450 standard; 1,526 full load
Dimensions, feet (metres): 206.3 × 36.1 × 13.4 (62.9 × 11 × 4.1)
Main machinery: 2 MTU diesels; 2,400 hp(m) (1.75 MW); 2 shafts
Speed, knots: 15
Complement: 86 (20 officers)
Guns: 2 Oerlikon 20 mm. 2—7.62 mm MGs.
Radars: Navigation: Racal Decca 1226; I-band

Comment: Laid down 27 August 1979, launched 8 September 1981. Designed for oceanographic and survey duties.



SUK 5/1999, van Ginderen Collection / 0080878

1 SURVEY SHIP (AGS)

Name	No	Builders	Commissioned
CHANTHARA	811 (ex-AGS 11)	Lurssen Werft	30 May 1961

Displacement, tons: 870 standard; 996 full load
Dimensions, feet (metres): 229.2 × 34.5 × 10 (69.9 × 10.5 × 3)
Main machinery: 2 KHD diesels; 1,090 hp(m) (801 kW); 2 shafts
Speed, knots: 13.25
Range, n miles: 10,000 at 10 kt
Complement: 68 (8 officers)
Guns: 2 Bofors 40 mm/60.

Comment: Laid down on 27 September 1960. Launched on 17 December 1960. Has served as a Royal Yacht



CHANTHARA 7/2008, Thai Navy League / 1353398

1 CANNON CLASS (FFT)

Name	No	Builders	Laid down	Launched	Commissioned
PIN KLAO	413	Western Pipe & Steel Co	1943	12 Sep 1943	30 May 1944

(ex-Hamminger DE 746)

Displacement, tons: 1,240 standard; 1,930 full load
Dimensions, feet (metres): 306 × 36.7 × 14 (93.3 × 11.2 × 4.3)
Main machinery: Diesel-electric; 4 GM 16-278A diesels; 6,000 hp (4.5 MW); 4 generators; 2 motors; 2 shafts
Speed, knots: 20
Range, n miles: 10,800 at 12 kt; 6,700 at 19 kt
Complement: 192 (14 officers)

Guns: 3 USN 3 in (76 mm)/50 Mk 22, 20 rds/min to 12 km (6.6 n miles); weight of shell 6 kg.
 6 Bofors 40 mm/60 (3 twin); 120 rds/min to 10 km (5.5 n miles); weight of shell 0.89 kg.
Torpedoes: 6—324 mm US Mk 32 (2 triple) tubes; anti-submarine.
A/S mortars: 1 Hedgehog Mk 10 multibarrelled fixed; range 250 m; warhead 13.6 kg; 24 rockets
Depth charges: 8 projectors; 2 racks.
Countermeasures: ESM-WLR-1; radar warning.
Weapons control: Mk 52 radar GFCS for 3 in guns. Mk 63 radar GFCS for aft gun only. 2 Mk 51 optical GFCS for 40 mm.
Radars: Air/surface search: Raytheon SPS-5; G/H-band
 Navigation: Raytheon SPS-21; G/H-band
Fire control: Western Electric Mk 34, I/J-band
 RCA/General Electric Mk 26, I/J-band
IFF SLR 1.
Sonars: SQS-11; hull-mounted, active attack; high frequency.

Programmes: Transferred from US Navy at New York Navy Shipyard in July 1959 under MDAP and by sale 6 June 1975

Modernisation: The three 21 in torpedo tubes were removed and the 20 mm guns were replaced by 40 mm. The six A/S torpedo tubes were fitted in 1966.

Operational: Used mostly as a training ship



PIN KLAO 6/1997, Royal Thai Navy / 0019254

TRAINING SHIPS

1 ALGERINE CLASS (AXL)

Name	No	Builders	Commissioned
PHOSAMTON	611 (ex-415, ex-MSF 1)	Reifern Construction Co	9 June 1945

(ex-Minstrel)

Displacement, tons: 1,040 standard; 1,335 full load
Dimensions, feet (metres): 225 × 35.5 × 11.5 (68.6 × 10.8 × 3.5)
Main machinery: 2 boilers; 2 reciprocating engines; 2,000 ihp (1.49 MW); 2 shafts
Speed, knots: 16
Range, n miles: 4,000 at 10 kt
Complement: 103
Guns: 1 USN 3 in (76 mm)/50. 1 Bofors 40 mm/60. 4 Oerlikon 20 mm
Radars: Navigation: Raytheon Pathfinder; I-band

Comment: Transferred from UK in April 1947. Received engineering overhaul in 1984. Minesweeping gear replaced by a deckhouse to increase training space. Vickers 4 in gun replaced



PHOSAMTON 8/2002, John Mortimer / 0529999

1 SIMILAN (HUDONG) CLASS (TYPE R22T)
(REPLENISHMENT SHIP) (AORH)

Name	No	Builders	Launched	Commissioned
SIMILAN	871	Hudong Shipyard, Shanghai	9 Nov 1995	12 Sep 1996

Displacement, tons: 23,000 full load
Dimensions, feet (metres): 562.3 × 80.7 × 29.5 (171.4 × 24.6 × 9)
Main machinery: 2 HD-SEMT-Pielstick 16 PC2 6V400; 24,000 hp(m) (17.64 MW); 2 shafts, Kamewa cp props
Speed, knots: 19
Range, n miles: 10,000 at 15 kt
Complement: 157 (19 officers) plus 26
Cargo capacity: 9,000 tons fuel, water, ammunition and stores
Radars: Air/surface search: Eye Shield (Type 354); E/F-band.
 Navigation: Racal Decca 1290 ARPA, I-band.
Helicopters: 1 Seahawk type

Comment: Contract signed with China State Shipbuilding Corporation on 29 September 1993. Fabrication started in December 1994. Two replenishment at sea positions each side and facilities for Vertrep. This ship complements the carrier and the new frigates to give the Navy a full deployment capability. Four twin 37 mm guns (Type 354) and associated Rice Lamp FC radar were not fitted.



SIMILAN 10/1998, Thai Navy League / 0060248

AUXILIARIES

1 REPLENISHMENT TANKER (AORL)

Name	No	Builders	Launched
CHULA	831 (ex-2)	Singapore SEC	24 Sep 1980

Displacement, tons: 2,000 full load
 Measurement, tons: 960 dwt
 Dimensions, feet (metres): 219.8 x 31.2 x 14.4 (67 x 9.5 x 4.4)
 Main machinery: 2 MTU 12V 396 TC62 diesels; 2,400 hp(m) (1.76 MW) sustained, 2 shafts
 Speed, knots: 14
 Complement: 39 (7 officers)
 Cargo capacity: 800 tons oil fuel
 Guns: 2 Oerlikon 20 mm
 Radars: Navigation: Racal Decca 1226; I-band

Comment: Replenishment is done by a hose handling crane boom



CHULA 6/1996, Royal Thai Navy / 0050249

4 HARBOUR TANKERS (YO)

Name	No	Builders
PRONG 833 (ex-YO 5)	SAMED 835 (ex-YO 10)	
PROET 834 (ex-YO 9)	CHIK 842 (ex-YO 11)	

Displacement, tons: 360 standard; 485 full load
 Dimensions, feet (metres): 122.7 x 19.7 x 8.7 (374 x 6 x 2.7)
 Main machinery: 1 GM 8-268A diesel; 500 hp(m) (368 kW); 1 shaft
 Speed, knots: 9
 Cargo capacity: 210 tons

Comment: Details are for 834, 835 and 842. Built by Bangkok Naval Dockyard, 834 commissioned 27 January 1967, remainder the same year. Details of 833 not known but reported to be approximately 180 tons.



SAMED 5/1999 / 0680029

1 HARBOUR TANKER (YO)

Name	No	Builders
SAMUI 832 (ex-YOG 60, ex-YO 4)		

Displacement, tons: 1,420 full load
 Dimensions, feet (metres): 174.5 x 32 x 15 (53.2 x 9.7 x 4.6)
 Main machinery: 1 Union diesel; 600 hp (448 kW); 1 shaft
 Speed, knots: 8
 Complement: 29
 Cargo capacity: 985 tons fuel
 Guns: 2 Oerlikon 20 mm can be carried.
 Radars: Navigation: Raytheon Pathfinder; I-band



SAMUI 12/1995 / 0506755

1 WATER TANKER (YW)

Name	No	Builders	Commissioned
CHUANG	841 (ex-YW 5)	Royal Thai Naval Dockyard, Bangkok	1965

Displacement, tons: 305 standard; 485 full load
 Dimensions, feet (metres): 136 x 24.6 x 10 (42 x 7.5 x 3.1)
 Main machinery: 1 GM diesel, 500 hp (373 kW); 1 shaft
 Speed, knots: 11
 Complement: 29
 Guns: 1 Oerlikon 20 mm.

Comment: Launched on 14 January 1965



CHUANG (alongside Proet) 5/1997, Maritime Photographic / 0019284

1 TRANSPORT SHIP (AKS)

Name	No	Builders	Commissioned
KLED KEO	861 (ex-AF-7)	Norjord, Norway	1948

Displacement, tons: 450 full load
 Dimensions, feet (metres): 150.1 x 24.9 x 14 (46 x 7.6 x 4.3)
 Main machinery: 1 CAT diesel; 900 hp(m) (662 kW); 1 shaft
 Speed, knots: 12
 Complement: 54 (7 officers)
 Guns: 3 Oerlikon 20 mm.

Comment: Former Norwegian transport acquired in 1956. Paid off in 1990 but back in service in 1997. Operates with the patrol boat squadron.



KLED KEO 6/1998, Royal Thai Navy / 0050250

1 BUOY TENDER (ABU)

Name	No	Builders	Commissioned
SURIYA	821	Bangkok Dock Co Ltd	15 Mar 1979

Displacement, tons: 690 full load
 Dimensions, feet (metres): 177.8 x 33.5 x 10.2 (54.2 x 10.2 x 3.1)
 Main machinery: 2 MTU diesels; 1,310 hp(m) (963 kW); 2 shafts; bow thruster; 135 hp(m) (99 kW)
 Speed, knots: 12
 Complement: 60 (12 officers)
 Radars: Navigation: Racal Decca; I-band

Comment: Can carry 20 mm guns.



SURIYA 11/2001, Maritime Photographic / 0130167

TUGS

2 COASTAL TUGS (YTB)

RIN 853 (ex-ATA 5) RANG 854 (ex-ATA 6)

Displacement, tons: 350 standard
 Dimensions, feet (metres): 106 × 29.7 × 15.2 (32.3 × 9 × 4.6)
 Main machinery: 1 MWM TBD441V/12K diesel; 2,100 hp(m) (1.54 MW); 1 shaft
 Speed, knots: 12 Range, n miles: 1,000 at 10 kt
 Complement: 19

Comment: Launched 12 and 14 June 1980 at Singapore Marine Shipyard. Both commissioned 5 March 1981. Bollard pull 22 tons.



RANG 1992, Royal Thai Navy / 0080830

2 SAMAESAN CLASS (COASTAL TUGS) (YTR)

SAMAESAN 855 RAET 856

Displacement, tons: 300 standard
 Dimensions, feet (metres): 82 × 27.9 × 7.9 (25 × 8.5 × 2.4)
 Main machinery: 2 Caterpillar 3512TA diesels; 2,350 hp(m) (1.75 MW) sustained;
 2 Aquamaster US 901 props
 Speed, knots: 10
 Complement: 6

Comment: Contract signed 23 September 1992 for local construction at Thonburi Naval dockyard. Completed in December 1993. Equipped for firefighting.



RAET 5/1997, A Sharma / 0050251

2 YTL 422 CLASS (YTL)

KLUENG BADAAN 851 (ex-YTL 2) MARN VICHAI 852 (ex-YTL 3)

Displacement, tons: 63 standard
 Dimensions, feet (metres): 64.7 × 16.5 × 6 (19.7 × 5 × 1.8)
 Main machinery: 1 diesel; 240 hp (179 kW); 1 shaft
 Speed, knots: 8

Comment: Built by Central Bridge Co, Trenton and bought from Canada 1953.



KLUENG BADAAN 11/2001, Maritime Photographic / 0130166

POLICE

Notes: (1) There is also a Customs service, subordinate to the Marine Police, which operates unarmed patrol craft with CUSTOMS on the hull, and a Fishery Patrol Service also unarmed but vessels are painted blue with broad white and narrow gold diagonal stripes on the hull. Two Hydrofoil craft are on loan from the Police to the Customs service. (2) There are large numbers of RIBs in service.

1 VOSPER THORNYCROFT TYPE (LARGE PATROL CRAFT) (PSO)

SRINAKARIN 1804

Displacement, tons: 630 full load
 Dimensions, feet (metres): 203.4 × 26.9 × 8.2 (62 × 8.2 × 2.5)
 Main machinery: 2 Deutz MWM BV16M628 diesels; 9,524 hp(m) (7 MW) sustained,
 2 shafts; Kamowa cp props
 Speed, knots: 25
 Range, n miles: 2,500 at 15 kt
 Complement: 45
 Guns: 4–30 mm (2 twin).
 Radars: Surface search: Racal Decca 1226, I-band.

Comment: Ordered in September 1989 from Ital Thai Marine. Same hull as the Khamronsin class corvettes for the Navy but much more lightly armed. Delivered in April 1992.



SRINAKARIN 6/2003, Royal Thai Navy / 0572648

2 HAMELN TYPE (LARGE PATROL CRAFT) (PBO)

DAMRONG RACHANUPHAP 1802

LOPSURI RAMES 1803

Displacement, tons: 430 full load
 Dimensions, feet (metres): 186 × 26.6 × 8 (56.7 × 8.1 × 2.4)
 Main machinery: 4 MTU diesels; 4,400 hp(m) (3.23 MW); 2 shafts
 Speed, knots: 23
 Complement: 45
 Guns: 2 Oerlikon 30 mm/75 (twin), 2 Oerlikon 20 mm.
 Radars: Surface search: Racal Decca 1226, I-band.

Comment: Delivered by Schiffwerft Hameln, Germany, on 3 January 1969 and 10 December 1972 respectively.



LOPSURI RAMES 6/2003, Royal Thai Navy / 0572647

2 SUMIDAGAWA TYPE (COASTAL PATROL CRAFT) (PB)

CHASANYABADEE 1101

PHROMYOTHEE 1103

Displacement, tons: 130 full load
 Dimensions, feet (metres): 111.5 × 19 × 9.1 (34 × 5.8 × 2.8)
 Main machinery: 3 Ikegai diesels; 4,050 hp(m) (2.98 MW); 3 shafts
 Speed, knots: 32
 Complement: 23
 Guns: 2–12.7 mm MGs.
 Radars: Surface search: Racal Decca; I-band.

Comment: Commissioned in August 1972 and May 1973 respectively.



PHROMYOTHEE 1990, Marine Police / 0080833

1 YOKOHAMA TYPE (COASTAL PATROL CRAFT) (PB)

CHAWENGSACK SONGKRAM 1102

Displacement, tons: 190 full load
 Dimensions, feet (metres): 116.5 x 23 x 11.5 (35.5 x 7 x 3.5)
 Main machinery: 4 lkagai diesels; 5,400 hp(m) (3.79 MW); 2 shafts
 Speed, knots: 32
 Complement: 18
 Guns: 2 Oerlikon 20 mm

Comment: Commissioned 13 April 1973. A second of class operates for the Customs with the number 1201



CHAWENGSACK SONGKRAM

1990, Marine Police / 0080834

3 CUTLASS CLASS (COASTAL PATROL CRAFT) (PB)

PHRAONGKAMROP 807

PICHARNPHOLAKIT 808

RAMINTHRA 809

Displacement, tons: 34 full load
 Dimensions, feet (metres): 65 x 17 x 8.3 (19.8 x 5.2 x 2.5)
 Main machinery: 3 Detroit 12V-71TA diesels; 1,020 hp(m) (761 kW) sustained; 3 shafts
 Speed, knots: 25
 Complement: 14
 Guns: 1 Oerlikon 20 mm. 2—7.62 mm MGs.

Comment: Delivered by Halter Marine, New Orleans, and all commissioned on 9 March 1969. Aluminium hulls.



PICHARNPHOLAKIT

6/1999 / 0080836

1 ITAL THAI MARINE TYPE (COASTAL PATROL CRAFT) (PB)

SRIYANONT 901

Displacement, tons: 52 full load
 Dimensions, feet (metres): 90 x 16 x 6.5 (27.4 x 4.9 x 2)
 Main machinery: 2 Deutz BA16M816 diesels; 2,680 hp(m) (1.97 MW) sustained; 2 shafts
 Speed, knots: 23
 Complement: 14
 Guns: 1 Oerlikon 20 mm. 2—7.62 mm MGs.
 Radars: Surface search; Racal Decca; i-band.

Comment: Commissioned 12 June 1986.



SRIYANONT

12/2001, Thai Navy League / 0130155

3 TECHNAUTIC TYPE (COASTAL PATROL CRAFT) (PB)

810-812

Displacement, tons: 50 full load
 Dimensions, feet (metres): 88.6 x 19.4 x 6.2 (27 x 5.9 x 1.9)
 Main machinery: 3 Isotta Fraschini diesels; 2,500 hp(m) (1.84 MW); 3 Castoldi hydrojets
 Speed, knots: 27
 Complement: 14
 Guns: 1 Oerlikon 20 mm GAM-BO1. 2—7.62 mm MGs

Comment: Delivered by Technautic, Bangkok in 1984.



812

1990, Marine Police / 0080837

1 BURESPADOONGKIT CLASS (COASTAL PATROL CRAFT) (PB)

BURESPADOONGKIT 813

Displacement, tons: 65 full load
 Dimensions, feet (metres): 80.5 x 19.4 x 6 (24.5 x 5.9 x 1.8)
 Main machinery: 2 SACM UD 23 V12 M5D diesels; 2,534 hp(m) (1.86 MW) sustained; 2 shafts
 Speed, knots: 28
 Range, n miles: 650 at 20 kt
 Complement: 14
 Guns: 1 Oerlikon GAM-CO1 20 mm; 2—7.62 mm MGs.

Comment: Built by Matsun, Thailand and commissioned 9 August 1995. Badly damaged in the Tsunami of 26 December 2004



BURESPADOONGKIT

6/1999, Marine Police / 0080835

5 ITAL THAI MARINE TYPE (COASTAL PATROL CRAFT) (PB)

625-629

Displacement, tons: 42 full load
 Dimensions, feet (metres): 64 x 17.5 x 5 (19.5 x 5.3 x 1.5)
 Main machinery: 2 MAN D2842LE diesels; 1,350 hp(m) (992 kW) sustained; 2 shafts
 Speed, knots: 27
 Complement: 14
 Guns: 1—12.7 mm MG.

Comment: Built in Bangkok 1987-90. Aluminium hulls. More of the class operated by the Fishery Patrol Service.



ITAL THAI 626

3/2004, Bob Filtes / 0589814

8 MARSUN TYPE (COASTAL PATROL CRAFT) (PB)

630-637

Displacement, tons: 38 full load
 Dimensions, feet (metres): 65.6 × 18.2 × 5 (20 × 5.6 × 1.5)
 Main machinery: 2 MAN D2840LXE diesels; 1,640 hp(m) (1.2 MW) sustained; 2 shafts
 Speed, knots: 25
 Complement: 11
 Guns: 1—12.7 mm MG.

Comment: Built by Marsun, Thailand and commissioned from 2 August 1994.



MARSUN 634

3/2004, Bob Fildes / 0589815

17 TECHNAUTIC TYPE (COASTAL PATROL CRAFT) (PB)

606-624

Displacement, tons: 30 full load
 Dimensions, feet (metres): 60 × 16 × 2.9 (18.3 × 4.9 × 0.9)
 Main machinery: 2 Isotta Fraschini ID 36 SS 8V diesels; 1,760 hp(m) (1.29 MW) sustained;
 2 Castoldi hydro, etc
 Speed, knots: 27
 Complement: 11
 Guns: 1—12.7 mm MG.

Comment: Built from 1983-87 in Bangkok. Operational status of some of these craft doubtful



TECHNAUTIC 609

11/2001, Maritime Photographic / 0130168

2 MARSUN TYPE (PB)

539-540

Displacement, tons: 30 full load
 Dimensions, feet (metres): 57 × 16 × 3 (17.4 × 4.9 × 0.9)
 Main machinery: 2 Detroit 12V-71TA diesels; 840 hp (627 kW) sustained; 2 shafts
 Speed, knots: 25
 Complement: 8
 Guns: 1—12.7 mm MG.

Comment: Built in Thailand. Both commissioned 26 March 1986.



MARSUN 539

11/2001, Maritime Photographic / 0130169

38 RIVER PATROL BOATS (PBR)

301-338

Displacement, tons: 5 full load
 Dimensions, feet (metres): 37.1 × 11.1 × 2.3 (11.3 × 3.4 × 0.7)
 Main machinery: 2 diesels; 2 shafts
 Speed, knots: 25

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26 SUMIDAGAWA TYPE (RIVER PATROL CRAFT) (PBR)

613-638

Displacement, tons: 18 full load
 Dimensions, feet (metres): 54.1 × 12.5 × 2.3 (16.6 × 3.8 × 0.7)
 Main machinery: 2 Cummins diesels; 800 hp (597 kW); 2 shafts
 Speed, knots: 23
 Complement: 6
 Guns: 1—12.7 mm MG.

Comment: First 21 built by Sumidagawa, last five by Captain Co, Thailand 1978-79.



SUMIDAGAWA 529

6/1999, Marine Police / 0060841



SUMIDAGAWA 526

6/2003, Royal Thai Navy / 0572646

20 CAMCRAFT TYPE (RIVER PATROL CRAFT) (PBR)

415-440 series

Displacement, tons: 13 full load
 Dimensions, feet (metres): 40 × 12 × 3.2 (12.2 × 3.7 × 1)
 Main machinery: 2 Detroit diesels; 540 hp (403 kW); 2 shafts
 Speed, knots: 25
 Complement: 6

Comment: Delivered by Camcraft, Louisiana. Aluminium hulls. Numbers uncertain.



CAMCRAFT 435

6/1999, Marine Police / 0060842

1 RIVER PATROL CRAFT (PBR)

339

Displacement, tons: 5 full load
 Dimensions, feet (metres): 37 × 11 × 6 (11.3 × 3.4 × 1.8)
 Main machinery: 2 diesels; 2 shafts
 Speed, knots: 25
 Complement: 4

Comment: Built in 1990.



RIVER PATROL CRAFT 339 (alongside Technautic 609)

7/2000 / 0106613



Togo

Country Overview

Formerly French Togoland, the Togolese Republic gained full independence in 1960 having rejected proposals to be united with Ghana. Situated in west Africa, it has an area of 21,925 square miles and borders to the east

with Benin and to the west with Ghana. Togo has a short coastline of 30 n miles with the Gulf of Guinea. Lomé is the capital, largest town and principal port. Togo is the only coastal state to claim territorial seas of 30 n miles. A 200 n mile Exclusive Economic Zone (EEZ) is also claimed

but this has not been defined by boundary agreements.

Headquarters Appointments

Commanding Officer, Navy:
Captain Atiogba Ametipe

Personnel

2009:
(a) 250
(b) Conscript (2 years)

Bases

Lomé

PATROL FORCES

2 COASTAL PATROL CRAFT (PB)

Name	No	Builders	Launched
KARA	P 761	Chantiers Navals de l'Estérel, Cannes	18 May 1976
MONO	P 762	Chantiers Navals de l'Estérel, Cannes	16 June 1976

Displacement, tons: 80 full load
Dimensions, feet (metres): 105 × 19 × 5.3 (32 × 5.8 × 1.6)
Main machinery: 2 MTU MB 12V 493 TY80 diesels; 2,000 hp (m) (1.47 MW) sustained; 2 shafts
Speed, knots: 30 **Range, n miles:** 1,500 at 15 kt
Complement: 17 (1 officer)
Missiles: SSM: Aerospatiale SS 12M; wire-guided to 5 km (3 n miles) subsonic; warhead 30 kg.
Guns: 1 Bofors 40 mm/70 1 Oerlikon 20 mm
Radars: Surface search: Decca 916; I-band

Comment: Both craft seagoing but missile system probably not operational



MONO

6/1998, 0050252



Tonga

Country Overview

A former British protectorate, the Kingdom of Tonga became a sovereign state in 1970. Situated in the southwestern Pacific Ocean some 1,080 n miles northeast of New Zealand, the country consists of more than 170 islands and islets running generally north-south. There are three main groups, Tongatapu, Ha'apai and Vava'u, and several outlying islands. Nuku'alofa, on Tongatapu island, is the capital, largest town and principal port. Territorial seas (12 n miles) are claimed. An Exclusive Economic Zone (EEZ)

(200 n miles) is claimed but limits have not been fully defined by boundary agreements.

Headquarters Appointments

Commanding Officer, Navy:
Commander Sione Fifita

Personnel

2009: 125



Toulaki Base Nuku'alofa (HMNB Masfield)

Prefix to Ships' Names

VOEA (Vaka O Ene Afio)

PATROL FORCES

Notes: A Beech 18 aircraft was acquired in May 1995 for maritime surveillance.

3 PACIFIC CLASS (LARGE PATROL CRAFT) (PB)

Name	No	Builders	Commissioned
NEIAFU	P 201	Australian Shipbuilding Industries	28 Oct 1989
PANGAI	P 202	Australian Shipbuilding Industries	30 June 1990
SAVEA	P 203	Australian Shipbuilding Industries	23 Mar 1991

Displacement, tons: 162 full load
Dimensions, feet (metres): 103.3 × 26.6 × 6.9 (31.5 × 8.1 × 2.1)
Main machinery: 2 Caterpillar 3516TA diesels, 2,820 hp (2.1 MW) sustained; 2 shafts
Speed, knots: 20
Range, n miles: 2,500 at 12 kt
Complement: 17 (3 officers)
Guns: 2 — 12.7 mm MGs.
Radars: Surface search: Furuno 1101; I-band.

Comment: Part of the Pacific Forum Australia Defence co-operation. First laid down 30 January 1989, second 2 October 1989, third February 1990. *Savea* has a hydrographic survey capability. Following half-life refits 1998–99 and the decision of the Australian government to extend the Pacific Patrol Boat programme, *Nearfu*, *Pangai* and *Savea* are due life-extension refits in 2008, 2009 and 2010 respectively.



PANGAI

2/2003, Chris Sattler / 0558655

AUXILIARIES

1 LCM

Name	No	Builders	Commissioned
LATE (ex-1057)	C 315	North Queensland, Cairns	1 Sep 1982

Displacement, tons: 116 full load
Dimensions, feet (metres): 73.5 × 21 × 3.3 (22.4 × 6.4 × 1)
Main machinery: 2 Detroit 12V-71 diesels, 680 hp (507 kW) sustained; 2 shafts
Speed, knots: 10
Range, n miles: 480 at 10 kt
Complement: 5
Cargo capacity: 54 tons
Guns: 1 — 7.62 mm MG can be carried
Radars: Surface search: Koden MD 305; I-band.

Comment: Acquired from the Australian Army for inter-island transport. Reported in a poor state of repair and operational status is doubtful.



LATE

6/1999, Tongan Navy / 0084414

Trinidad and Tobago



Country Overview

Trinidad and Tobago gained independence in 1962 and became a republic in 1976. The country lies at the southern end of the Lesser Antilles chain and comprises the main islands of Trinidad (1,864 square miles), Tobago (116 square miles) and 21 minor islands and rocks. Trinidad is close to the northeastern coast of Venezuela and the mouth of the Orinoco River. The capital, largest town, and principal port is Port-of-Spain, Trinidad. An archipelagic state, territorial seas (12 n miles) are claimed. While a 200 n mile Exclusive Economic

Zone (EEZ) has been claimed, the limits have only been partly defined by boundary agreements.

Headquarters Appointments

Commanding Officer, Coast Guard:
Captain Jewah Ramoutar

Aircraft

The Coast Guard operates three Cessna (Types 172, 402B and 310R) for surveillance and two C26B acquired in 1999. These aircraft can be backed by Air Division

Gazelle and Sikorsky S-76 helicopters when necessary.

Personnel

(a) 2009: 1,381 (50 officers)
(b) Voluntary service

Bases

Staubles Bay (HQ)
Hart's Cut, Tobago, Point Fortin
Piarco (Air station), Cedros
Galeota

Coast Defence

There are plans to install a coastal radar system

Prefix to Ships' Names

TTS

COAST GUARD

Notes: It is planned to procure six interceptor craft and four helicopters.

1 ISLAND CLASS (PBO)

Name	No	Builders	Commissioned
NELSON (ex-Orkney)	CG 20 (ex-P 299)	Hall Russell	25 Feb 1977

Displacement, tons: 925 standard; 1,260 full load
Dimensions, feet (metres): 176 wl; 195.3 oa x 36 x 15 (53.7; 59.5 x 11 x 4.5)
Main machinery: 2 Ruston 12RKC diesels; 5,640 hp (4.21 MW) sustained; 1 shaft; cp prop
Speed, knots: 16.5
Range, n miles: 7,000 at 12 kt
Complement: 35 (5 officers)
Guns: 2 762 mm MGs can be carried
Radars: Navigation: Kelvin Hughes Type 1006; I-band.

Comment: Transferred from the UK Navy on 18 December 2000 and recommissioned on 22 February 2001. Based at Port of Spain.



NELSON 1/2001, H M Steele / 0106616

1 TYPE CG 40 (LARGE PATROL CRAFT) (PB)

Name	No	Builders	Commissioned
CASCADURA	CG 6	Karliskronavarvet	15 June 1980

Displacement, tons: 210 full load
Dimensions, feet (metres): 133.2 x 21.9 x 5.2 (40.6 x 6.7 x 1.6)
Main machinery: 2 Paxman Valenta 16CM diesels; 6,700 hp (5 MW) sustained; 2 shafts
Speed, knots: 30
Range, n miles: 3,000 at 15 kt
Complement: 25
Guns: 1 Bofors 40 mm/70, 1 Oerlikon 20 mm
Weapons control: Optronic GFCS
Radars: Surface search: Racal Decca 1226, I-band

Comment: Ordered in Sweden mid-1978. Laid down early 1979. Fitted with foam-cannon oil pollution equipment and for oceanographic and hydrographic work. Nine spare berths. The hull is similar to Swedish Spica class but with the bridge amidships. Refitted in 1989 and 1998/99. *Barracuda* decommissioned in 2005.



CASCADURA 1/1994, Maritime Photographic / 0406207

4 POINT CLASS (COASTAL PATROL CRAFT) (PB)

Name	No	Builders	Commissioned
COROZAL POINT (ex-Point Hayer)	CG 7 (ex-82369)	J Martinac, Tacoma	3 Aug 1967
CROWN POINT (ex-Point Bennett)	CG 8 (ex-82351)	Coast Guard Yard, Curtis Bay	19 Dec 1966
GALERA POINT (ex-Point Bonita)	CG 9 (ex-82347)	J Martinac, Tacoma	12 Sep 1966
BARCOLET POINT (ex-Point Highland)	CG 10 (ex-82333)	Coast Guard Yard, Curtis Bay	27 June 1962

Displacement, tons: 66 full load
Dimensions, feet (metres): 83 x 17.2 x 5.8 (25.3 x 5.2 x 1.8)
Main machinery: 2 Caterpillar 3412 diesels; 1,600 hp (1.19 MW); 2 shafts
Speed, knots: 23. **Range, n miles:** 1,500 at 8 kt
Complement: 10
Guns: 2 - 7.62 mm MGs.
Radars: Surface search: Raytheon SPS-64(VII) and Raytheon SPS 69AN, I-band

Comment: CG 7 and CG 8 transferred from US Coast Guard 12 February 1999 and CG 9 on 14 November 2000. CG 10 transferred on 24 July 2001.



GALERA POINT 6/2007, Trinidad and Tobago Coast Guard / 1170216

4 SOUTER WASP 17 METRE CLASS (COASTAL PATROL CRAFT) (PB)

Name	No	Builders	Commissioned
PLYMOUTH	CG 27	WA Souter, Cowes	27 Aug 1982
CARONI	CG 28	WA Souter, Cowes	27 Aug 1982
GALEOTA	CG 29	WA Souter, Cowes	27 Aug 1982
MORUGA	CG 30	WA Souter, Cowes	27 Aug 1982

Displacement, tons: 20 full load
Dimensions, feet (metres): 55.1 x 13.8 x 4.6 (16.8 x 4.2 x 1.4)
Main machinery: 2 MANN 8V diesels; 1,470 hp (1.1 MW); 2 shafts
Speed, knots: 32
Range, n miles: 500 at 18 kt
Complement: 7 (2 officers)
Guns: 1 - 7.62 mm MG.
Radars: Surface search: Raytheon SPS 69AN; I-band.

Comment: GRP hulls. All refitted from September 1997 with new engines.



PLYMOUTH 6/2007, Trinidad and Tobago Coast Guard / 1335303

For details of the latest updates to *Jane's Fighting Ships* online and to discover the additional information available exclusively to online subscribers please visit jfs.janes.com

822 Trinidad and Tobago/Coast guard

2 WASP 20 METRE CLASS (COASTAL PATROL CRAFT) (PB)

Name	No	Builders	Commissioned
KAIRI (ex-Sea Bird)	CG 31	WA Souter, Cowes	Dec 1982
MORIAH (ex-Sea Dog)	CG 32	WA Souter, Cowes	Dec 1982

Displacement, tons: 32 full load
Dimensions, feet (metres): 65.8 x 16.5 x 5 (20.1 x 5 x 1.5)
Main machinery: 2 MANN 12V diesels; 2,400 hp (1.79 MW); 2 shafts
Speed, knots: 30. **Range, n miles:** 450 at 30 kt
Complement: 6 (2 officers)
Guns: 2 – 7.62 mm MGs.
Radars: Surface search: Decca 150, I-band

Comment: Ordered 30 September 1981. Aluminium alloy hull. Transferred from the Police in June 1989. New engines in 1999.



KAIRI 7/2001, Margaret Organ / 0114370

1 SWORD CLASS (COASTAL PATROL CRAFT) (PB)

Name	No	Builders	Commissioned
MATELOT (ex-Sea Skorpion)	CG 33	SeaArk Marine	May 1979

Displacement, tons: 15.6 full load
Dimensions, feet (metres): 44.9 x 13.4 x 4.3 (13.7 x 4.1 x 1.3)
Main machinery: 2 GM diesels; 860 hp (634 kW); 2 shafts
Speed, knots: 28. **Range, n miles:** 500 at 20 kt
Complement: 6
Guns: 1 – 7.62 mm MG
Radars: Surface search: Decca 150; I-band

Comment: Two transferred from the Police 30 June 1989, one scrapped in 1990. Refitted in 1998.



MATELOT 1/1994, Maritime Photographic / 0506174

0 + 3 OFFSHORE PATROL VESSELS (PSO)

CG 55-57

Displacement, tons: 2,250 full load
Dimensions, feet (metres): 296.9 x 44.3 x 11.6 (90.5 x 13.5 x 3.5)
Main machinery: 2 MAN 16RK 280 diesels; 2 shafts
Speed, knots: 25. **Range, n miles:** 5,500 at 12 kt
Complement: 34 plus 5 trainees plus 50 embarked force
Guns: 1 MSI DS 30M 30 mm, 2 MSI DS 25M 25 mm, 2 – 12.7 mm MGs.
Weapons control: Ultra Osiris optronic director.
Radars: Air/surface search: Terma 4100; E/F-band.
Navigation: I-band.
Helicopters: Platform for one medium.

Comment: Contract for the design and construction of three offshore patrol vessels signed with VT Shipbuilding on 5 April 2007. First steel was cut on 23 January 2008. The ships are to be used for EEZ management, special operations and maritime law enforcement tasks. An improved River class design, the ships are to be equipped with a 16 tonne crane, space for ISO containers (for disaster relief or military stores) and a 39 kt Pacific 24 RIB. The first two ships are to be launched in 2009 and the third in 2010.



CG 55 (artist's impression) 4/2007, VT Group / 1185760

12 INTERCEPTION CRAFT (PBF)

CG 001-002 CG 004-006 CG 012-018

Comment: CG 001-002 are 31 ft Bowen craft acquired in May 1991. They are capable of 40 kt. CG 004-006 are 25 ft RHIBs with Johnson outboards acquired from the US in 1993. They are capable of 45 kt. CG 012-013 are Midnight Express craft. CG 014-015 are 40 ft Formula 111 craft acquired from the US in 2005. They are capable of 60 kt. CG 016-018 are 40 ft Phantom Enforcer craft manufactured in Trinidad. They are capable of 60 kt.



CG 002 6/2007, Trinidad and Tobago Coast Guard / 1170215



CG 012 6/2007, Trinidad and Tobago Coast Guard / 1170214

2 OFFSHORE PATROL VESSEL (PBO)

GASPER GRANDE CG 21 CHACACHACARE CG 22

Displacement, tons: 200 full load
Dimensions, feet (metres): 151.9 x 29.8 x 7.9 (46.3 x 9.1 x 2.4)
Main machinery: 4 Cummins K38 diesels; 2 shafts
Speed, knots: 20
Range, n miles: 3,300 at 12 kt
Complement: 19
Guns: 2 – 30 mm, 2 – 12.7 mm MGs.
Radars: Surface search, E/F-band.
Navigation: I-band.

Comment: As part of the contract, signed with VT Shipbuilding on 5 April 2007, to build three new 90 m offshore patrol vessels, an interim patrol capability is being provided at least until the new vessels start entering service from 2009. Both vessels were commissioned on 23 April 2008. The interim vessels are former US oil-rig crew ships modified to undertake patrol tasks. The ships are equipped with a 39 kt Halmatic Pacific 24 RIB.



CHACACHACARE 1/2008, Trinidad and Tobago Coast Guard / 1170217

0 + 6 PATROL CRAFT (PB)

GC 231-236

Measurement, tons: 16 dwt
Dimensions, feet (metres): 98.4 × 21.0 × 4.9 (30.0 × 6.4 × 1.5)
Main machinery: 2 MTU 16V 2000 M92 diesels; 4,370 hp (3.26 MW); 2 Kamewa waterjets
Speed, knots: 40 **Range, n miles:** 1,000 at 10 kt
Complement: 12
Guns: 1—20 mm 3—12.7 mm MGs.
Radars: Surface search/Navigation. To be announced

Comment: The contract with Austal Shipbuilding for the construction of six patrol craft was announced on 18 March 2008. The monohull craft, of aluminium construction, are to be used for safety of shipping, environmental protection, counter-drugs and SAR duties. The contract includes a five-year support programme and training package. All six craft are to be delivered by early 2010.



PATROL CRAFT (artist's impression)

3/2008*, Austal / 1294460

1 AUXILIARY VESSEL

REFORM A 04

Comment: Used for Port Services and other support functions.

CUSTOMS

Notes: Among other craft, the Customs service operate a High Speed Interception craft *Kenneth Mohammed*.



KENNETH MOHAMMED

2/2001, van Ginderen Collection / 0114369

Tunisia**Country Overview**

Formerly a French protectorate, the Tunisian Republic gained independence in 1956 and became a republic in 1957. Situated in northern Africa, it has an area of 63,170 square miles and is bordered to the west by Algeria and to the south by Libya. It has a 619 n mile coastline with the Mediterranean Sea. The capital and largest city is the seaport of Tunis. There are further ports at Bizerte,

Sousse, Sfax and Gabès while as-Sukhayrah, specialises in petroleum bunkering. Territorial seas (12 n miles) are claimed. An EEZ has not been claimed.

Headquarters Appointments

Naval Chief of Staff:
Rear Admiral Tarek Faouzi El Arbi

Personnel

(a) 2009: 4,800 officers and men (including 800 conscripts)
 (b) 1 year's national service

Bases

Bizerte, Sfax, La Goulette, Kelibia

PATROL FORCES**3 COMBATTANTE III M CLASS (FAST ATTACK CRAFT—MISSILE) (PGGF)**

Name	No	Builders	Launched	Commissioned
LA GALITÉ	501	CMN, Cherbourg	16 June 1983	27 Feb 1985
TUNIS	502	CMN, Cherbourg	27 Oct 1983	27 Mar 1985
CARTHAGE	503	CMN, Cherbourg	24 Jan 1984	28 Apr 1985

Displacement, tons: 345 standard; 425 full load
Dimensions, feet (metres): 183.7 × 26.9 × 7.2 (56 × 8.2 × 2.2)
Main machinery: 4 MTU 20V 538TB93 diesels; 18,740 hp(m) (13.8 MW) sustained; 4 shafts
Speed, knots: 38.5
Range, n miles: 700 at 33 kt; 2,800 at 10 kt
Complement: 35

Missiles: SSM 8 Aerospatiale MM 40 Exocet (2 quad) launchers, inertial cruise, active radar homing to 70 km (40 n miles) at 0.9 Mach; warhead 165 kg; sea-skimmer.

Guns: 1 OTO Melara 3 in (76 mm)/62; 55-65 rds/min to 16 km (8.7 n miles); weight of shell 6 kg.
 2 Breda 40 mm/70 (twin); 300 rds/min to 12.5 km (6.8 n miles); weight of shell 0.96 kg
 4 Oerlikon 30 mm/75 (2 twin); 650 rds/min to 10 km (5.5 n miles); weight of shell 1 kg or 0.36 kg.

Countermeasures: Decoys: 1 CSEE Dagaia trainable launcher; IR flares and chaff.
 ESM: Thomson CSF, DR 2000, intercept.

Combat data systems: Tav tac action data automation.

Weapons control: 2 CSEE Naja optronic directors for 30 mm. Thomson-CSF Vega II for SSM, 76 mm and 40 mm.

Radars: Air/surface search: Thomson-CSF Triton S; G-band; range 33 km (18 n miles) for 2 m² target.

Fire control: Thomson-CSF Castor II; I/J-band; range 31 km (17 n miles) for 2 m² target.

Programmes: Ordered 27 June 1981.

Operational: CSEE Sylostat navigation system. All three ships operating but reported in need of refits.



CARTHAGE

8/2004, Schaeffer/Marsan / 1044197



CARTHAGE

8/2004, B Prézeln / 1044198

3 MODIFIED HAIZHUI CLASS (LARGE PATROL CRAFT) (PB)

UTIQUE P 207 JERBA P 208 KURIAT P 209

Displacement, tons: 120 full load
Dimensions, feet (metres): 114.8 × 17.7 × 5.9 (35 × 5.4 × 1.8)
Main machinery: 4 MWM TB 604 BV12 diesels; 4,400 hp(m) (3.22 MW) sustained; 4 shafts
Speed, knots: 28
Range, n miles: 750 at 17 kt
Complement: 39
Guns: 4 China 25 mm/80 (2 twin).
Radars: Surface search: Pot Head, I-band.

Comment: Delivered from China in March 1994. These craft resemble a smaller version of the Haizhui class in service with the Chinese Navy but with a different armament and some superstructure changes. Built to Tunisian specifications.



KURIAT

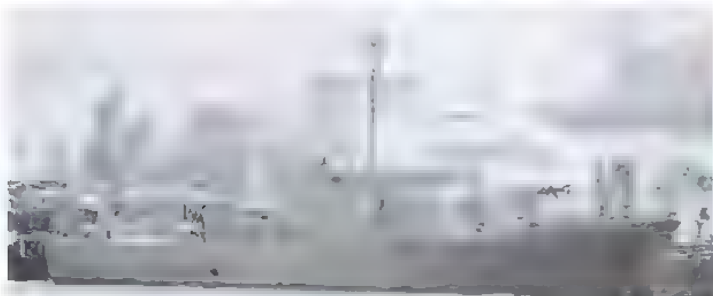
4/1995, 0080847

3 BIZERTE CLASS (TYPE PR 48) (LARGE PATROL CRAFT) (PBOM)

Name	No	Builders	Commissioned
BIZERTE	P 301	SFCN, Villeneuve-la-Garenne	10 July 1970
HORRIA (ex-Liberté)	P 302	SFCN, Villeneuve-la-Garenne	Oct 1970
MONASTIR	P 304	SFCN, Villeneuve-la-Garenne	25 Mar 1975

Displacement, tons: 250 full load
 Dimensions, feet (metres): 157.5 × 23.3 × 7.5 (49 × 7.1 × 2.3)
 Main machinery: 2 MTU 16V 652TB81 diesels; 4,600 hp(m) (3.4 MW) sustained; 2 shafts
 Speed, knots: 20. Range, n miles: 2,000 at 16 kt
 Complement: 34 (4 officers)
 Missiles: SSM: 8 Aerospatiale SS 12M; wire-guided to 5.5 km (3 n miles) subsonic; warhead 30 kg.
 Guns: 4—37 mm/63 (2 twin) 2—14.5 mm MGs.
 Radars: Surface search: Thomson-CSF DRBN 31; I-band.

Comment: First pair ordered in 1968, third in August 1973. Guns changed in 1994. All are active.



BIZERTE 3/2002, van Ginderen Collection / 0141859



HORRIA 10/2001 / 0533311

6 ALBATROS CLASS (TYPE 143B) (PG)

Name	No	Builders	Commissioned
HAMILCAR (ex-Sperber)	505 (ex-P 6115)	Kroger, Rendsburg	27 Sep 1976
HANNON (ex-Greif)	506 (ex-P 6116)	Lurssen, Vegesack	25 Nov 1976
HIMILCON (ex-Geier)	507 (ex-P 6113)	Lurssen, Vegesack	2 June 1976
HANNIBAL (ex-Seeadler)	508 (ex-P 6118)	Lurssen, Vegesack	28 Mar 1977
HASDRUBAL (ex-Habicht)	509 (ex-P 6119)	Kroger, Rendsburg	23 Dec 1977
GISCON (ex-Kormoran)	510 (ex-P 6120)	Lurssen, Vegesack	29 July 1977

Displacement, tons: 398 full load
 Dimensions, feet (metres): 189 × 25.6 × 8.5 (57.6 × 7.8 × 2.6)
 Main machinery: 4 MTU 16V 956TB91 diesels; 17,700 hp(m) (13 MW) sustained; 4 shafts
 Speed, knots: 40. Range, n miles: 1,300 at 30 kt
 Complement: 40 (4 officers)

Guns: 2 OTO Melara 3 in (76 mm)/62 compact, 85 rds/min to 16 km (8.6 n miles) anti-surface; 12 km (6.5 n miles) anti-aircraft; weight of shell 6 kg.
 2—12.7 mm MGs (may be fitted).

Torpedoes: 2—21 in (533 mm) aft tubes. AEG Seel; wire-guided; active homing to 13 km (7 n miles) at 35 kt; passive homing to 28 km (15 n miles) at 23 kt; warhead 260 kg.

Countermeasures: Decoys: Buck-Wegmann Hot Dog/Silver Dog; IR/chaff dispenser. ESM/ECM: Rascal Octopus (Cutlass intercept, Scorpion jammer).

Combat data systems: AEG/Signal command and fire-control system; Link 11.

Weapons control: ORG73 optronics GPCS. STN Atlas WBA optronic sensor to be fitted.

Radars: Surface search/fire control: Signal WM27, I/J-band.

Navigation: SMA 3 RM 20; I-band.

Programmes: Sold to Tunisia on being decommissioned from the German Navy in 2005.

Structure: Wooden hulled craft.

Operational: 505 and 506 transferred on 4 July 2005, 507 and 508 in September 2005 and 509 and 510 on 13 December 2005. Exocet missiles were not transferred although the containers remain on board



HASDRUBAL 12/2005, Martin Mokrus / 1157949



HAMILCAR 7/2005, B Prézalin / 1133152

4 COASTAL PATROL CRAFT (PB)

Name	No	Builders	Commissioned
ISTIKLAL (ex-VC 11, P 761)	P 201	Ch Navals de l'Estere	Apr 1957
JOURMOURIA	P 202	Ch Navals de l'Estere	Jan 1961
AL JALA	P 203	Ch Navals de l'Estere	Nov 1963
REMADA	P 204	Ch Navals de l'Estere	July 1967

Displacement, tons: 60 standard; 80 full load
 Dimensions, feet (metres): 104 × 19 × 5.3 (31.5 × 5.8 × 1.6)
 Main machinery: 2 MTU MB 12V 493 TY70 diesels; 2,200 hp(m) (1.62 MW) sustained; 2 shafts
 Speed, knots: 30
 Range, n miles: 1,500 at 15 kt
 Complement: 17 (3 officers)
 Guns: 2 Oerlikon 20 mm.
 Radars: Surface search: Racal Decca 1226, I-band.

Comment: Istiklal transferred from France March 1959. Wooden hulls. At least one may belong to the Coast Guard.



JOURMOURIA 3/2005, M Declerck / 1167533

6 COASTAL PATROL CRAFT (PB)

V 101-106

Displacement, tons: 38 full load
 Dimensions, feet (metres): 83 × 15.6 × 4.2 (25 × 4.8 × 1.3)
 Main machinery: 2 Detroit 12V-71TA diesels; 840 hp (627 kW) sustained; 2 shafts; LIPS cp props
 Speed, knots: 23
 Range, n miles: 900 at 15 kt
 Complement: 11
 Guns: 1 Oerlikon 20 mm.
 Radars: Surface search: Racal Decca 1226, I-band.

Comment: Built by Chantiers Navals de l'Estere and commissioned in 1961-63. Two further craft of the same design (Sabaq el Bahr T 2 and Jaouel el Bahr T 1) but unarmed were transferred to the Fisheries Administration in 1971—same builders. Refitted in 1997/98. V 102 is Coast Guard



V 105 3/2005, M Declerck / 1167537

TRAINING/SURVEY SHIPS

Notes: Degga A 707 and El Jem A 708 are converted fishing vessels used for divers' training.



EL JEM 7/2002, Schaeffer/Marsan / 0533312

1 WILKES CLASS (AGS)

Name	No	Builders	Launched	Commissioned
KHAIREDDINE (ex-Wilkes)	A 700 (ex-T-AGS 33)	Defoe SB Co, Bay City, MI	31 July 1969	28 June 1971

Displacement, tons: 2,843 full load
 Dimensions, feet (metres): 285.3 x 48 x 15.1 (87 x 14.6 x 4.6)
 Main machinery: Diesel-electric; 2 Alco diesel generators; 1 Westinghouse/GE motor; 3,600 hp (2.69 MW); 1 shaft, bow thruster; 350 hp (261 kW)
 Speed, knots: 15
 Range, n miles: 8,000 at 13 kt
 Complement: 37
 Radars: Navigation: RM 1650/9X; I-band.

Comment: Decommissioned on 29 August 1996 and transferred from the USA by grant aid on 29 September 1995. Designed specifically for surveying operations. Bow propulsion unit for precise manoeuvrability and station keeping. Second of class planned for transfer but not confirmed.



KHAIREDDINE 7/2007, Bob Fildes / 1167858

1 ROBERT D CONRAD CLASS (AGOR/AX)

Name	No	Builders	Launched	Commissioned
N N O SALAMMBO (ex-De Steiguer)	A 701 (ex-T-AGOR 12)	Northwest Iron Works	13 June 1966	28 Feb 1969

Displacement, tons: 1,370 full load
 Dimensions, feet (metres): 208.9 x 40 x 15.3 (63.7 x 12.2 x 4.7)
 Main machinery: Diesel-electric; 2 Cummins diesel generators; 1 motor; 1,000 hp (746 kW); 1 shaft, bow thruster; 350 hp (257 kW)
 Speed, knots: 13
 Range, n miles: 12,000 at 12 kt
 Complement: 40
 Radars: Navigation: Raytheon 1650/6X; I-band

Comment: Transferred from USA on 2 November 1992 and recommissioned on 11 February 1993. Built as an oceanographic research ship. Special features include a 10 ton boom, and a gas turbine for quiet propulsion up to 6 kt. Used primarily for training having replaced the frigate *Inkadh*, which is now an accommodation hulk.



N N O SALAMMBO 7/1997, Camil Busquets i Vilanova / 0019296

AUXILIARIES

1 SIMETO CLASS (WATER TANKER) (AWT)

AIN ZAGHOUAN (ex-Simeto) – (ex-A 5375)

Displacement, tons: 1,858 full load
 Dimensions, feet (metres): 229 x 33.1 x 14.4 (69.8 x 10.1 x 4.4)
 Main machinery: 2 GMT B 230.6 BL diesels; 2,530 hp(m) (1.86 MW) sustained; 2 shafts; cp props; bow thruster; 300 hp(m) (220 kW)
 Speed, knots: 13. Range, n miles: 1,800 at 12 kt
 Complement: 36 (3 officers)
 Cargo capacity: 1,130 tons
 Guns: 1–20 mm/70. 2–7.62 mm MGs can be carried.
 Radars: Navigation: 2 SPN-753B(V); I-band

Comment: Built by Cinet, Molfetta and originally commissioned on 9 July 1988. Transferred from Italy on 30 June 2003.



SIMETO CLASS (Italian colours) 2/2000, van Ginderen Collection / 0104888

2 WHITE SUMAC CLASS (BUOY TENDERS) (ABU)

Name	No	Launched	Recommissioned
TABARKA (ex-White Heath)	A 804 (ex-WLM 545)	21 July 1943	31 Mar 1998
TAGUERMESS (ex-White Lupine)	A 805 (ex-WLM 546)	28 July 1943	31 Mar 1998

Displacement, tons: 485 full load
 Dimensions, feet (metres): 133 x 31 x 9 (40.5 x 9.5 x 2.7)
 Main machinery: 2 Caterpillar diesels; 600 hp (448 kW); 2 shafts
 Speed, knots: 9
 Complement: 24
 Radars: Navigation: Raytheon; I-band.

Comment: Former US Coast Guard vessels transferred by gift on 10 June 1998. Arrived in Tunisia one month later.



TAGUERMESS (US colours) 9/1997, Harald Carstens / 0012986

1 COASTAL TUG (YTB)

SIDI DAUD (ex-Porto D'Ischia) – (ex-Y438)

Displacement, tons: 412 full load
 Measurement, tons: 122 dwt
 Dimensions, feet (metres): 108.3 x 27.9 x 12.8 (32.4 x 8.5 x 3.9)
 Main machinery: 1 GMT B 230.8 M diesels; 1,600 hp(m) (1.18 MW) sustained; 1 shaft; cp prop
 Speed, knots: 12.7
 Range, n miles: 4,000 at 12 kt
 Complement: 13
 Radars: Navigation: GEM BX 132; I-band

Comment: Built in 1970. Transferred from Italy in November 2002.



COASTAL TUG (Italian colours) 5/2001, Giorgia Ghiglione / 0130337

1 BUOY TENDER (ABU)

SIDI BOU SAID A 802

Displacement, tons: To be announced
 Dimensions, feet (metres): 127.3 x 33.8 x 5.9 (38.8 x 10.2 x 1.8)
 Main machinery: 2 Caterpillar 3406 CTA/B diesels; 810 hp(m) (600 kW); 2 shafts
 Speed, knots: 10
 Complement: To be announced
 Radars: Navigation: I-band.

Comment: Built by and procured from Damen, Gorinchem, in 1998. Painted white.

NATIONAL GUARD

Notes: (1) *Tazerke P 205* and *Menzel Bourguiba P 206* may have transferred from the Navy to the National Guard but this is not confirmed.
 (2) There are at least 12 further patrol craft: *GN 1602, GN 1701, GN 1704, GN 1705, GN 1105, GN 1401, GN 1402, GN 1403, GN 1407, GN 2004, GN 2005* and *GN 907*



GN 1407

3/2006, M Deckerck / 1167535



GN 1701

6/2004, Marco Ghigliano / 1133146

6 KONDOR I CLASS (PBO)

RAS EL BLAIS (ex-Demmin) 601
RAS AJDIR (ex-Malchin) 602
RAS EL EDRAK (ex-Altantreprow) 603

RAS EL MANOURA (ex-Templin) 604
RAS ENGHELA (ex-Ahrenshoop) 605
RAS IFRIKIA (ex-Warnemunde) 606

Displacement, tons: 377 full load
 Dimensions, feet (metres): 170.3 x 23.3 x 7.2 (51.9 x 7.1 x 2.2)
 Main machinery: 2 Russki/Kolomna 40-DM; 4,408 hp(m) (3.24 MW) sustained; 2 shafts, cp props
 Speed, knots: 20. Range, n miles: 1,800 at 15 kt
 Complement: 24
 Guns: 2—25 mm (twin) can be carried
 Radars: Navigation: TSR 333 or Racal Decca 360; I-band.

Comment: Former GDR minesweepers built at Peenewerft, Wolgast in 1969. First four transferred in May 1992, one in August 1997 and the last one in May 2000. In German service they were fitted with a twin 25 mm gun and a hull-mounted sonar. *Ras Ifrikia* which was used as a fishery protection and research vessel in East German and, later, German service has a more extensive superstructure. These ships may belong to the Navy. Ships of the same class acquired by Cape Verde. Reported operational.



RAS ENGHELA

8/1997, Diego Quevedo / 0050258



RAS IFRIKIA

5/2000, Kristian Lundgren / 0567538

4 GABES CLASS (PB)

GABES JERBA KELIBIA TABARK

Displacement, tons: 18 full load
 Dimensions, feet (metres): 42.3 x 12.5 x 3 (12.9 x 3.8 x 0.9)
 Main machinery: 2 diesels; 800 hp(m) (588 kW); 2 shafts
 Speed, knots: 38. Range, n miles: 250 at 15 kt
 Complement: 6
 Guns: 2—12.7 mm MGs.

Comment: Built by SBCN, Loctudy in 1988–89



GABES

1/1995 / 0080857

5 BREMSE CLASS (PB)

SBEITLA (ex-G 32) *UTIQUE* GN 2301 (ex-G 37) *SELEUTA* (ex-G 39)
BULLARJIA (ex-G 36) *UERKOUANE* (ex-G 38)

Displacement, tons: 42 full load
 Dimensions, feet (metres): 74.1 x 15.4 x 3.6 (22.6 x 4.7 x 1.1)
 Main machinery: 2 SKL 6VD 18/5 AL-1 diesels; 944 hp(m) (694 kW) sustained; 2 shafts
 Speed, knots: 14
 Complement: 6
 Guns: 2—14.5 mm (twin) MGs can be carried
 Radars: Navigation: TSR 333, I-band

Comment: Built in 1971–72 for the ex-GDR GBK. Transferred from Germany in May 1992. Others of the class sold to Malta and Cyprus.



UTIQUE

3/2006, M Deckerck / 1167534

2 SOCOMENA (PATROL CRAFT) (PB)

ASSAD BIN FOURAT MOHAMMED BRAHIM REJEB

Displacement, tons: 32 full load
 Dimensions, feet (metres): 67.3 x 15.4 x 4.3 (20.5 x 4.7 x 1.3)
 Main machinery: 2 diesels; 1,000 hp(m) (735 kW); 2 shafts
 Speed, knots: 28. Range, n miles: 500 at 20 kt
 Complement: 8
 Guns: 1 12.7 mm MG

Comment: Built by Socomena Bizerte, with assistance from South Korea, and completed 2 March 1986.



SOCOMENA CRAFT (inboard)

3/2002, van Ginderen Collection / 0141833

4 RODMAN 38 CLASS (PB)

Displacement, tons: 11.2 full load
 Dimensions, feet (metres): 38.7 x 12.8 x 2.82 (11.6 x 3.9 x 0.86)
 Main machinery: 2 diesels; 2 shafts
 Speed, knots: 28. Range, n miles: 300 at 28 kt
 Complement: 4
 Radars: Navigation: I-band

Comment: GRP hull. Two supplied in 2000 and two in 2002. Built by Rodman, Vigo for Customs Service.



RODMAN 38

6/2004 / 1133149

Turkey

TÜRK DENİZ KUVVETLERİ



Country Overview

The modern Republic of Turkey was founded in 1923. Situated in south-east Europe and south-west Asia, the country has an area of 300,848 square miles and is bordered to the north-west by Bulgaria and Greece, to the north-east by Georgia and Armenia, to the east by Iran and to the south with Iraq and Syria. It has a 739 n mile coastline with the Black Sea and 3,149 n mile coastline with the Aegean and Mediterranean Seas. The capital is Ankara, while the leading ports are Istanbul (largest city) and Izmir. In addition, Black Sea ports include Trabzon, Giresun, Samsun, and Zonguldak while Iskenderun and Mersin lie on the Mediterranean. Territorial waters for Black Sea and Aegean (6 n miles) (12 n miles) are claimed and for Aegean (6 n miles). An EEZ (200 n miles) is claimed in the Black Sea only.

Headquarters Appointments

Commander-in-Chief, Turkish Naval Forces:

Admiral M Metin Ataç

Chief of Naval Staff

Vice Admiral E Murat Bilgel

Chief of Coast Guard

Rear Admiral A Can Erenoğlu

Flag Officers

Comturfleet (Gölcük):

Admiral E Uğur Yiğit

Comtursarnorth (Istanbul):

Vice Admiral A Feyyaz Ögütçü

Comtursarsouth (Izmir):

Vice Admiral S Erdal Bucak

Comturnavtrain (Istanbul):

Rear Admiral Kadir Sağdıç

Comturampgroup (Foça):

Rear Admiral Baha Eren

Comtursuracgroup (Gölcük):

Rear Admiral Bülent Bostanoğlu

Comturfastgroup (Gölcük):

Rear Admiral Hasan Uçaklıoğlu

Comturninagroup (Erdek):

Rear Admiral Yalçın Kavukçuoğlu

Comtursubgroup (Gölcük):

Rear Admiral Serdar Dulger

Comtursaspatgroup (Izmir):

Rear Admiral Kemalettin Gür

Comist Strait (Istanbul):

Rear Admiral Ibrahim Akın

Comcan Strait (Çanakkale):

Rear Admiral Erhan Akporay

Comturaganzone (Izmir):

Rear Admiral S Tayfun Atılır

Flag Officers — continued

Comturmedzone (Mersin):

Rear Admiral Soner Polat

Comtursouthskgrp (Aksaz):

Rear Admiral Fikret Güneş

Comturavgolbase (Gölcük):

Rear Admiral Doğan Denizmen

Comturnevaksbase (Aksaz):

Rear Admiral Celal Parlaköğlu

Comturairbase (Topeli):

Rear Admiral Deniz Dağlılar

Comturblackzone (Ereğli):

Rear Admiral Türker Ertürk

Comturmarbde (Foça):

Rear Admiral Ufuk Aslan

Comturampships (Foça):

Rear Admiral Cem Gürdeniz

Comturnaviskbase (Iskenderun):

Rear Admiral İsmail Taylan

Personnel

(a) 2009: 55,000 (5,500 officers) including 31,000 conscripts, 3,000 Marines and 900 Air Arm (reserves 70,000)

(b) 15 months' national service

Organisation

Fleet HQ (Ankara), Fleet Command (Gölcük), Northern Area Command (Black Sea and Marmara), Southern Area Command (Aegean and Mediterranean), Naval Training Command (Istanbul).

Bases

Headquarters: Ankara

Black Sea: Ereğli, Bartın, Samsun, Trabzon

Marmara: İstanbul, Erdek, Çanakkale, Gölcük

Mediterranean: Izmir, Foça, Antalya, Mersin, Iskenderun, Aksaz

Dockyards: Gölcük, Pendik (Istanbul), Izmir

Prefix to Ships' Names

T CG (Turkish Republic Ship)

TCSG (Turkish Republic Coast Guard)

Strength of the Fleet (including Coast Guard)

Type	Active	Building (Planned)
Submarines—Patrol	14	(6)
Frigates	17	—
Corvettes	8	1 (11)
Fast Attack Craft—Missile	25	2
Large Patrol Craft	18	16
Minesweepers/Hunters—Coastal	14	2
Minesweepers—inshore	4	—
LSTs/Minelayers	5	—
LCTs	24	—
Survey Vessels	3	—
Training Ships	10	—
Fleet Support Ships	2	—
Tankers	4	—
Transports—Large and small	13	—
Salvage Ships	3	(3)
Boom Defence Vessels	2	—

Pennant Numbers

From mid-1997 all pennant numbers have been repainted in non-reflective paint.

Marines

Total 3,000

One brigade of HQ company, three infantry battalions, one artillery battalion, support units.

Coast Guard (Sahil Güvenlik)

Formed in July 1982 from the naval wing of the Jandarma Prefix J replaced by SG and paint scheme is very light grey with a diagonal stripe forward. About 1,700 officers and men. Plans to establish a coastal surveillance system were announced in June 2008. The coastline is to be broken down into some 31 sectors in which radar and other sensors would be established. Requests for Proposals were issued to a large number of international and national companies.

DELETIONS

Frigates

2006 Karadeniz
2007 Muavenet

Auxiliaries

2006 Eceabat

PENNANT LIST

Submarines

S 347 Atılay
S 348 Seldiray
S 349 Batıray
S 350 Yıldırım
S 351 Doğanay
S 352 Dolunay
S 353 Preveze
S 354 Sakarya
S 355 18 Mart
S 356 Anafartalar
S 357 Gür
S 358 Çanakkale
S 359 Burakreis
S 360 1. İnönü

Frigates

F 240 Yavuz
F 241 Turgutreis
F 242 Fatih
F 243 Yıldırım
F 244 Barbaros
F 245 Orucreis
F 246 Selüreis
F 247 Kemalreis
F 253 Zafer
F 490 Gaziantep
F 491 Giresun
F 492 Gemlik
F 493 Gellibolu
F 494 Gökçeada
F 495 Gediz
F 496 Gökova
F 497 Gökusu

Corvettes

F 500 Bozcaada
F 501 Bodrum
F 502 Bandırma
F 503 Beykoz
F 504 Bartın
F 505 Befra
F 511 Heybeliada (bldg)

Mine Warfare Forces (Sweepers/Hunters)

M 260 Edincik
M 261 Edremiş
M 262 Enez
M 263 Erdek
M 264 Erdemli
M 265 Alanya
M 266 Amasra
M 267 Ayvalık
M 268 Akçakoca (bldg)
M 269 Anamur (bldg)
M 270 Akçay (bldg)
M 500 Foça
M 501 Fethiye
M 502 Fatsa
M 503 Finike
M 514 Silişk
M 515 Saros
M 518 Sigecik
M 517 Sapanca
M 518 Sarıyer
P 313-314 MTB 3-4
P 316-319 MTB 6-9

Amphibious Forces

L 401 Ertuğrul
L 402 Serdar
NL 123 Serucabey
NL 124 Karamurselbey
NL 125 Osman Gazi

Patrol Forces

P 114 Akhisar
P 121 AB 21
P 122 AB 22
P 123 AB 23
P 124 AB 24
P 127 AB 27
P 128 AB 28
P 129 AB 29
P 131 AB 31
P 135 AB 35
P 136 AB 36
P 301 Kozlu
P 302 Kuşadası
P 307 Karamürsel

P 308 Kerempe
P 309 Kiliimli
P 321 Denizkuşu
P 322 Atmaca
P 323 Şahin
P 324 Kartal
P 326 Felikan
P 327 Albatros
P 328 Şimşek
P 329 Kasırga
P 330 Kılıç
P 331 Kalkan
P 332 Mızrak
P 333 Tufan
P 334 Maltom
P 335 İmbat
P 336 Zıpkin (bldg)
P 337 Atak (bldg)
P 338 Bora (bldg)
P 340 Doğan
P 341 Marti
P 342 Tayfun
P 343 Volkan
P 344 Rüzgar
P 345 Poyraz
P 346 Gurbet
P 347 Firtına
P 348 Yıldız
P 349 Karayel
P 531 Terme

Auxiliaries

P 305 AG 5
P 306 AG 6
A 570 Taşkızak
A 571 Albay Hakkı Burak
A 572 Yüzbaşı İhsan Tolunay
A 573 Binbaşı Sadettin Gürçan
A 576 Değirmendere
A 577 Sokullu Mehmed Paşa
A 578 Darica
A 579 Cezayirli Gazi Hasan Paşa
A 580 Akar
A 581 Çiner
A 582 Kemer
A 585 Akin
A 586 Akbes

A 587 Gazal
A 588 Çandarlı
A 589 İğın
A 590 İnebolu
A 592 Karadeniz Ereğli
A 594 Çubuklu
A 595 Yarbey Kudret Güngör
A 596 Ulubat
A 597 Van
A 598 Söğüt
A 599 Çeşme
A 600 Kavak
A 1531 E 1
A 1532 E 2
A 1533 E 3
A 1534 E 4
A 1535 E 5
A 1536 E 6
A 1537 E 7
A 1538 E 8
A 1542 Söndüren 2
A 1543 Söndüren 3
A 1544 Söndüren 4
A 1500 Iskenderun
Y 50 Gölcük
Y 51 Söndüren 1
Y 52 Doğanarslan
Y 53 Kuvvet
Y 55 Atıl
Y 56 Pondik
Y 57 Aksaz
Y 64 Ersev Bayrak
Y 90 Deney
Y 95 Torpido Tanderi
Y 98 Takip 1
Y 99 Takip 2
Y 112 Taşkızak
Y 113 Pinar 3
Y 114 Pinar 4
Y 116 Pinar 6
Y 139 Yakit
Y 140 H 500
Y 141 H 501
Y 142 H 502
Y 180 Önder
Y 181 Öncü
Y 182 Özgen
Y 183 Öden
Y 184 Özgür

SUBMARINES

8 PREVEZE (TYPE 209/1400) CLASS (SSK)

Name	No	Builders	Laid down	Launched	Commissioned
PREVEZE	S 353	Gölcük, Kocaeli	12 Sep 1989	22 Oct 1993	22 Mar 1994
SAKARYA	S 354	Gölcük, Kocaeli	1 Feb 1990	28 July 1994	6 Jan 1995
18 MART	S 355	Gölcük, Kocaeli	28 July 1994	26 Aug 1997	27 Aug 1997
ANAFARTALAR	S 356	Gölcük, Kocaeli	1 Aug 1995	1 Sep 1998	12 Oct 1998
GÜR	S 357	Gölcük, Kocaeli	21 Feb 2000	24 Feb 2003	24 July 2003
ÇANAKKALE	S 358	Gölcük, Kocaeli	19 Dec 2000	23 June 2004	26 July 2005
BURAKREIS	S 359	Gölcük, Kocaeli	19 Dec 2001	5 Sep 2005	15 Feb 2006
1. İNÖNÜ	S 360	Gölcük, Kocaeli	2 Jan 2003	24 May 2007	22 July 2007

Displacement, tons: 1,454 surfaced; 1,586 dived

Dimensions, feet (metres): 203.4 × 20.3 × 18
(67 × 6.2 × 5.5)

Main machinery: Diesel-electric; 4 MTU 12V 396 S883 diesels; 3,800 hp(m) (2.8 MW) sustained; 4 alternators; 1 Siemens motor; 4,000 hp(m) (3.38 MW) sustained; 1 shaft

Speed, knots: 10 surfaced/snorting, 21.5 dived

Range, n miles: 8,200 at 8 kt surfaced; 400 at 4 kt dived

Complement: 30 (8 officers)

Missiles: McDonnell Douglas Sub Harpoon; active radar homing to 130 km (70 n miles) at 0.9 Mach; warhead 227 kg.

Torpedoes: 8–21 in (533 mm) bow tubes. GEC-Marconi Tigerfish Mk 24 Mod 2; wire-guided, active/passive homing to 13 km (7 n miles) at 35 kt active; 29 km (15.7 n miles) at 24 kt passive; warhead 134 kg or STN Atlas DM 2A4 (S 357 onwards). Total of 14 torpedoes and missiles.

Mines: In lieu of torpedoes.

Countermeasures: ESM: Racal Porpoise or Racal Sealion (UAP) (S 357 onwards); intercept.

Weapons control: Atlas Elektronik ISUS 83-2 TFCS. Link 11 receive only

Radars: Surface search: I-band

Sonars: Atlas Elektronik CSU 83, passive/active search and attack, medium/high frequency.

Atlas Elektronik TAS-3; towed array; passive low frequency.

STN Atlas flank array; passive low frequency.

Programmes: Order for first two signed in Ankara on 17 November 1987 with option on two more taken up in 1993. Four more ordered 22 July 1998. All built with HDW prefabrication and assembly at Gölcük. The last four are called the Gur class.

Structure: Single hull design. Diving depth, 280 m (820 ft). Kollmorgen masts. Four torpedo tubes can be used for SSM. STN Atlas flank arrays fitted in 1998/99 to the first four

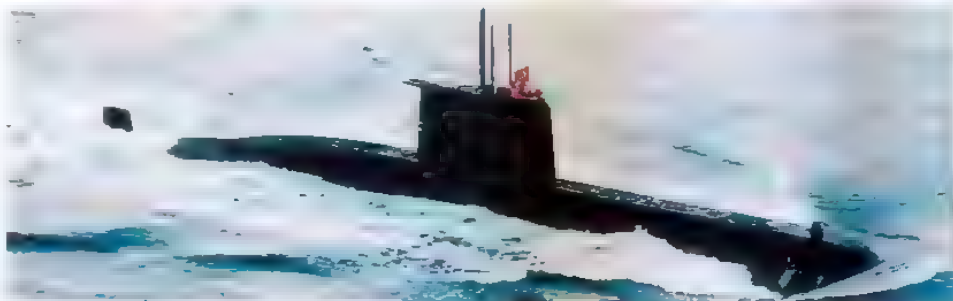
Operational: Endurance, 50 days.

18 MART
7/2000, Michael Nitz



ÇANAKKALE

8/2005, Selçuk Emre / 1133567



PREVEZE

10/2003, C D Yayıllı / 0567543



ANAFARTALAR

4/2001, Selçuk Emre / 0132789

6 ATILAY (209) CLASS (TYPE 1200) (SSK)

Name	No	Builders	Laid down	Launched	Commissioned
ATILAY	S 347	Howaldtswerke, Kiel	1 Dec 1972	23 Oct 1974	12 Mar 1976
SALDIRAY	S 348	Howaldtswerke, Kiel	2 Jan 1973	14 Feb 1975	15 Jan 1977
BATIRAY	S 349	Howaldtswerke, Kiel	1 June 1975	24 Oct 1977	7 Nov 1978
YILDIRAY	S 350	Gölcük, Izmit	1 May 1976	20 July 1979	20 July 1981
DOĞANAY	S 351	Gölcük, Izmit	21 Mar 1980	16 Nov 1983	16 Nov 1984
DOLUNAY	S 352	Gölcük, Izmit	8 Mar 1981	22 July 1988	29 June 1990

Displacement, tons: 980 surfaced; 1,185 dived
Dimensions, feet (metres): 200.8 × 20.3 × 17.9
 (61.2 × 6.2 × 5.5)

Main machinery: Diesel-electric, 4 MTU 12V 493 TY60 diesels, 2,400 hp(m) (1.76 MW) sustained; 4 alternators; 1.7 MW, 1 Siemens motor, 4,600 hp(m) (3.38 MW) sustained; 1 shaft
Speed, knots: 11 surfaced; 22 dived
Range, n miles: 7,500 at 8 kt surfaced
Complement: 38 (9 officers)

Torpedoes: 8–21 in (533 mm) tubes, 14 AEG SST 4; wire-guided; active/passive homing to 28 km (15.3 n miles) at 23 kt; 12 km (6.6 n miles) at 35 kt; warhead 260 kg Swim-out discharge

Countermeasures: ESM: Thomson-CSF DR 2000 or Racal Sealion (UAP) or Racal Porpoise, intercept
Weapons control: Signal M8 (S 347-348). Signal Sinbads (remainder). Link 11 receive.

Radars: Surface search: S 638; I-band.
Sonars: Atlas Elektronik CSU 3; hull-mounted; passive/active search and attack, medium/high frequency

Programmes: Designed by Ingenieurkontor, Lübeck for construction by Howaldtswerke, Kiel and sold by Ferrosteal, Essen, all acting as a consortium. Last three built in Turkey with assistance given by HDW

Modernisation: Mid-life upgrades are planned, for the last four boats. The programme, which may include

command system and weapon system upgrades was planned to have started in 2006 although details have not been confirmed.

Structure: A single-hull design with two ballast tanks and forward and after trim tanks. Fitted with snort and remote machinery control. The single screw is slow revving. Very high-capacity batteries with GRP lead-acid cells and battery cooling-by Wilh Hagen. Active and passive sonar, sonar detection equipment, sound ranging gear and underwater telephone. Fitted with two periscopes, radar and Omega receiver. Fore-planes retract. Diving depth, 250 m (820 ft).

Operational: Endurance, 50 days. Some US Mk 37 torpedoes may also be carried.



DOĞANAY

10/2006, B Prézelin / 1164271



YILDIRAY

1/2002, M Declerck / 0132790

0 + (6) TYPE 214 CLASS (SSK)

Displacement, tons: 1,700 surfaced; 1,860 dived
Dimensions, feet (metres): 213.3 × 20.7 × 19.7
 (65 × 6.3 × 6)

Main machinery: 1 MTU 16V 396 diesel; 4,243 hp (3.12 MW); 1 Siemens Permasyn motor; 3,875 hp(m) (2.85 MW); 1 shaft; 2 HDW PEM fuel cells, 240 kW; sodium sulphide high-energy batteries

Speed, knots: 20 dived, 12 surfaced
Complement: 27 (5 officers)

Torpedoes: 8–21 in (533 mm) bow tubes.

Countermeasures: Decoys: ESM

Weapons control: STN Atlas.

Radars: Surface search: I-band.

Sonars: Bow, flank and towed arrays.

Programmes: It was announced on 22 July 2008 that negotiations to procure six Type 214 submarines, equipped with Air Independent Propulsion (AIP), were

to be opened with HDW. The boats are to be built at Gölcük Shipyard and delivery of the first boat is planned in 2015.

Structure: The Type 214 is a synthesis of the proven Type 209 design with AIP from the Type 212. Turkey is the third customer for the Type 214. Details are based on those in South Korean service and may be different.



TYPE 214 CLASS

10/2008, Michael Nitz / 1353402

FRIGATES

Notes: The Turkish Frigate 2000 (TF 2000) project for a class of four ships is unlikely to be taken forward until further progress has been made with the MILGEM project.

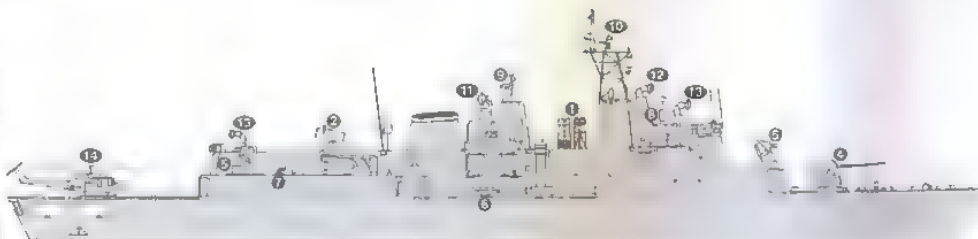
4 BARBAROS CLASS (MEKO 200TN II-A/B) (FFGHM)

Name	No	Builders	Laid down	Launched	Commissioned
BARBAROS	F 244	Blohm + Voss, Hamburg	18 Mar 1993	29 Sep 1993	16 Mar 1995
ORUCREIS	F 245	Gölcük, Kocaeli	15 Sep 1993	28 July 1994	10 May 1996
SALIHREIS	F 246	Blohm + Voss, Hamburg	24 July 1995	26 Sep 1997	17 Dec 1998
KEMALREIS	F 247	Gölcük, Kocaeli	4 Apr 1997	24 July 1998	8 June 2000

Displacement, tons: 3,380 full load
 Dimensions, feet (metres): 387.1 x 48.6 x 14.1; 21 (sonar)
 (118 x 14.8 x 4.3, 6.4)
 Main machinery: CODOG; 2 GE LM 2500 gas turbines; 60,000 hp (44.76 MW) sustained; 2 MTU 16V 1163 T883 diesels; 11,780 hp(m) (8.67 MW) sustained; 2 shafts; Escher Wyss; cp props
 Speed, knots: 32
 Range, n miles: 4,100 at 18 kt
 Complement: 187 (22 officers) plus 9 aircrew plus 8 spare

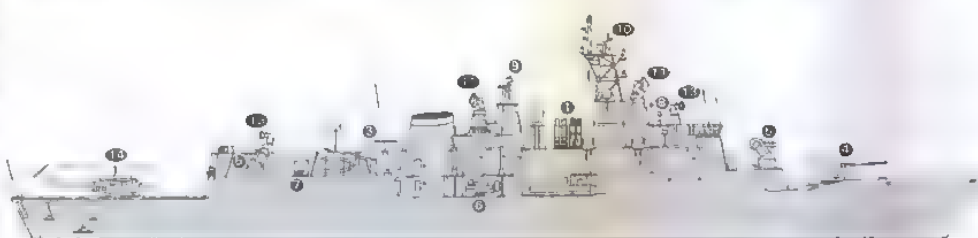
Missiles: SSM, 8 McDonnell Douglas Harpoon (2 quad) launchers (1), active radar homing to 130 km (70 n miles) at 0.9 Mach, warhead 227 kg
 SAM Raytheon Sea Sparrow RIM-7M Mk 29 Mod 1 octuple launcher (1) (F 244 and F 245) and VLS Mk 41 Mod 8 (1) (F 246 and F 247); semi-active radar homing to 16 km (8.5 n miles) at 2.5 Mach; warhead 38 kg. RIM-162 Evolved Sea Sparrow (ESSM) in due course.
 Guns: 1 FMC 5 in (127 mm)/54 Mk 45 Mod 1/2 (1); 20 rds/min to 23 km (12.6 n miles) anti-surface; 15 km (8.2 n miles) anti-aircraft; weight of shell 32 kg
 3 Oerlikon-Contraves 25 mm Sea Zenith (1); 4 barrels per mounting; 3,400 rds/min combined to 2 km.
 Torpedoes: 6—324 mm Mk 32 Mod 5 (2 triple) tubes (1). Honeywell Mk 46 Mod 5; anti-submarine, active/passive homing to 11 km (5.9 n miles) at 40 kt; warhead 44 kg
 Countermeasures: Decoys: 2 Loral Hycor 8-tubed fixed Mk 36 Mod 1 SRBOC (1); IR flares and chaff to 4 km (2.2 n miles). Nixie SLQ-25; towed torpedo decoy.
 ESM/ECM Rascal Cutlass/Scorpion, intercept and jammer.
 Combat data systems: Thomson-CSF/Signaal STACOS Mod 3; Link 11. WSC 3V(7) SATCOMs Marisat.
 Weapons control: 2 Siemens Albis optronic directors (1). SWG-1A for Harpoon.
 Radars: Air search: Siemens/Plessey AWS 8 (Type 986) (1); 3D; E/F-band
 Air/surface search: Plessey/BAe AWS 6 Dolphin (1); G-band
 Fire control: 1 or 2 (F 246-247) Signaal STIR (1); I/J/K-band (for SAM); range 140 km (76 n miles) for 1 m² target
 Contraves TMKu (F 244-245) (1); I/J-band (for SSM and 127 mm).
 2 Contraves Seaguard (1); I/J-band (for 25 mm).
 Navigation: Rascal Decca 2690 BT ARPA, I-band.
 Tacan URN 25. IFF Mk XII Mod 4.
 Sonars: Raytheon SQS-56 (DE 1180); hull-mounted; active search and attack; medium frequency.

Helicopters: 1 AB 212ASW (1) or S-708 Seahawk.
 Programmes: First pair ordered 19 January 1990, second pair: authorised 14 December 1992. Programme started 5 November 1991 with construction commencing in



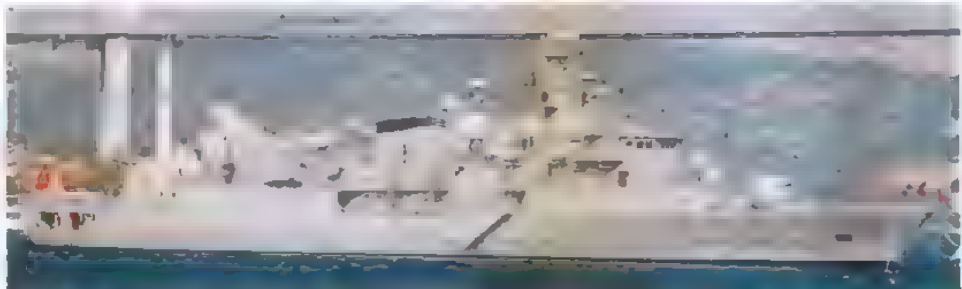
BARBAROS

(Scale 1 : 900), Ian Sturton 0019315



SALIHREIS

(Scale 1 : 900), Ian Sturton 1153494



ORUCREIS

8/2008*, C D Yaylali / 1353103

June 1992 in Germany. Completion of the last one delayed by the Gölcük earthquake in 1999.
 Structure: An improvement on the Yavuz class. Mk 29 Sea Sparrow launchers fitted in the first two, while the second pair have Mk 41 VLS aft of the funnel, which are to be retrofitted in the first two. The ships have CODOG

propulsion for a higher top speed. Other differences with Yavuz include a full command system, improved radars and a citadel for NBCD protection. A bow bulwark has been added in the second pair
 Operational: The AB 212 helicopter has Sea Skua anti-ship missiles. All can be used as Flagships.



SALIHREIS

6/2008*, Giorgio Ghiglione 1353400



KEMALREIS

11/2007, Selim San / 1353404

4 YAVUZ CLASS (MEKO 200TN) (FFGHM)

Name	No	Builders	Laid down	Launched	Commissioned
YAVUZ	F 240	Blohm + Voss, Hamburg	30 May 1985	7 Nov 1985	17 July 1987
TURGUTREIS (ex-Turgut)	F 241	Howaldtswerke, Kiel	20 May 1985	30 May 1986	4 Feb 1988
FATİH	F 242	Gölcük, İzmit	1 Jan 1986	24 Apr 1987	28 Aug 1988
YILDIRIM	F 243	Gölcük, İzmit	24 Apr 1987	22 July 1988	17 Nov 1989

Displacement, tons: 2,414 standard; 2,919 full load

Dimensions, feet (metres): 378.9 × 46.6 × 13.5
(115.5 × 14.2 × 4.1)

Main machinery: CODAD; 4 MTU 20V 1163 T893 diesels;
29,940 hp (m) (22 MW) sustained; 2 shafts; cp props

Speed, knots: 27

Range, n miles: 4,100 at 18 kt

Complement: 180 (24 officers)

Missiles: SSM: 8 McDonnell Douglas Harpoon (2 quad)
launchers; active radar homing to 130 km (70 n miles)
at 0.9 Mach, warhead 227 kg

SAM: Raytheon Sea Sparrow RIM-7M Mk 29 Mod 1
octuple launcher; semi-active radar homing to 16 km
(8.5 n miles) at 2.5 Mach; warhead 38 kg.

Guns: 1 FMC 5 in (127 mm)/54 Mk 45 Mod 1; 20 rds/min
to 23 km (12.6 n miles) anti-surface, 15 km (8.2 n miles)
anti-aircraft; weight of shell 32 kg

3 Oerlikon-Contraves 25 mm Sea Zenith; 4 barrels per
mount ng, 3,400 rds/min combined to 2 km

Torpedoes: 6 324 mm Mk 32 (2 triple) tubes; Honeywell
Mk 46 Mod 5; anti-submarine; active/passive homing to
11 km (5.9 n miles) at 40 kt; warhead 44 kg.

Countermeasures: Decoys: 2 Loral Hycor 6-tubed fixed
Mk 36 Mod 1 SRBOC; IR flares and chaff to 4 km
(2.2 n miles).

Nixie SLO-25; towed torpedo decoy.

ESM/ECM: Signaal Rapids/Ramses, intercept and jammer.

Combat data systems: Signaal STACOS-TU; action data
automation; Link 11. WSC 3V(7) SATCOMs, Marisat.

Weapons control: 2 Siemens Albis optronic directors
(for Sea Zenith), SWG-1A for Harpoon.

Radars: Air search: Signaal DA08; F-band.

Air/surface search: Plessey AWS 6 Dolphin; G-band.

Fire control: Signaal STIR; I/J/K band (for SAM), range

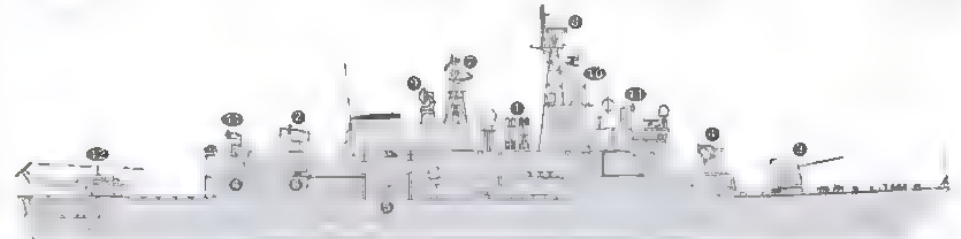
140 km (76 n miles) for 1 m² target.

Signaal WM25; I/J-band (for SSM and 127 mm).

2 Contraves Seaguard; I/J-band (for 25 mm)

Navigation: Racal Decca TM 1226; I-band.

Tacan: URN 25. IFF Mk XII.



YAVUZ

(Scale 1 : 900), Ian Sturton / 1153493



TURGUTREIS

7/2008, C D Yayıllı / 1353405

Sonars: Raytheon SQS-56 (DE 1160); hull-mounted; active
search and attack; medium frequency.

Helicopters: 1 AB 212ASW

Programmes: Ordered 29 December 1982 with builders and
Thyssen Rheinshahi Technik of Dusseldorf. Meko 200 type
similar to Portuguese frigates. Turgutreis was renamed
on 14 February 1988.

Operational: Helicopter has Sea Skua anti-ship missiles.



FATİH

8/2008, C D Yayıllı / 1353406



YAVUZ

8/2007, Selim San / 1167861

8 + (2) GAZIANTEP (OLIVER HAZARD PERRY) CLASS (FFGHM)

Name	No	Builders	Laid down	Launched	Commissioned	Recommissioned
GAZIANTEP (ex-Clifton Sprague)	F 490 (ex-FFG 16)	Bath Iron Works	30 Sep 1979	16 Feb 1980	21 Mar 1981	24 July 1998
GİRESUN (ex-Antrim)	F 491 (ex-FFG 20)	Todd Shipyards, Seattle	21 June 1978	27 Mar 1979	26 Sep 1981	24 July 1998
GEMLIK (ex-Flatley)	F 492 (ex-FFG 21)	Bath Iron Works	13 Nov 1979	15 May 1980	20 June 1981	24 July 1998
GELIBOLU (ex-Reid)	F 493 (ex-FFG 30)	Todd Shipyards, San Pedro	8 Oct 1980	27 June 1981	19 Feb 1983	22 July 1999
GÖKÇEADA (ex-Mahlon S Tisdale)	F 494 (ex-FFG 27)	Todd Shipyards, San Pedro	19 Mar 1980	7 Feb 1981	27 Nov 1982	8 June 2000
GEDİZ (ex-John A Moore)	F 495 (ex-FFG 19)	Todd Shipyards, San Pedro	19 Dec 1978	20 Oct 1979	14 Nov 1981	25 July 2000
GOKOVA (ex-Samuel Eliot Morison)	F 496 (ex-FFG 13)	Bath Iron Works	4 Aug 1978	14 July 1979	11 Oct 1980	11 Apr 2002
GÖKSU (ex-Estaoin)	F 497 (ex-FFG 15)	Bath Iron Works	2 Apr 1979	3 Nov 1979	10 Jan 1981	4 Apr 2003

Displacement, tons: 2,760 light, 3,638 full load
 Dimensions, feet (metres): 453 × 45 × 14.8, 24.5 (sonar)
 (138.1 × 13.7 × 4.5; 7.5)
 Main machinery: 2 GE LM 2500 gas turbines; 41,000 hp
 (30.59 MW) sustained; 1 shaft; cp prop
 2 auxiliary retractable props; 650 hp (484 kW)
 Speed, knots: 29
 Range, n miles: 4,500 at 20 kt
 Complement: 206 (13 officers) including 19 aircrew

Missiles: SSM: 4 McDonnell Douglas Harpoon Block 1B;
 active radar homing to 92 km (50 n miles) at 0.9 Mach;
 warhead 227 kg.
 SAM: 36 Raytheon Standard SM-1MR Block VIB;
 command guidance; semi-active radar homing to 38 km
 (20.5 n miles) at 2 Mach.
 1 Mk 13 Mod 4 launcher for both SSM and SAM missiles ●
 Guns: 1 OTO Melara 3 in (76 mm)/52 Mk 75 ●; 85 rds/min to
 16 km (8.7 n miles) anti-surface; 12 km (6.6 n miles) anti-
 aircraft; weight of shell 6 kg.
 1 General Electric/General Dynamics 20 mm/76
 6-barrelled Mk 15 Vulcan Phalanx ●; 3,000 rds/min
 combined to 1.5 km.
 4–12.7 mm MGs
 Torpedoes: 6–324 mm Mk 32 (2 triple) tubes ●.
 24 Honeywell Mk 46 Mod 5; anti-submarine; active/
 passive homing to 11 km (5.9 n miles) at 40 kt; warhead
 44 kg
 Countermeasures: Decoys: 2 Loral Hycon SRBOC
 6-barrelled fixed Mk 36 ●; IR flares and chaff to 4 km
 (2.2 n miles)
 T-Mk-6 Fanfare/SLO-25 Naxos; torpedo decoy.
 ESM/ECM: SLO-32(V)2 ●; radar warning. Sidekick
 modification adds jammer and deception system.



GÖKÇEADA

(Scale 1 : 1,200), Ian Sturton / 0587565

Combat data systems: NTDS with Link 11 and 14.
 SATCOM.

Weapons control: SWG-1 Harpoon LCS, Mk 92 Mod 4 WCS
 with CAS (Combined Antenna System). The Mk 92 is the
 US version of the Signaal WM28 system. Mk 13 weapon
 direction system. 2 Mk 24 optical directors.

Radars: Air search Raytheon SPS-49(V)4 ●; C/D-band.
 Surface search: ISC Cardion SPS-55 ●; I-band
 Fire control: Lockheed STIR (modified SPG-60) ●; I/J-band.
 Sperry Mk 92 (Signaal WM28) ●; I/J-band.
 Navigation: Furuno; I-band
 Tacan URN 25

Sonars: Raytheon SQS-56; hull-mounted; active search and
 attack; medium frequency.

Helicopters: 1 S-70B Seahawk ●

Programmes: Three approved for transfer by grant aid.
 Transfer delayed by Greek objections, and Turkish sailors

were sent home from the US in mid-1996. Congress
 authorised the go-ahead again on 27 August 1997. Two
 more approved for transfer by sale 30 September 1998,
 one in February 2000, one in April 2002 and one in April
 2003. At least one other *Duncan* FFG 10 for spares. The
 transfer of two further ships *George Philip* FFG 12 and
Sides FFG 14 is under consideration.

Modernisation: The combat data system is being upgraded
 under the 'Genesis' programme. F 492 was the first to
 be modernised and returned to service on 18 May 2007.
 The other ships are to follow. MilSoft awarded a contract
 in August 2006 to develop a Link 11/16 datalink system.
 Mk 41 VLS launchers are to be installed in four ships. The
 arrangement is likely to be similar to the Australian FFG
 upgrade programme.

Structure: A flight deck extension programme, to enable
 S-70 helicopters has been completed. The work involved
 angling the transom as in later USN ships of the class.
 Operational. Sonar towed arrays were not transferred



GELIBOLU

11/2007, Selim San / 1353408



GOKOVA

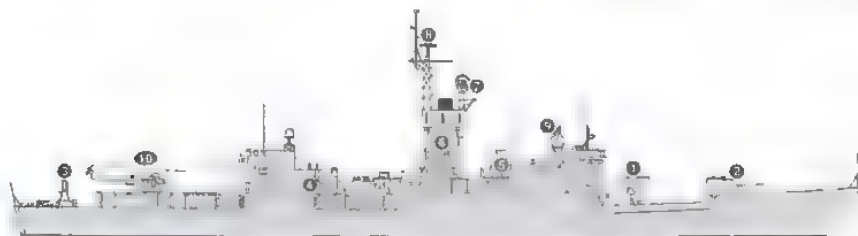
8/2007, Lisette Von Oss / 1353407

1 TEPE (KNOX) CLASS (FFGH)

Name	No	Builders	Laid down	Launched	Commissioned	Recommissioned
ZAFER (ex-Thomas C Hart)	F 253 (ex-10921)	Avondale Shipyards	8 Oct 1971	12 Aug 1972	28 July 1973	30 Aug 1993

Displacement, tons: 3,011 standard, 4,260 full load
Dimensions, feet (metres): 439.6 x 46.8 x 15; 24.8 (sonar) (134 x 14.3 x 4.6; 7.8)
Main machinery: 2 Combustion Engineering/Babcock & Wilcox boilers; 1,200 psi (84.4 kg/cm²); 950°F (510°C); 1 Westinghouse turbine, 35,000 hp (26 MW); 1 shaft
Speed, knots: 27. **Range, n miles:** 4,000 at 22 kt on 1 boiler
Complement: 288 (20 officers)

Missiles: SSM: 8 McDonnell Douglas Harpoon, active radar homing to 130 km (70 n miles) at 0.9 Mach; warhead 227 kg
A/S: Honeywell ASROC Mk 16 octuple launcher with reload system (has 2 cells modified to fire Harpoon); inertial guidance to 1.6-10 km (1-5.4 n miles); payload Mk 46 Mod 5 Nearthip
Guns: 1 FMC 5 in (127 mm)/54 Mk 42 Mod 9; 20-40 rds/min to 24 km (13 n miles) anti-surface; 14 km (7.7 n miles) anti-aircraft; weight of shell 32 kg.
 1 General Electric/General Dynamics 20 mm/76 6-barrelled Mk 15 Vulcan Phalanx; 3,000 rds/min combined to 1.5 km.
Torpedoes: 4—324 mm Mk 32 (2 twin) fixed tubes; 22 Honeywell Mk 46 Mod 5; anti-submarine; active/passive homing to 11 km (5.9 n miles) at 40 kt; warhead 44 kg.
Countermeasures: Decoys: 2 Loral Hycor SRBOC 6-barrelled fixed Mk 36; IR flares and chaff to 4 km (2.2 n miles). T Mk-6 Fanfare/SLQ-25 Nixie; torpedo decoy. Prairie Maskee hull and blade rate noise suppression
ESM: SLQ-32(V)2; intercept.
Combat data systems: Signaal Sigma K5 with Link 11.
Weapons control: SWG-1A Harpoon LCS. Mk 68 Mod 3 GFCS. Mk 114 Mod 6 ASW FCS. Mk 1 target designation



(Scale 1 : 1,200), Ian Sturton / 0506334

ZAFER

system. MMS target acquisition sight (for mines, small craft and low-flying aircraft).
Radars: Air search: Lockheed SPS-40B; B-band.
Surface search: Raytheon SPS-10 or Norden SPS-67; G-band.
Navigation: Marconi LN66; I-band.
Fire control: Western Electric SPG-53D/F; I/J band.
Tacan: SRN 15.
Sonars: EDO/General Electric SQS-26CX; bow-mounted; active search and attack; medium frequency.
Helicopters: 1 AB 212ASW

being hit by a Sea Sparrow missile. A second batch of four transferred in 1994. All eight purchased outright in 1999. F 251 decommissioned in 2000, F 257 in 2001, F 252 in 2002, F 254 in 2003, F 256 in 2005, F 255 in 2006 and F 250 in 2007.
Modernisation: Hangar and flight deck enlarged. In 1979 a programme was initiated to fit 3.5 ft bow bulwarks and spray strakes adding 9.1 tons to a displacement. Sea Sparrow SAM replaced by Phalanx 1982-88. Link 11 fitted after transfer. Project 'Kalyon-B' integrated new multipurpose consoles into the combat data system.
Structure: Improved ASROC torpedo reloading capability (note slanting face of bridge structure immediately behind ASROC). Four Mk 32 torpedo tubes are fixed in the midships structure, two to a side, angled out at 45°. The arrangement provides improved loading capability over exposed triple Mk 32 torpedo tubes. A 4,000 lb lightweight anchor is fitted on the port side and an 8,000 lb anchor fits into the after section of the sonar dome.

Programmes: In late 1992 the US offered Turkey four of the class. A proposal was put to Congress in June 1993 and four approved for transfer on a five year lease, plus one more, *Elmer Montgomery* for spares, on a grant basis under the Foreign Assistance Act. The latter replaced the former destroyer *Mauvenet* which was scrapped after



ZAFER

1/2002, M Declerck / 053374b

CORVETTES

0 + 2 (10) MILGEM CLASS (FSG)

Name	No	Builders	Laid down	Launched	Commissioned
HEYBELIADA	F 511	Istanbul Naval Shipyard	26 July 2005	27 Sep 2008	2011
BÜYÜKADA	-	Istanbul Naval Shipyard	27 Sep 2008	2011	2014

Displacement, tons: 1,500 standard; 2,000 full load
Dimensions, feet (metres): 324.8 x 47.2 x 11.8 (99.0 x 14.4 x 3.6)
Main machinery: CODAG; 2 MTU 16V 595 TE 90 diesel; 11,750 hp (8.76 MW); 1 GE LM 2500 gas turbine; 20,500 hp (15.3 MW); 2 shafts; cp props
Speed, knots: 29. **Range, n miles:** 3,500 at 15 kt
Complement: 93
Missiles: SSM: 8 McDonnell Douglas Harpoon (2 quadruple); active radar homing to 130 km (70 n miles) at 0.9 Mach; warhead 227 kg.
SAM: 1 RIM-116 RAM 21-cell Mk 49 launcher.
Guns: 1—3 in (76 mm), 2—12.7 mm MGs.
Torpedoes: 4—324 mm (2 twin) tubes.
Countermeasures: Decoys: To be announced
ESM/ECM: To be announced.
Torpedo decoy system: Ultra Sea Sentor.
Combat data systems: 'Genesis' derivative.
Electro-optic systems: Thales Sting optronic director.
Radars: Air/surface search: Thales SMART-S Mk 2 3D; E/F-band.
Fire control: Thales Sting; I/K-band.
Navigation: To be announced.
Sonars: To be announced.



HEYBELIADA (model)

8/2005, C D Yaylali / 1133234

Programmes: The MILGEM project was launched in 1996 for the in-country design and construction of up to 12 anti-submarine warfare and offshore patrol vessels.

The first two ships are under construction in Istanbul and construction of follow-on ships is likely to be shared between several shipyards.

Helicopters: S-70B Seahawk.

6 BURAK (TYPE A 69) CLASS (FFGM)

Name	No	Builders	Laid down	Launched	Commissioned	Recommissioned
BOZCAADA (ex-Commandant de Pimodan)	F 500 (ex-F 787)	Lorient Naval Dockyard	15 July 1975	7 Aug 1976	20 May 1978	22 June 2001
BODRUM (ex-Dragout)	F 501 (ex-F 783)	Lorient Naval Dockyard	16 Oct 1973	30 Nov 1974	1 Oct 1976	18 Oct 2001
BANDIRMA (ex-Quartier Maître Anquetil)	F 502 (ex-F 786)	Lorient Naval Dockyard	1 Aug 1975	7 Aug 1976	4 Feb 1978	15 Oct 2001
BEYKOZ (ex-d'Estienne d'Orves)	F 503 (ex-F 781)	Lorient Naval Dockyard	1 Sep 1972	1 June 1973	10 Sep 1976	18 Mar 2002
BARTIN (ex-Amyot d'Inville)	F 504 (ex-F 782)	Lorient Naval Dockyard	2 July 1973	30 Nov 1974	13 Oct 1976	3 June 2002
BAFRA (ex-Second Maître Le Bihan)	F 505 (ex-F 788)	Lorient Naval Dockyard	1 Nov 1976	13 Aug 1977	7 July 1979	26 June 2002

Displacement, tons: 1,175 standard; 1,250 (1,330 later ships) full load

Dimensions, feet (metres): 264.1 × 33.8 × 18 (sonar) (80.5 × 10.3 × 5.5)

Main machinery: 2 SEMT-Pielstick 12 PC2 V 400 diesels; 12,000 hp(m) (8.82 MW); 2 shafts; LIPS cp props

Speed, knots: 23 Range, n miles: 4,500 at 15 kt

Complement: 104 (10 officers)

Missiles: SSM: 2 Aerospatiale MM 38 Exocet ●; inertial cruise; active radar homing to 70 km (40 n miles) or 42 km (23 n miles) at 0.9 Mach; warhead 165 kg; sea-skimmer.

SAM: Matra Simbad twin launcher for Mistral ●; IR homing to 4 km (2.2 n miles); warhead 3 kg This may be replaced by Stinger.

Guns: 1 DCN/Creusot-Loire 3.9 in (100 mm)/65 Mod 68 CADAM automatic ●; 80 rds/min to 17 km (9 n miles) anti-surface; 8 km (4.4 n miles) anti-aircraft; weight of shell 13.5 kg.

2 Giat 20 mm ●; 720 rds/min to 10 km (5.5 n miles)

4–12.7 mm MGs

Torpedoes: 4 fixed tubes ●. ECAN L5; dual purpose, active/passive homing to 9.5 km (5.1 n miles) at 35 kt; warhead 150 kg, depth to 550 m (1,800 ft).

BOZCAADA

A/S mortars: 1 Creusot-Loire 375 mm Mk 54 6-tubed trainable launcher ●; range 1,600 m; warhead 107 kg.

Countermeasures: Decoys: 2 CSEE Dagaie 10-barrelled trainable launchers ●; chaff and IR flares; H- to J-band. Nixie torpedo decoy.

ESM: ARBR 16, radar warning.

Weapons control: Thomson-CSF Voge system; CSEE Panda optical secondary director.

Radars: Air/surface search: Thomson-CSF DRBV 51A ●; G-band

Navigation: Racal Decca 1226; i-band.

Fire control Thomson-CSF DRBC 32E ●; i-band.

Sonars: Thomson Sintra DUBA 25, hull-mounted, search and attack; medium frequency.

Comment: Six Type A 69 class bought second hand from France in October 2000. All, except *Bafra*, refitted at Brest. Work done on propulsion and weapons systems. Exocet MM 38 SSMs procured under separate contract. Operational use is coastal patrol duties, for which they were designed, in order to release more capable ships for front line service.



(Scale 1 : 900), Ian Sturton / 0114803



BOZCAADA

4/2008*, Selim San / 1353409

SHIPBORNE AIRCRAFT

Numbers/Type: 14 Agusta AB 212.

Operational speed: 106 kt (196 km/h).

Service ceiling: 14,200 ft (4,330 m).

Range: 230 n miles (426 km).

Role/Weapon systems: Multirole helicopter. Sensors: L3 AQS-18 dipping sonar (in seven aircraft); BAe Ferranti Sea Spray Mk 3 radar, ECM/ESM. Weapons: ASW: two Mk 46 or 244/S torpedoes. ASuW: two Sea Skua missiles.



AB 212

1/2002, M Declerck / 0533250

Numbers/Type: 7 Sikorsky S-70B Seahawk.

Operational speed: 135 kt (250 km/h).

Service ceiling: 10,000 ft (3,050 m).

Range: 600 n miles (1,110 km).

Role/Weapon systems: Contracts placed 3 June 1998 for first four. Second contract for four further aircraft on 31 December 1998. First three delivered 26 April 2002 and second four on 24 July 2003. One aircraft lost in accident. An order for a further 17 aircraft was placed on 24 June 2005. Deliveries to be made from 2009. Helras ASW weapon systems ordered. Sensors: APS-124 search radar; Helras dipping sonar. Weapons: ASW: 2 Mk 46 torpedoes, AGM-114B Hellfire II ASM



SEAHAWK S-70B

6/2002, Selçuk Emre / 0533251

LAND-BASED MARITIME AIRCRAFT

Numbers/Type: 6 CASA CN-235 D/K MPA.

Operational speed: 240 kt (445 km/h).

Service ceiling: 26,600 ft (8,110 m).

Range: 669 n miles (1,240 km).

Role/Weapon systems: Initial batch of two delivered in 2001 and a further four in 2002. First flight with mission systems took place on 18 June 2007. Thales AMACOS mission control system. Long-range maritime patrol for surface surveillance and ASW. Sensors: Ocean Master radar (SAR, ISAR, MTI and air-to-air modes); FLIR; AAR-60 missile warning, DR 3000 A ESM; MAD; Link 11. Weapons: 2 Mk-46 torpedoes.



CN-235

8/2006, Turkish Navy / 1158691

Numbers/Type: 10 Alenia ATR-72 ASW

Operational speed: 255 kt (472 km/h).

Service ceiling: 22,000 ft (6,705 m).

Range: 1,200 n miles (2,200 km).

Role/Weapon systems: Project Meltem-3. Contract signed on 20 July 2005 for ten maritime patrol aircraft which are to receive a modified Thales Airborne Systems Amascos mission and sensor suite. Alenia will conduct platform modifications and perform systems integration on the first aircraft with the assistance of Turkish companies. First flight planned for 2009 and deliveries to take place 2010–2012. Full details of weapons and sensors to be announced. The ATR72-ASW is based on the ATR72-500 which is a stretched version of the ATR42.



ATR-72 (model)

9/2005, C D Yayıllı / 1133582

PATROL FORCES

7 + 2 KILIÇ CLASS (FAST ATTACK CRAFT—MISSILE) (PGGF)

Name	No	Builders	Launched	Commissioned
KILIÇ	P 330	Lürssen, Vegesack	15 July 1997	17 Mar 1998
KALKAN	P 331	Taşkızak, İstanbul	22 Sep 1998	22 July 1999
MIZRAK	P 332	Taşkızak, İstanbul	5 Apr 1999	8 June 2000
TUFAN	P 333	Lürssen, Vegesack	3 Feb 2003	26 July 2005
MELTEM	P 334	İstanbul Naval Shipyard	1 Sep 2004	26 July 2005
İMBAT	P 335	İstanbul Naval Shipyard	26 July 2005	7 July 2006
ZİPKİN	P 336	İstanbul Naval Shipyard	27 Sep 2006	17 Sep 2008
ATAK	P 337	Gölcük Naval Shipyard	4 Jan 2008	2009
BORA	P 338	Gölcük Naval Shipyard	2009	2010

Displacement, tons: 550 full load
 Dimensions, feet (metres): 204.6 × 27.2 × 8.5 (62.4 × 8.3 × 2.6)
 Main machinery: 4 MTU 16V 956 TB91 diesels; 15,120 hp(m) (11.1 MW) sustained; 4 shafts
 Speed, knots: 38. Range, n miles: 1,050 at 30 kt
 Complement: 46 (12 officers)

Missiles: SSM: 8 McDonnell Douglas Harpoon (2 quad) launchers; active radar homing to 130 km (70 n miles) at 0.9 Mach; warhead 227 kg.
 Guns: 1 Otobreda 3 in (76 mm)/62 compact; 85 rds/min to 16 km (8.7 n miles) anti-surface; 12 km (6.6 n miles) anti-aircraft; weight of shell 6 kg.
 2 Otobreda 40 mm/70 (twin); 300 rds/min to 12 km (6.6 n miles); weight of shell 0.96 kg.
 Countermeasures: Decoys: 2 Mk 36 SRBOC chaff launchers.
 ESM: Racal Cutlass; intercept.
 Combat data systems: Signaal/Thomson-CSF STACOS
 Weapons control: LIROD Mk 2 optronic director; Vesta helo datalink/transponder.
 Radars: Surface search: Signaal MW08; G-band
 Fire control: Signaal STING; I/J-band.
 Navigation: KH 1007; I-band.

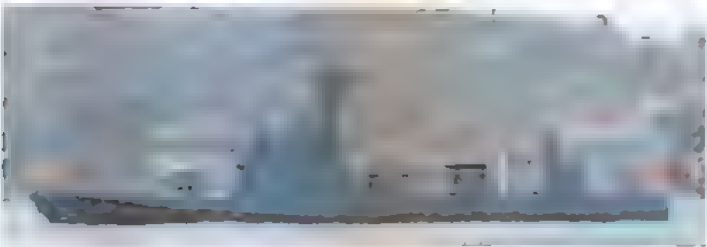
Programmes: Contract for first three signed in May 1993 but there was a delay in confirming it. Further four ordered 19 June 2000 and a further two thereafter.

Structure: A development of the Yıldız class but with reduced radar cross-section mast and a redesigned bow to improve sea-keeping. The after gun and radars are also different to Yıldız. Tufan fitted with stealthy gun turret.

Operational: First of class arrived in Turkey in April 1998



TUFAN 6/2005, Michael Nitz / 1127054



KILIÇ 9/2008, C D Yaylal / 1353410

2 YILDIZ CLASS (FAST ATTACK CRAFT—MISSILE) (PGGF)

Name	No	Builders	Commissioned
YILDIZ	P 348	Taşkızak Yard, İstanbul	3 June 1996
KARAYEL	P 349	Taşkızak Yard, İstanbul	19 Sep 1996

Displacement, tons: 433 full load
 Dimensions, feet (metres): 189.6 oa; 178.5 wl × 25 × 8.8 (57.8; 54.4 × 7.6 × 2.7)
 Main machinery: 4 MTU 16V 956 TB91 diesels; 15,120 hp(m) (11.1 MW) sustained; 4 shafts
 Speed, knots: 38. Range, n miles: 1,050 at 30 kt
 Complement: 45 (6 officers)

Missiles: SSM: 8 McDonnell Douglas Harpoon (2 quad) launchers; active radar homing to 130 km (70 n miles) at 0.9 Mach; warhead 227 kg.
 Guns: 1 Oto Melara 3 in (76 mm)/62 compact; 85 rds/min to 16 km (8.7 n miles) anti-surface; 12 km (6.6 n miles) anti-aircraft; weight of shell 6 kg.
 2 Oerlikon 35 mm/90 (twin); 550 rds/min to 6 km (3.3 n miles); weight of shell 1.55 kg.
 Countermeasures: Decoys: 2 Mk 36 SRBOC chaff launchers.
 ESM: Racal Cutlass; intercept.
 Combat data systems: Signaal/Thomson-CSF TACTICOS.
 Weapons control: LIROD Mk 2 optronic director; Vesta helo datalink/transponder.
 Radars: Surface search: Siemens/Plessey AW 6 Dolphin; G-band
 Fire control: Oerlikon/Contraves TMX; I/J-band.
 Navigation: Racal Decca TM 1226; I-band.

Programmes: Ordered in June 1991. Karayel launched 20 June 1995

Structure: Doğan class hull with much improved weapon systems.



YILDIZ 9/2008, C D Yaylal / 1353411

8 DOĞAN CLASS (FAST ATTACK CRAFT—MISSILE) (PGGF)

Name	No	Builders	Commissioned
DOĞAN	P 340	Lürssen, Vegesack	23 Dec 1977
MARTI	P 341	Taşkızak Yard, İstanbul	1 Aug 1978
TAYFUN	P 342	Taşkızak Yard, İstanbul	9 Aug 1979
VOLKAN	P 343	Taşkızak Yard, İstanbul	25 July 1980
RÜZGAR	P 344	Taşkızak Yard, İstanbul	24 May 1985
POYRAZ	P 345	Taşkızak Yard, İstanbul	28 Aug 1986
GURBET	P 346	Taşkızak Yard, İstanbul	24 July 1988
FIRTINA	P 347	Taşkızak Yard, İstanbul	14 Oct 1988

Displacement, tons: 436 full load
 Dimensions, feet (metres): 190.6 × 25 × 8.8 (58.1 × 7.6 × 2.7)
 Main machinery: 4 MTU 16V 956 TB92 diesels; 17,700 hp(m) (13 MW) sustained; 4 shafts
 Speed, knots: 38
 Range, n miles: 1,050 at 30 kt
 Complement: 40 (5 officers)

Missiles: SSM: 8 McDonnell Douglas Harpoon (2 quad) launchers; active radar homing to 130 km (70 n miles) at 0.9 Mach; warhead 227 kg.
 Guns: 1 Oto Melara 3 in (76 mm)/62 compact; 85 rds/min to 16 km (8.7 n miles) anti-surface; 12 km (6.6 n miles) anti-aircraft; weight of shell 6 kg.
 2 Oerlikon 35 mm/90 (twin); 550 rds/min to 6 km (3.3 n miles); weight of shell 1.55 kg.
 Countermeasures: Decoys: 2 Mk 36 SRBOC chaff launchers.
 ESM: MEL Susie (344-347); intercept.
 Combat data systems: Signaal mmi TACTICOS (344-347)
 Weapons control: LIROD Mk 2 optronic director.
 Radars: Surface search: Racal Decca 1226; I-band.
 Fire control: Signaal WM28/41; I/J-band.

Programmes: First ordered 3 August 1973 to a Lürssen FPB 57 design.

Modernisation: A mid-life programme includes upgrade to the combat data system, communications and ESM. Work on the first four was completed in 2002. Work on the second four has not been confirmed.

Structure: Aluminium superstructure; steel hulls. The last pair were built with optronic directors which are being retrofitted in all, together with an improved Signaal combat data system



DOĞAN 7/2005, C D Yaylal / 1133580



VOLKAN 11/2005, Manuel Declerck / 1153003

8 KARTAL CLASS (FAST ATTACK CRAFT—MISSILE) (PTGF)

Name	No	Builders	Commissioned
DENİZKUŞU	P 321 (ex-P 336)	Lürssen, Vegesack	9 Mar 1967
ATMACA	P 322 (ex-P 335)	Lürssen, Vegesack	9 Mar 1967
ŞAHİN	P 323 (ex-P 334)	Lürssen, Vegesack	3 Nov 1966
KARTAL	P 324 (ex-P 333)	Lürssen, Vegesack	3 Nov 1966
PELİKAN	P 326	Lürssen, Vegesack	11 Feb 1970
ALBATROS	P 327 (ex-P 325)	Lürssen, Vegesack	18 Mar 1970
ŞİMŞEK	P 328 (ex-P 332)	Lürssen, Vegesack	6 Nov 1969
KASIRGA	P 329 (ex-P 338)	Lürssen, Vegesack	26 Nov 1967

Displacement, tons: 160 standard; 190 full load
 Dimensions, feet (metres): 139.4 × 23 × 7.9 (42.5 × 7 × 2.4)
 Main machinery: 4 MTU MD 16V 538 TB90 diesels; 12,000 hp(m) (8.82 MW) sustained; 4 shafts
 Speed, knots: 42
 Range, n miles: 500 at 40 kt
 Complement: 39 (4 officers)

Missiles: SSM: 2 or 4 Kongsberg Penguin Mk 2; IR homing to 27 km (14.6 n miles) at 0.8 Mach; warhead 120 kg.
 Guns: 2 Bofors 40 mm/70; 300 rds/min to 12 km (6.6 n miles); weight of shell 0.96 kg.
 Torpedoes: 2—21 in (533 mm) tubes; anti-surface
 Mines: Can carry 4.
 Radars: Surface search: Racal Decca 1226; I-band.

Operational: *Meltem* sunk in collision with Soviet naval training ship *Khasan* in Bosphorus in 1985. Subsequently salvaged but beyond repair. Although these craft are getting old, there are no plans to decommission them in the short term.



ŞİMŞEK 4/2004, Marco Ghigino / 1133592

1 HISAR (PC 1638) CLASS (LARGE PATROL CRAFT) (PBO)

Name	No	Builders	Commissioned
AKHISAR (ex-PC 1641)	P 114	Gunderson, Portland	Dec 1964

Displacement, tons: 325 standard; 477 full load
Dimensions, feet (metres): 173.7 × 23 × 10.2 (53 × 7 × 3.1)
Main machinery: 2 Fairbanks-Morse diesels, 2,800 hp (2.09 MW); 2 shafts
Speed, knots: 19. **Range, n miles:** 6,000 at 10 kt
Complement: 31 (3 officers)
Guns: 2 Bofors 40 mm/60
Depth charges: 4 projectors; 1 rack (9).
Radars: Surface search: Decca 707; I-band.

Comment: Transferred from the US on build, ASW equipment removed. Three paid off in 2000, one in 2002 and one in 2006. P 114 likely to be decommissioned in 2009 and converted into a museum.



HISAR CLASS

8/2002, C D Yaylali / 0533753

1 TRABZON CLASS (LARGE PATROL CRAFT) (PBO/AGI)

TERME (ex-Trinity) P 531 (ex-M 531)

Displacement, tons: 370 standard; 470 full load
Dimensions, feet (metres): 184 × 30.2 × 9.2 (56 × 9.2 × 2.8)
Main machinery: 2 GM 12-278A diesels; 2,200 hp (1.64 MW); 2 shafts
Speed, knots: 15. **Range, n miles:** 4,500 at 11 kt
Complement: 35 (4 officers)
Guns: 1 Bofors 40 mm/60. 2—12.7 mm MGs.
Radars: Surface search: Racal Decca 1226; I-band.

Comment: Transferred from Canada and recommissioned 31 March 1958. Built by Davie SB Co 1951-53. Of similar type to British Ton class. Pennant number changed in 1991 reflecting use as patrol ship with all minesweeping gear removed.



TRABZON CLASS

6/1999, Selim San / 0080879

6 VEGESACK CLASS (PBO/AGS)

Name	No	Builders	Commissioned
KARAMÜRSEL (ex-Worms)	P 307 (ex-M 620, M 1253)	Amiot, Cherbourg	30 Apr 1960
KEREMPE (ex-Datmold)	P 308 (ex-M 521, ex-M 1252)	Amiot, Cherbourg	20 Feb 1960
KILIMLI (ex-Siegen)	P 309 (ex-M 522, ex-M 1254)	Amiot, Cherbourg	9 July 1960
KOZLU (ex-Harmeln)	P 301 (ex-M 523, ex-M 1251)	Amiot, Cherbourg	15 Oct 1959
KUŞADASI (ex-Vegesack)	P 302 (ex-M 524, ex-M 1250)	Amiot, Cherbourg	18 Sep 1959
KEMER (ex-Passau)	A 582 (ex-M 525, ex-M 1255)	Amiot, Cherbourg	15 Oct 1960

Displacement, tons: 362 standard; 378 full load
Dimensions, feet (metres): 155.1 × 28.2 × 9.5 (473 × 8.6 × 2.9)
Main machinery: 2 MTU MB diesels; 1,500 hp (1.1 MW); 2 shafts, cp props
Speed, knots: 15
Complement: 33 (2 officers)
Guns: 2 Oerlikon 20 mm (twin).
Radars: Navigation: Decca 707; I-band.
Sonars: Simrad; active mine detection; high frequency.

Comment: Transferred by West Germany and recommissioned in the mid-1970s. Sonars were fitted from 1989. Kemer paid off in 1998 but returned as a survey ship in 1999. Kozlu and Kuşadası refitted as patrol ships in 1999 and Karamürsel, Kerempe and Kilimli in 2006.



KEMER

4/2005, Selim San / 1133591

6 TURK CLASS (LARGE PATROL CRAFT) (PC)

Name	No	Builders	Commissioned
AB 27	P 127 (ex-P 1227)	Haliç Shipyard	27 June 1969
AB 28	P 128 (ex-P 1228)	Haliç Shipyard	Apr 1969
AB 29	P 129 (ex-P 1229)	Haliç Shipyard	21 Feb 1969
AB 31	P 131 (ex-P 1231)	Haliç Shipyard	17 Nov 1971
AB 35	P 135 (ex-P 1235)	Taşkızak Shipyard	13 Apr 1976
AB 36	P 136 (ex-P 1236)	Taşkızak Shipyard	13 Apr 1976

Displacement, tons: 170 full load
Dimensions, feet (metres): 132 × 21 × 6.5 (40.2 × 6.4 × 1.7)
Main machinery: 4 SACM AGO V16CSHR diesels, 9,600 hp (7.06 MW)
 2 cruise diesels; 300 hp (220 kW); 2 shafts

Speed, knots: 22
Complement: 31 (3 officers)
Guns: 1 or 2 Bofors 40 mm/70.
 1 Oerlikon 20 mm (in those with 1—40 mm). 2—12.7 mm MGs
A/S mortars: 1 Mk 20 Mousetrap 4 rocket launcher; range 200 m; warhead 50 kg.
Depth charges: 1 rack
Radars: Surface search: Racal Decca; I-band.
Sonars: Plessey PMS 26; hull-mounted; active search and attack; high frequency.

Comment: Pennant numbers changed in 1991. Similar to SG 21 Coast Guard class. One to Georgia (AB 30) in December 1998, one to Azerbaijan (AB 34) in July 2000 and one to Kazakhstan (AB 26) in July 2001. AB 33 decommissioned in 2005.



AB 28

5/2008, C D Yaylali / 1353412

4 PGM 71 CLASS (LARGE PATROL CRAFT) (PC)

AB 21-24 (ex-PGM 104-107) P121-124 (ex-P1221-1224)

Displacement, tons: 130 standard; 147 full load
Dimensions, feet (metres): 101 × 21 × 7 (30.8 × 6.4 × 2.1)
Main machinery: 3 GM diesels 2,040 hp (1.52 MW); 2 shafts
Speed, knots: 18.5. **Range, n miles:** 1,500 at 10 kt
Complement: 31 (3 officers)
Guns: 1 Bofors 40 mm/60. 4 Oerlikon 20 mm (2 twin). 1—7.62 mm MG
A/S mortars: 2 Mk 22 Mousetrap 8 rocket launchers; range 200 m; warhead 50 kg.
Depth charges: 2 racks (4).
Radars: Surface search: Raytheon 1500B; I band.
Sonars: EDO SQS-17A; hull-mounted; active attack; high frequency.

Comment: Built by Peterson, Sturgeon Bay and commissioned 1967-68. Transferred from US almost immediately after completion. Pennant numbers changed in 1991.



AB 24

11/2006, Manuel Declerck / 1153506

0 + 1 (5) DEARSAN PATROL CRAFT (PC)

Name	No	Builders	Laid down	Launched	Commissioned
-	-	Dearsan Shipyard, Istanbul	3 May 2008	2010	2011

Displacement, tons: 400 full load
Dimensions, feet (metres): 182.9 × 29.0 × 8.2 (55.75 × 8.85 × 2.5)
Main machinery: 2 MTU 16V 4000 M 90 diesels; 7,300 hp (5.44 MW); 2 shafts; cp props
Speed, knots: 25. **Range, n miles:** 2,000 at 12 kt
Complement: 34
Guns: 2—40 mm/70 (1 twin) 2—12.7 mm stabilised MGs.
A/S mortars: 2 Asefir 6-barrelled launchers.
Countermeasures: To be announced.
Combat data systems: To be announced.
Weapons control: Asefir 300
Radars: Surface search/navigation: I-band
Sonars: Simrad SP92; hull-mounted; high frequency; 20-30 kHz.

Comment: Contract signed with Dearsan Shipyard, Istanbul, on 23 August 2007 for the construction of 16 anti-submarine patrol craft to be built in four batches of four. The origin of the design has not been announced but may have been developed with foreign assistance. Steel hull and superstructure. The craft are to be employed on patrol duties in the vicinity of ports and bases.



DEARSAN PATROL CRAFT (model)

2/2007, C D Yaylali / 1167967

2 KAAN 15 CLASS (FAST INTERVENTION CRAFT) (HSIC)

Displacement, tons: 19 full load
Dimensions, feet (metres): 54.8 x 13.2 x 3.9 (16.7 x 4.04 x 1.2)
Main machinery: 2 MTU 12V 183 TE93 diesels; 2,588 hp(m) (1.93 MW); 2 Arneson ASD 12 B1L surface drives
Speed, knots: 65
Range, n miles: 350 at 35 kt
Complement: 2 plus 10 mission crew

Comment: Onuk MRTP 15 advanced composites design. Two delivered in 2002 for Turkish Special Forces



KAAN 15 CLASS 10/2000 / 0106641

2 ERTUĞRUL (TERREBONNE PARISH) CLASS (LSTH/ML)

Name	No	Builders	Commissioned
ERTUĞRUL (ex-Windham County LST 1170)	L 401	Christy Corporation	15 Dec 1954
SERDAR (ex-Westchester County LST 1167)	L 402	Christy Corporation	10 Mar 1954

Displacement, tons: 2,590 light; 5,800 full load
Dimensions, feet (metres): 384 x 55 x 17 (117.1 x 16.8 x 5.2)
Main machinery: 4 GM 16-278A diesels; 6,000 hp (4.48 MW); 2 shafts; cp props
Speed, knots: 15
Complement: 163 (14 officers)
Military lift: 395 troops, 2,200 tons cargo; 4 LCVPs
Guns: 8 USN 3 in (76 mm)/50 (3 twin).
Weapons control: 2 Mk 63 GFCS.
Radars: Surface search. Racal Decca 1226, I-band.
Fire control: 2 Western Electric Mk 34; UJ-band.

Comment: Transferred by US and recommissioned 3 October 1973 and 24 February 1975 respectively. Purchased outright 6 August 1987. Marisat fitted.



SERDAR 1/2006*, Guy Toremans / 1353413

AMPHIBIOUS FORCES

Notes: (1) The prefix 'Ç' for smaller amphibious vessels stands for 'Çıkarma Gemisi' (landing vessel) and indicates that the craft are earmarked for national rather than NATO control.

(2) A Request for Information for a new landing platform dock was issued on 6 April 2007. Capable of both military and humanitarian operations, the ship is expected to be of the order of 12-15,000 tons and to be capable of carrying 600 troops. Entry into service was planned to be 2012 although this may be delayed by funding constraints.

(3) Plans to acquire two Landing Ship Tank (LST) were announced on 19 January 2007.

1 OSMAN GAZI CLASS (LSTH/ML)

Name	No	Builders	Launched	Commissioned
OSMAN GAZI	NL 125	Taşkızak Yard, Istanbul	20 July 1990	27 July 1994

Displacement, tons: 3,773 full load
Dimensions, feet (metres): 344.5 x 52.8 x 15.7 (105 x 16.1 x 4.8)
Main machinery: 2 MTU 12V 1183 TB73 diesels; 8,800 hp(m) (6.47 MW); 2 shafts
Speed, knots: 17
Range, n miles: 4,000 at 15 kt
Military lift: 900 troops; 15 tanks; 4 LCVPs
Guns: 2 Oerlikon 35 mm/90 (twin), 4 Bofors 40 mm/70 (2 twin), 2 Oerlikon 20 mm.
Radars: Navigation: Racal Decca, I-band
Helicopters: Platform for 1 large.

Comment: Laid down 7 July 1989. Full NBCD protection. Equipped with a support weapons co-ordination centre to control amphibious operations. The ship has about a 50 per cent increase in military lift capacity compared with the Sarucabey class. Secondary role as minelayer. Second of class cancelled in 1991 and *Osman Gazi* took a long time to complete. Marisat fitted.



OSMAN GAZI 5/2007, Selim San / 1167875

2 SARUCABEY CLASS (LSTH/ML)

Name	No	Builders	Launched	Commissioned
SARUCABEY	NL 123	Taşkızak Naval Yard	30 July 1981	17 July 1984
KARAMÜRSELBEY	NL 124	Taşkızak Naval Yard	26 July 1984	19 June 1987

Displacement, tons: 2,600 full load
Dimensions, feet (metres): 301.8 x 45.9 x 7.5 (92 x 14 x 2.3)
Main machinery: 3 diesels, 4,320 hp (3.2 MW); 3 shafts
Speed, knots: 14
Military lift: 600 troops, 11 tanks, 12 jeeps; 2 LCVPs
Guns: 4 Bofors 40 mm/70, 4 Oerlikon 20 mm (2 twin)
Mines: 150 in lieu of amphibious lift.
Radars: Navigation: Racal Decca 1226; I-band
Helicopters: Platform only

Comment: *Sarucabey* is an enlarged *Çakabey* design more suitable for naval requirements. Dual-purpose minelayers. NL 124 has superstructure one deck lower



KARAMÜRSELBEY 9/2007, C D Yaylalı / 1353401

1 EDICTYPE (LCT)

Ç 120

Displacement, tons: 580 full load
Dimensions, feet (metres): 186.9 x 39.4 x 4.6 (57 x 12 x 1.4)
Main machinery: 3 GM 6-71 diesels, 522 hp (390 kW) sustained; 3 shafts
Speed, knots: 8.5
Range, n miles: 600 at 10 kt
Complement: 15
Military lift: 100 troops; up to 5 tanks
Guns: 2 Oerlikon 20 mm, 2—12.7 mm MGs.
Radars: Navigation: Racal Decca; I-band.

Comment: Vessel built at Gölcük Naval Shipyard in 1973. French EDIC type.



EDICTYPE 2/1996, C D Yaylalı / 0106688



OSMAN GAZI 6/2004, Cemil Busquets i Vilanova / 1133590

838 Turkey/Amphibious forces — Mine warfare forces

23 LCT

Ç 123 Ç 125-128 Ç 132-135 Ç 137-150

Displacement, tons: 600 standard
Dimensions, feet (metres): 195.6 × 38 × 10.5 (59.6 × 11.6 × 3.2)
Main machinery: 3 GM 6-71 diesels, 522 hp (390 kW) sustained; 3 shafts (119-138) or 3 MTU diesels, 900 hp(m) (662 kW); 3 shafts (139-150)
Speed, knots: 8.5 **Range, n miles:** 600 at 8 kt
Complement: 17 (1 officer)
Military lift: 100 troops; 5 tanks
Guns: 2 Oerlikon 20 mm, 2—12.7 mm MGs.
Radars: Navigation. Racal Decca; I-band.

Comment: Follow-on to the Ç 107 type started building in 1977. Ç 130 and Ç 131 transferred to Libya January 1980 and Ç 136 sunk in 1985. The delivery rate was about two per year from the Taşkızak and Gölcük yards until 1987. Then two launched in July 1987 and commissioned in 1991. Last three completed in 1992. Dimensions given are for Ç 139 onwards, earlier craft are 3.6 m shorter and have less freeboard



Ç 126 7/2006, Marco Ghigliino / 1158709

16 LCM 8 TYPE

Ç 305 Ç 308 Ç 312 Ç 314 Ç 316 Ç 319 Ç 321-327 Ç 329-331

Displacement, tons: 58 light; 113 full load
Dimensions, feet (metres): 72 × 20.5 × 4.8 (22 × 6.3 × 1.4)
Main machinery: 4 GM 6-71 diesels; 696 hp (520 kW) sustained; 2 shafts
Speed, knots: 9.5
Complement: 9
Military lift: 60 tons or 140 troops
Guns: 2—12.7 mm MGs.

Comment: Up to Ç 319 built by Taşkızak and Haliç in 1965-66. Ç 321-331 built by Taşkızak and Naldoken in 1987-89.



Ç 308 6/2003, Turkish Navy / 0567540

MINE WARFARE FORCES

Notes: (1) Minelayers: see *Sarucabey*, *Karamürselbey* and *Osmangazi* under Amphibious Forces

(2) In 2006, approval for the transfer of two ex-US Navy Osprey-class minehunters (*Black Hawk* and *Shrike*) was given by the US Congress. There have been no further developments.

4 COVE CLASS (MINESWEEPERS—INSHORE) (MSI)

Name	No	Builders	Commissioned
FOÇA (ex-MSI 15)	M 500	Peterson, WI	19 Apr 1968
FETHİYE (ex-MSI 16)	M 501	Peterson, WI	24 Apr 1968
FATSA (ex-MSI 17)	M 502	Peterson, WI	21 Mar 1968
FINİKE (ex-MSI 18)	M 503	Peterson, WI	26 Apr 1968

Displacement, tons: 180 standard; 235 full load
Dimensions, feet (metres): 111.9 × 23.5 × 7.9 (34 × 7.1 × 2.4)
Main machinery: 4 GM 6-71 diesels; 696 hp (520 kW) sustained; 2 shafts
Speed, knots: 13 **Range, n miles:** 900 at 11 kt
Complement: 25 (3 officers)
Guns: 1—12.7 mm MG
Radars: Navigation: I-band.

Comment: Built in US and transferred under MAP at Boston, Massachusetts, August-December 1967.



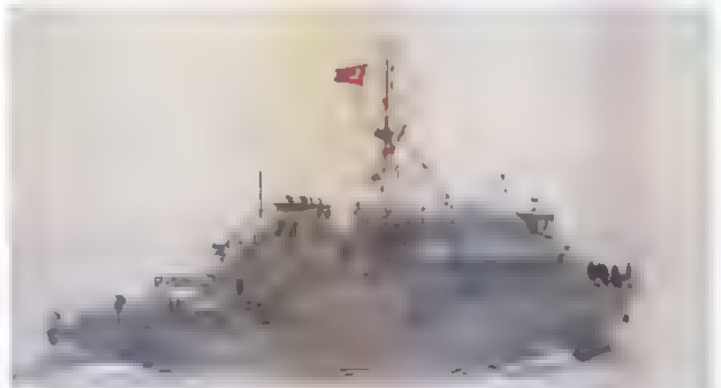
FINİKE 6/2007, Maritime Photographic / 1167877

4 + 2 AYDIN CLASS (TYPE MHV 54-014) (MHSC)

Name	No	Builders	Launched	Commissioned
ALANYA	M 265	Abeking & Rasmussen	21 Mar 2003	26 July 2005
AMASRA	M 266	Istanbul Naval Shipyard	10 May 2004	26 July 2005
AYVALIK	M 267	Istanbul Naval Shipyard	26 July 2005	22 June 2007
AKÇAKOCA	M 268	Istanbul Naval Shipyard	27 Sep 2006	24 Jan 2008
ANAMUR	M 269	Istanbul Naval Shipyard	17 Sep 2007	2009
AKÇAY	M 270	Istanbul Naval Shipyard	27 Oct 2008	2010

Displacement, tons: 715 full load
Dimensions, feet (metres): 178.8 × 31.8 × 8.5 (54.5 × 9.7 × 2.6)
Main machinery: 2 MTU 8V 396 TB84 diesels; 2 Voith-Schnorrer props; 2 Schottel bow thrusters
Speed, knots: 14
Complement: 53 (6 officers)
Guns: 1 Otobreda 30 mm, 2—12.7 mm MGs.
Countermeasures: 2 ECA PAP 104 Mk 5, 1 Oropesa mechanical sweep.
Combat data systems: Alenia Marconi Nautis-M.
Radars: KH 1007; I-band.
Sonars: Thomson Marconi Type 2093, VDS, active high frequency

Comment: Ordered from Abeking & Rasmussen and Lürssen on 30 July 1999. First one built in Bremen, remainder in Turkey. The design is based on the German Type 332 but with different propulsion and mine countermeasures equipment. Non-magnetic steel hull. First of class laid down 20 November 2000, second on 25 July 2001, third on 25 July 2002 and fourth on 24 July 2003, the fifth on 1 September 2004 and sixth on 26 July 2005



ALANYA 2/2007, Adolfo Ortigueira Gil / 1167874



AMASRA 6/2007, Maritime Photographic / 1167873

5 EDINCİK (CIRCÉ) CLASS (MINEHUNTERS) (MHC)

Name	No	Builders	Commissioned	Recommissioned
EDINCİK (ex-Cybele)	M 260 (ex-M 712)	CMN, Cherbourg	26 Sep 1972	24 July 1998
EDREMIT (ex-Calliope)	M 261 (ex-M 713)	CMN, Cherbourg	26 Sep 1972	28 Aug 1998
ENEZ (ex-Cérés)	M 262 (ex-M 716)	CMN, Cherbourg	7 Mar 1973	30 Oct 1998
ERDEK (ex-Circé)	M 263 (ex-M 715)	CMN, Cherbourg	18 May 1972	4 Dec 1998
ERDEMLİ (ex-Cha)	M 264 (ex-M 714)	CMN, Cherbourg	18 May 1972	15 Jan 1999

Displacement, tons: 460 standard, 495 normal; 510 full load
Dimensions, feet (metres): 167 × 29.2 × 11.2 (50.9 × 8.9 × 3.4)
Main machinery: 1 MTU diesel; 1,800 hp(m) (1.32 MW); 2 active rudders; 1 shaft
Speed, knots: 15 **Range, n miles:** 3,000 at 12 kt
Complement: 48 (5 officers)
Guns: 1 Oerlikon 20 mm.
Countermeasures: MCM: DCN Mintac minehunting system with PAP Plus ROV
Radars: Navigation: Racal Decca 1223; I-band.
Sonars: Thomson Sintra DUBM 20B; hull-mounted; active search; high frequency

Comment: Acquired from France on 24 September 1997. Full refits included installation of Mintac system before being handed over.



EDREMIT 6/2007, Maritime Photographic / 1167871

5 MSC 289 CLASS (MINESWEEPERS—COASTAL) (MSC)

SILIFKE (ex-*MSC 304*) M 514 SAPANCA (ex-*MSC 312*) M 517
 SAROS (ex-*MSC 305*) M 515 SARIYER (ex-*MSC 315*) M 518
 SIGACIK (ex-*MSC 311*) M 516

Displacement, tons: 320 standard, 370 full load
 Dimensions, feet (metres): 141 × 26 × 8.3 (43 × 8 × 2.6)
 Main machinery: 4 GM 6-71 diesels, 696 hp (519 kW) sustained, 2 shafts (M 510-M 513)
 2 Waukesha L 1616 diesels; 1,200 hp (895 kW); 2 shafts (M 514-M 518)
 Speed, knots: 14
 Range, n miles: 2,500 at 10 kt
 Complement: 35 (2 officers)
 Guns: 2 Oerlikon 20 mm (twin).
 Radars: Navigation: Racal Decca 1226; I-band.
 Sonars: UQS-1D; hull-mounted mine search; high frequency.

Comment: Built 1965–67. Transferred from US. Commissioning dates in the Turkish Navy were respectively: 21 March 1966, 25 October 1966, 20 December 1965, 20 December 1965 and 7 December 1967.



SAPANCA 10/2003, C D Yaylali / 0587556



SILIFKE 7/2006, Marco Ghigino / 1158710

8 MINEHUNTING TENDERS (YAG/YDT)

MTB 2 P 312 MTB 4 P 314 MTB 6 P 316 MTB 8 P 318
 MTB 3 P 313 MTB 5 P 315 MTB 7 P 317 MTB 9 P 319

Displacement, tons: 70 standard
 Dimensions, feet (metres): 71.5 × 13.8 × 8.6 (21.8 × 4.2 × 2.6)
 Main machinery: 2 diesels; 2,000 hp(m) (1.47 MW); 2 shafts
 Speed, knots: 20
 Guns: 1 Oerlikon 20 mm or 1—12.7 mm MG (aft) (in some)

Comment: All launched in 1942. Now employed as minehunting base ships.



MTB 6 7/1995, van Ginderen Collection / 0080868

SURVEY SHIPS

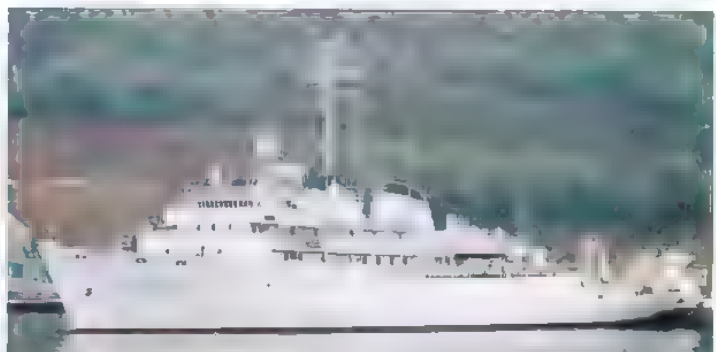
Notes: *Kemer A 582* (ex-M 525) is listed under *Vegesack* class in *Patrol Forces*.

2 SILAS BENT CLASS (AGS)

Name	No	Builders	Commissioned
ÇESME (ex- <i>Silas Bent</i>)	A 599 (ex-TAGS 26)	Amer can SB Co, Lorain	23 July 1965
ÇANDARLI (ex- <i>Kane</i>)	A 588 (ex-TAGS 27)	Christy Corp, Sturgeon Bay	19 May 1967

Displacement, tons: 2,843 full load
 Dimensions, feet (metres): 285.3 × 48 × 16.1 (87 × 14.6 × 4.6)
 Main machinery: Diesel-electric; 2 Alco diesel generators; 1 Westinghouse/GE motor; 3,600 hp (2.69 MW); 1 shaft; cp prop; bow thruster 350 hp (261 kW)
 Speed, knots: 15
 Range, n miles: 12,000 at 14 kt
 Complement: 31 plus 28 spare
 Radars: Navigation: RM 1650/SX; I-band.

Comment: Çesme transferred from US on 28 October 1999 and Çandarlı on 14 March 2001.



ÇANDARLI 11/2005, Manuel Declercq / 1153306

1 SURVEY SHIP (AGS)

Name	No	Builders	Launched	Commissioned
ÇUBUKLU (ex- <i>Y 1251</i>)	A 594	Gölcük	17 Nov 1983	24 June 1987

Displacement, tons: 680 full load
 Dimensions, feet (metres): 132.8 × 31.5 × 10.5 (40.5 × 9.6 × 3.2)
 Main machinery: 1 MWM diesel; 820 hp(m) (603 kW); 1 shaft, cp prop
 Speed, knots: 11
 Complement: 37 (6 officers)
 Guns: 2 Oerlikon 20 mm
 Radars: Navigation: Racal Decca; I-band.

Comment: Qubit advanced integrated navigation and data processing system fitted in 1991.



ÇUBUKLU 7/2006, Selim San / 1353414

2 SURVEY CRAFT (AGSC)

MESAHA 1 Y 35 MESAHA 2 Y 36

Displacement, tons: 38 full load
 Dimensions, feet (metres): 52.2 × 14.8 × 4.3 (15.9 × 4.5 × 1.3)
 Main machinery: 2 GM 6-71 diesels; 348 hp (260 kW) sustained; 2 shafts
 Speed, knots: 10 Range, n miles: 600 at 10 kt
 Complement: 9

Comment: Completed in 1994 and took the names and pennant numbers of their deleted predecessors.



MESAHA 2 8/1994, C D Yaylali / 0080868

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TRAINING SHIPS

2 RHEIN CLASS (AG/AX)

Name	No	Builders	Commissioned
CEZAYIRLI GAZI HASAN PAŞA (ex-Elbe)	A 579	Schliekerwerft, Hamburg	17 Apr 1962
SOKULLU MEHMET PAŞA (ex-Donau)	A 577	Schlichting, Travemünde	23 May 1964

Displacement, tons: 2,370 standard; 2,940 full load
Dimensions, feet (metres): 322.1 x 38.8 x 14.4 (98.2 x 11.8 x 4.4)
Main machinery: Diesel-electric, 6 MTU MD diesels; 14,400 hp(m) (10.58 MW); 2 Siemens motors, 11,400 hp(m) (8.38 MW); 2 shafts
Speed, knots: 20.5. **Range, n miles:** 1,625 at 15 kt
Complement: 188 (15 officers)
Guns: 2 Creusot-Loire 3.9 in (100 mm)/55, 4 Bofors 40 mm/60, 2 – 12.7 mm MGs
Radars: Surface search: Signaal DA02; E/F-band
Fire control: 2 Signaal M 45; I/J-band.

Comment: *Elbe* transferred from Germany on 15 March 1983, taking over the same name and pennant number as the former *Ruhr*. *Donau* transferred 13 March 1995 taking the same name and pennant number as the deleted *Isar*.



SOKULLU MEHMET PAŞA 2/2007, Adolfo Ortigueira Gil / 1167870

8 TRAINING CRAFT (AXL)

Name	No	Builders	Commissioned
E 1	A 1531	Bora-Duzgit	22 July 1999
E 2	A 1532	Bora-Duzgit	22 July 1999
E 3	A 1533	Bora-Duzgit	8 June 2000
E 4	A 1534	Bora-Duzgit	8 June 2000
E 5	A 1535	Bora-Duzgit	8 June 2000
E 6	A 1536	Bora-Duzgit	8 June 2000
E 7	A 1537	Bora-Duzgit	8 June 2000
E 8	A 1538	Bora-Duzgit	8 June 2000

Displacement, tons: 94 full load
Dimensions, feet (metres): 94.5 x 19.7 x 6.2 (28.8 x 6 x 1.9)
Main machinery: 1 MTU diesel; 1 shaft
Speed, knots: 12. **Range, n miles:** 240 at 12 kt
Complement: 15

Comment: Naval Academy training craft ordered in 1998.



E 1 7/1999, Selçuk Emre / 0080892

AUXILIARIES

Notes: (1) The tendering process for the procurement of a Submarine Rescue Mother Ship and for two tenders was initiated by the issue of a Request for Information on 25 July 2006. The broad requirement is for a national rescue system which would be interoperable with NATO assets.
 (2) A Request for Information for two Rescue and Towing ships was released on 25 July 2006.

1 TRANSPORT SHIP (AK)

Name	No	Builders	Commissioned	Recommissioned
ISKENDERUN	A 1600	Camialti Shipyard, Istanbul	1991	25 July 2002

Measurement, tons: 10,583 gross; 3,872 net
Dimensions, feet (metres): 418.4 x 64.0 x 17.7 (127.5 x 19.5 x 5.4)
Main machinery: 4 Skoda and Sulzer diesels; 16,800 hp (12.52 MW); 2 shafts
Speed, knots: 15.5
Complement: 129 (11 officers)

Comment: Car ferry (214 cars and passengers) built to Polish design. Commissioned in Turkish Navy on 25 July 2002.



ISKENDERUN 3/2004, Selim San / 0587559

2 FLEET SUPPORT SHIPS (AORH)

Name	No	Builders	Laid down	Launched	Commissioned
AKAR	A 580	Gölcük Naval Dockyard	5 Aug 1982	17 Nov 1983	9 Sep 1987
YARBAY KUDRET GÜNGÖR	A 595	Sedaf Shipyard, Istanbul	5 Nov 1993	15 Nov 1994	24 Oct 1995

Displacement, tons: 19,350 full load
Dimensions, feet (metres): 475.9 x 74.8 x 27.6 (145.1 x 22.8 x 8.4)
Main machinery: 1 diesel, 6,500 hp(m) (4.78 MW); 1 shaft
Speed, knots: 16
Range, n miles: 6,000 at 14 kt
Complement: 203 (14 officers)
Cargo capacity: 16,000 tons oil fuel (A 580); 9,980 tons oil fuel (A 595), 2,700 tons water (A 595), 80 tons hub oil (A 595); 500 m³ stores (A 595)
Guns: 2–3 in (76 mm)/50 (twin) Mk 34 (A 580), 1–20 mm/76 Mk 15 Vulcan Phalanx (A 595), 2 Bofors 40 mm/70
Weapons control: Mk 63 GFCS (A 580)
Radars: Fire control: SPG-34; I-band (A 580)
Navigation: Racal Decca 1226; I-band.
Helicopters: Platform for 1 medium.

Comment: Helicopter flight deck aft. *Akar* is primarily a tanker whereas the second ship of the same type is classified as logistic support vessel. *Gungör* was the first naval ship to be built at a civilian yard in Turkey.



YARBAY KUDRET GÜNGÖR 5/2007, Selim San / 1167869

1 SUPPORT TANKER (AOTL)

Name	No	Builders	Launched	Commissioned
TAŞKIZAK	A 570	Teşizak Naval DY, Istanbul	28 July 1983	14 Aug 1985

Displacement, tons: 1,440 full load
Dimensions, feet (metres): 211.9 x 30.8 x 11.5 (64.6 x 9.4 x 3.5)
Main machinery: 1 diesel; 1,400 hp(m) (1.03 MW); 1 shaft
Speed, knots: 13
Complement: 57
Cargo capacity: 800 tons
Guns: 1 Bofors 40 mm/60, 2 Oerlikon 20 mm.
Radars: Navigation: Racal Decca 1226; I-band.

Comment: Laid down 20 July 1983.



TAŞKIZAK (Doğan class in background) 5/1990, A Sheldon Duplax / 0080893

2 SUPPORT TANKERS (AOT)

Name	No	Builders	Commissioned
ALBAY HAKKI BURAK	A 571	RMK Marine, Tuzla, Istanbul	21 Nov 1999
YUZBASIIHSAN TOLUNAY	A 572	RMK Marine, Tuzla, Istanbul	8 June 2000

Displacement, tons: 3,300 full load
Measurement, tons: 6,750 dwt
Dimensions, feet (metres): 359.2 x 56.4 x 23.0 (109.5 x 17.2 x 7.0)
Main machinery: 2 Caterpillar 3606TA diesels; 5,522 hp(m) (4.06 MW); 2 shafts
Speed, knots: 13
Complement: 50
Cargo capacity: 2,355 m³ dieso

Comment: Ordered in 1998.



ALBAY HAKKI BURAK 6/2002, Selçuk Emre / 0533258

1 SUPPORT TANKER (AORL)

Name	No	Builders	Commissioned
BINBAŞI SADETTİN GÜRCAN	A 573	Taşkızak Naval DY, İstanbul	4 Sep 1970

Displacement, tons: 1,505 standard; 4,460 full load
 Dimensions, feet (metres): 294.2 × 38.7 × 17.7 (89.7 × 11.8 × 5.4)
 Main machinery: Diesel-electric; 4 GM 16 567A diesels; 5,600 hp (4.12 MW); 4 generators; 2 motors, 4,400 hp (3.28 MW); 2 shafts
 Speed, knots: 16
 Complement: 63
 Guns: 2 Oerlikon 20 mm.
 Radars: E/F-band.

Comment: Main armament removed. Can be used for replenishment at sea.



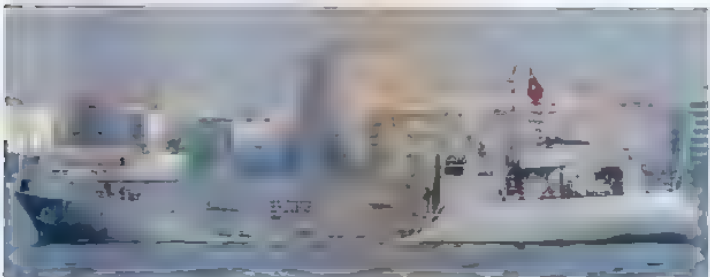
BINBAŞI SADETTİN GÜRCAN 6/1995, Turkish Navy / 0080895

3 WATER TANKERS (AWT)

SÖĞÜT (ex-FW 2) A 598 (ex-Y 1217)	KAVAK (ex-FW 4) A 800	ÇINAR (ex-FW 1) A 581
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Displacement, tons: 626 full load
 Dimensions, feet (metres): 144.4 × 25.6 × 8.2 (44.1 × 7.8 × 2.5)
 Main machinery: 1 MWM diesel; 230 hp(m) (169 kW); 1 shaft
 Speed, knots: 9.5
 Range, n miles: 2,150 at 9 kt
 Complement: 12
 Cargo capacity: 340 tons

Comment: Söğüt acquired from West Germany and commissioned 12 March 1976. Pennant number changed in 1991. Kavak transferred from Germany 12 April 1991 and Çınar in early 1996.



KAVAK 6/2007, Selim San / 1167857

2 WATER TANKERS (AWT)

Name	No	Builders	Commissioned
VAN	A 597 (ex-Y 1208)	Camialti Shipyard	12 Aug 1968
ULUBAT	A 596 (ex-Y 1209)	Camialti Shipyard	3 July 1969

Displacement, tons: 1,250 full load
 Dimensions, feet (metres): 174.2 × 29.5 × 9.8 (53.1 × 9 × 3)
 Main machinery: 1 diesel; 650 hp(m) (478 kW); 1 shaft
 Speed, knots: 14
 Complement: 39 (3 officers)
 Cargo capacity: 700 tons
 Guns: 1 Oerlikon 20 mm.
 Radars: Racal Decca 707, I-band

Comment: Pennant numbers changed in 1991.



VAN 6/2003, Turkish Navy / 0567542

4 WATER TANKERS (YW)

PINAR 2 Y 112 (ex-Y 1212)	PINAR 4 Y 114 (ex-Y 1214)
PINAR 3 Y 113 (ex-Y 1213)	PINAR 6 Y 116 (ex-Y 1216)

Displacement, tons: 300 full load
 Dimensions, feet (metres): 110.2 × 27.9 × 5.9 (33.6 × 8.5 × 1.8)
 Main machinery: 1 GM diesel; 225 hp (168 kW); 1 shaft
 Speed, knots: 11
 Complement: 12
 Cargo capacity: 150 tons

Comment: Built by Taşkızak Naval Yard. Details given for Pinar 3, 4 and 6, sisters to harbour tankers H 500-502. Pinar 2 built in 1958 of 1,300 tons full load, 167.3 × 27.9 ft (51 × 8.5 m).



PINAR 3

4/2007, C D Yaylali / 1167951

3 HARBOUR TANKERS (YW)

H 500-502 Y 140-142 (ex-Y 1231-1233)

Displacement, tons: 300 full load
 Dimensions, feet (metres): 110.2 × 27.9 × 5.9 (33.6 × 8.5 × 1.8)
 Main machinery: 1 GM diesel; 225 hp(m) (165 kW); 1 shaft
 Speed, knots: 11
 Complement: 12
 Cargo capacity: 150 tons

Comment: Sisters of water tankers of Pinar series. Built at Taşkızak in early 1970s



H 501

5/2007, Selim San / 1167968

1 HARBOUR TANKER (YO)

GÖLCÜK Y 50

Displacement, tons: 310 full load
 Dimensions, feet (metres): 108.8 × 19.2 × 9.2 (33.2 × 5.8 × 2.8)
 Main machinery: 1 diesel; 650 hp(m) (404 kW); 1 shaft
 Speed, knots: 12
 Complement: 12



GÖLCÜK

7/1992, Selçuk Emre / 0080938

1 DIVER CLASS (SALVAGE SHIP) (ARS)

Name	No	Builders	Launched	Commissioned
İŞİN (ex-Safeguard ARS 25)	A 589	Besalt Rock, Napa	20 Nov 1943	31 Oct 1944

Displacement, tons: 1,530 standard; 1,970 full load
 Dimensions, feet (metres): 213.5 × 41 × 13 (65.1 × 12.5 × 4)
 Main machinery: Diesel-electric; 4 Cooper-Bessmer GSB-8 diesels; 3,420 hp (2.65 MW); 4 generators; 2 motors; 2 shafts
 Speed, knots: 14.8
 Complement: 110
 Guns: 2 Oerlikon 20 mm.

Comment: Transferred from US 28 September 1979 and purchased outright 6 August 1987.



İŞİN

4/2005, C D Yaylali / 1133575

842 Turkey/Auxiliaries

1 CHANTICLEER CLASS (SUBMARINE RESCUE SHIP) (ASR)

Name	No	Builders	Launched	Commissioned
AKIN (ex-Graenlet ASR 10)	A 585	Moore SB & DD Co	12 July 1942	29 May 1943

Displacement, tons: 1,653 standard; 2,321 full load
 Dimensions, feet (metres): 251.5 x 44 x 16 (76.7 x 13.4 x 4.9)
 Main machinery: Diesel-electric; 4 Alco 539 diesels; 3,532 hp (2.63 MW); 4 generators; 1 motor; 1 shaft
 Speed, knots: 15
 Complement: 111 (9 officers)
 Guns: 1 Bofors 40 mm/60. 4 Oerlikon 20 mm (2 twin).
 Radars: Navigation. Racal Decca 1226; I-band.

Comment: Transferred from US, recommissioned 23 December 1970 and purchased 15 February 1973. Carries a Diving Bell.



AKIN 9/2008*, Arda Mevlutoglu / 1353415

1 TRANSPORT (AKS/AWT)

Name	No	Builders	Commissioned
KARADENİZ EREĞLİ	A 592 (ex-Y 1167)	Erdem	30 Aug 1982

Displacement, tons: 820 full load
 Dimensions, feet (metres): 166.3 x 26.2 x 9.2 (50.7 x 8 x 2.8)
 Main machinery: 1 diesel; 1,440 hp (1.06 MW); 1 shaft
 Speed, knots: 10
 Complement: 23 (3 officers)
 Cargo capacity: 300 tons
 Guns: 1 Oerlikon 20 mm

Comment: Funnel-aft coaster type. Pennant number changed in 1991. Used as a stores ship.

2 BARRACK SHIPS (YPB)

YÜZBAŞI NAŞİT ÖNGÖREN (ex-US APL 47) Y 38 (ex-Y 1204)
 BINBAŞI METİN SÜLÜŞ (ex-US APL 53) Y 39 (ex-Y 1205)

Comment: Ex-US barrack ships transferred on lease: Y 1204 in October 1972 and Y 1205 on 8 December 1974. Y 1204 based at Ereğli and Y 1205 at Golcük. Purchased outright June 1987. Pennant numbers changed in 1991.

12 SMALL TRANSPORTS (YFB/YE)

ŞALOPA 11-12 ŞALOPA 18 ŞALOPA 22-24 ŞALOPA 27 ŞALOPA 30-33 YAKIT Y 139

Comment: Of varying size and appearance. Pennant numbers changed in 1991.

1 BOOM DEFENCE VESSEL (ABU)

Name	No	Builders	Commissioned
AG 6 (ex-AN 93, ex-Netherlands Cerberus A 895)	P 306	Bethlehem Steel Corporation, Staten Island, NY	10 Nov 1952

Displacement, tons: 780 standard, 855 full load
 Dimensions, feet (metres): 165 x 33 x 10 (50.3 x 10.1 x 3)
 Main machinery: Diesel-electric; 2 GM 8-268A diesels; 880 hp (656 kW); 2 generators; 1 motor; 1 shaft
 Speed, knots: 12.8
 Range, n miles: 5,200 at 12 kt
 Complement: 32 (3 officers)
 Guns: 1 USN 3 in (76 mm)/50 4 Oerlikon 20 mm.
 Radars: Navigation: Racal Decca 1226; I-band.

Comment: Netlayer. Transferred from US to Netherlands in December 1952. Used first as a boom defence vessel and latterly as salvage and diving tender since 1981 but retained her netlaying capacity. Handed back to US Navy on 17 September 1970 but immediately turned over to the Turkish Navy under grant aid.



AG 6 7/1995, Frank Behling / 0080905

1 BOOM DEFENCE VESSEL (ABU)

Name	No	Builders	Commissioned
AG 5 (ex-AN 104)	P 305	Kröger, Rendsburg	25 Feb 1962

Displacement, tons: 960 full load
 Dimensions, feet (metres): 173.8 x 35 x 13.5 (53 x 10.7 x 4.1)
 Main machinery: Diesel-electric; 1 MAN G7V40/60 diesel generator; 1 motor; 1,470 hp (1.08 MW); 1 shaft
 Speed, knots: 12
 Range, n miles: 6,500 at 11 kt
 Complement: 32 (3 officers)
 Guns: 1 Bofors 40 mm/60. 3 Oerlikon 20 mm.
 Radars: Navigation: Racal Decca 1226; I-band.

Comment: Netlayer P 305 built in US offshore programme for Turkey.



AG 5 8/2008*, C D Yaylali / 1353415

3 TORPEDO RETRIEVERS (YPT)

TORPIDOTENDERY 95 (ex-Y 1051) TAKIP 1 Y 98 (ex-Y 1052) TAKIP 2 Y 99

Comment: Of different types.



TORPEDO RETRIEVER 9/1998, C D Yaylali / 0050297

2 OFFICERS' YACHTS (YAC)

GÜL NEVCIVAN

Comment: Pennant numbers not displayed.



GÜL 6/2003, Turkish Navy / 0567541



NEVCIVAN 10/2003, C D Yaylali / 0567569

13 FLOATING DOCKS/CRANES (YAC)

Name	Lift	Name	Lift
LEVENT Y 59 (ex-Y 1022)	—	HAVUZ 5 Y 125 (ex-Y 1085)	400 tons
ALGARNA 1 Y 58	—	HAVUZ 8 Y 128 (ex-Y-1088)	700 tons
ALGARNA 3 Y 60; (ex-Y 1021)	—	HAVUZ 9 Y 129 (ex-Y-1089)	4,500 tons
HAVUZ 1 Y 121 (ex-Y 1081)	16,000 tons	HAVUZ 10 Y 130 (ex-Y-1090)	3,500 tons
HAVUZ 2 Y 122 (ex-Y 1082)	12,000 tons	HAVUZ 11 Y 134	14,500 tons
HAVUZ 3 Y 123 (ex-Y 1083); (ex-US AFDL)	2,500 tons	HAVUZ 13 Y 136	7,500 tons
HAVUZ 4 Y 124 (ex-Y 1084)	4,500 tons		

Comment: Algarna and Levent are ex-US floating cranes.



HAVUZ 10 8/2008, C D Yaylali / 1353417

1 POWHATAN CLASS (FLEET OCEANTUGS) (ATF)

Name	No	Laid down	Commissioned
INEBOLU (ex-Powhatan)	A 590 (ex-T-ATF 166)	30 Sep 1976	15 June 1979

Displacement, tons: 2,260 full load
 Dimensions, feet (metres): 226.0 x 42 x 15 (68.9 x 12.8 x 4.6)
 Main machinery: 2 GM EMD 20-645F7B diesels; 7,250 hp(m) (5.41 MW) sustained; 2 shafts; Kort nozzles, cp props, bow thruster, 300 hp (224 kW)
 Speed, knots: 14.5. Range, n miles: 10,000 at 13 kt
 Complement: 16 civilians plus 4 naval
 Guns: Space provided to fit 2—20 mm and 2—12.7 mm MGs
 Radars: Navigation: E/F/I-band

Comment: Built at Marinette Marine Corp, Wisconsin patterned after commercial offshore supply ship design. Following de-activation from US MSC in 1999, operated on commercial lease to Don John Commercial Co until 25 February 2008. Following a refit at Detyens Shipyard, Charleston, commissioned in Turkish Navy on 15 March 2008. Equipped with 10-ton crane, two fire pumps and capable of supporting salvage operations. Bollard pull 54 tons.



POWHATAN CLASS 5/2006, M Declerck / 1167637

TUGS

1 CHEROKEE CLASS (ATF)

GAZAL (ex-Sioux ATF 75) A 587

Displacement, tons: 1,235 standard; 1,675 full load
 Dimensions, feet (metres): 205 x 38.5 x 17 (62.5 x 11.7 x 5.2)
 Main machinery: Diesel-electric; 4 GM 12-27B diesels, 4,400 hp (3.28 MW); 4 generators; 1 motor, 3,000 hp (2.24 MW); 1 shaft
 Speed, knots: 16. Range, n miles: 15,000 at 8 kt
 Complement: 85
 Guns: 1 USN 3 in (76 mm)/50 2 Oerlikon 20 mm.
 Radars: Navigation: Racal Decca; I-band.

Comment: Originally completed on 6 December 1942. Transferred from US and commissioned 9 March 1973. Purchased 15 August 1973. Can be used for salvage. 3 in gun removed in 1987 but has since been restored



GAZAL 6/2008, Selim San / 1353418

1 TENACE CLASS (ATA)

Name	No	Builders	Commissioned
DEĞIRMENDERE (ex-Cantauro)	A 576 (ex-A 674)	Chantiers de la Rochelle	14 May 1974

Displacement, tons: 1,454 full load
 Dimensions, feet (metres) 167.3 x 37.8 x 18.6 (51 x 11.5 x 5.7)
 Main machinery: 2 SACM AGO 240 V12 diesels; 4,600 hp(m) (3.38 MW); 1 shaft; Kort nozzle
 Speed, knots: 13
 Range, n miles: 9,500 at 13 kt
 Complement: 37 (3 officers)
 Radars: Racal Decca RM 1226 and Racal Decca 060, I-band

Comment: Transferred from French Navy 16 March 1999. Recommissioned after refit 22 July 1999. Bollard pull 60 tons.



DEĞIRMENDERE 1/2008, Selim San / 1353419

17 COASTAL/HARBOUR TUGS (YTB/YTM/YTL)

Name	No	Commissioned	Displacement, tons/ Speed, knots
AKBAŞ	A 586	1978	1660/14
SÖNDÜREN 2	A 1542	1999/2000	385/12
SÖNDÜREN 3	A 1543	1954	128/12
SÖNDÜREN 4	A 1544	1954	128/12
SÖNDÜREN 1	Y 51 (ex-Y 1117)	1954	128/12
KUVVET	Y 53 (ex-Y 1122)	1962	390/10
DOĞANARSLAN	Y 52 (ex-Y 1123)	1985	600/12
ATIL	Y 55 (ex-Y 1132)	1962	300/10
PENDİK	Y 56	2000	238/10
ERSEV BAYRAK	Y 64 (ex-Y 1134)	1946	30/9
AKSAZ (ex-Koos)	Y 57 (ex-Y 1651, ex-A 08)	1962	320/11
DENEY	Y 90	1970	400/14
ÖNDER	Y 160	1998	230/12
ÖNCÜ	Y 161	1998	230/12
ÖZGEN	Y 162	1999	230/12
ÖDEV	Y 163	1999	230/12
ÖZGÜR	Y 164	2000	230/12

Comment: In addition there are 47 Katir pusher berthing tugs. Koos was transferred from Germany on 7 October 1996



ÖZGEN 5/2005, C D Yaylali / 1133574



SÖNDÜREN 2 4/2005, Selim San / 1133588

1 OCEANTUG (ATR)

DARICA A 578 (ex-Y 1125)

Displacement, tons: 750 full load
Dimensions, feet (metres): 134.2 x 32.2 x 12.8 (40.9 x 9.8 x 3.9)
Main machinery: 2 ABC diesels; 4,000 hp (2.94 MW); 2 shafts
Speed, knots: 14
Range, n miles: 2,500 at 14 kt

Comment: Built at Taşkızak Naval Yard and commissioned 13 June 1991. Equipped for firefighting and as a torpedo tender. Pennant number changed in 1991.



DARICA 11/1994, van Ginderen Collection / 0080910

COAST GUARD (SAHIL GÜVENLIK)

Notes: (1) A Request for Information for the procurement of up to 16 patrol craft has been issued. The broad requirement is for craft of about 50 m and 400 tons capable of speeds of over 25 kt.

(2) Patrol craft based in north Cyprus include KKTC SG 101 (*Raif Denktas*), two 40 m craft (KKTC SG 01-02), two Kaan 15 class (KKTC SG 11, KKTC SG 12), two 14 m craft (KKTC SG 102-103) and a converted cabin cruiser KKTC SG 104.

(3) Four Vigilante class Boston Whalers were acquired by the Police in September 1999.



KKTC SG 104 6/2004, Selçuk Emre / 1133570

0 + 4 OFFSHORE PATROL VESSELS (PSOH)

Name	No	Builders	Laid down	Launched	Commissioned
DOST	-	RMK Marine, Tuzla	3 May 2008	2010	2011
UMUT	-	RMK Marine, Tuzla	2009	2010	2012
YASAM	-	RMK Marine, Tuzla	2009	2011	2012
GÜVEN	-	RMK Marine, Tuzla	2009	2011	2012

Displacement, tons: 1,520 full load
Dimensions, feet (metres): 290.0 x 40.0 x 15.1 (88.4 x 12.2 x 4.6)
Main machinery: 2 diesels; cp props, bow thruster
Speed, knots: 22 **Range, n miles:** 3,500 at 14 kt
Complement: 60 (5 officers)
Guns: 1—76 mm 2—25 mm
Weapons control: To be announced
Radars: Surface search: To be announced.
Fire control: To be announced
Navigation: To be announced.
Helicopters: 1 AB 412

Comment: Contract signed with RMK Marine on 16 January 2007 for the construction of four offshore patrol vessels to carry out SAR and EEZ patrol duties. The design, based on the Italian Sirio class, includes a telescopic hangar, two high-speed RIBs, two firefighting monitors and anti-pollution equipment.



OPV 10/2007, Turkish Navy / 1167863

14 LARGE PATROL CRAFT (WPB)

SG 80-91 KKTC SG 01-02

Displacement, tons: 195 full load
Dimensions, feet (metres): 133.5 x 23.3 x 7.2 (40.7 x 7.1 x 2.2)
Main machinery: 2 diesels; 5,700 hp(m) (4.19 MW); 2 shafts
Speed, knots: 27
Complement: 25
Guns: 1 Breda 40 mm/70, 2—12.7 mm MGs.
Radars: Surface search: Racal Decca, I-band

Comment: All built at Taşkızak Shipyard except SG 89 which was built at İstanbul Shipyard SG 80-82 commissioned in 1996, 83-84 in 1997, 85 in 1998, 86-87 in 2000, 89-90 in 2001, 88 in 2002 and 91 in 2004. Two based in northern Cyprus with pennant numbers KKTC SG 01-02



SG 90 6/2008, C D Yaylali / 1353420



KKTC SG 02 6/2004, Selçuk Emre / 1044200

14 LARGE PATROL CRAFT (WPB)

SG 121-134

Displacement, tons: 180 full load
Dimensions, feet (metres): 132 x 21 x 6.5 (40.2 x 6.4 x 1.7)
 131.2 x 21.3 x 4.9 (40 x 6.5 x 1.5) (SG 130-134)
Main machinery: 2 SACM AGO 195 V16 CSHR diesels; 4,800 hp(m) (3.53 MW) sustained
 2 cruise diesels; 300 hp(m) (220 kW); 2 shafts
Speed, knots: 22
Complement: 25
Guns: 1 or 2 Bofors 40 mm/60, 2—12.7 mm MGs.
Radars: Surface search: Racal Decca 1226, I-band.

Comment: SG 121 and 122 built by Gölcük Naval Yard, remainder by Taşkızak Naval Yard. SG 134 commissioned in 1977, remainder 1968-71. SG 130-134 have minor modifications—knuckle at bow, radar stirrup on bridge and MG on superstructure sponsons. These are similar craft to the Turk class listed under *Patrol Forces* for the Navy



SG 131 6/2007, C D Yaylali / 1167963

10 SAR 33 TYPE (LARGE PATROL CRAFT) (WPB)

SG 61-70

Displacement, tons: 180 full load
Dimensions, feet (metres): 113.5 x 28.3 x 9.7 (34.6 x 8.6 x 3)
Main machinery: 3 SACM AGO 195 V16 CSHR diesels; 7,200 hp(m) (5.29 MW) sustained;
 3 shafts; cp props
Speed, knots: 33. **Range, n miles:** 450 at 24 kt; 550 at 18 kt
Complement: 24
Guns: 1 Bofors 40 mm/60, 2—12.7 mm MGs.
Radars: Surface search: Racal Decca; I-band

Comment: Prototype Sarter design ordered from Abeking & Rasmussen, Lemwerder in May 1976. The remainder were built at Taşkızak Naval Yard, İstanbul between 1979 and 1981. Fourteen of this class were to have been transferred to Libya but the order was cancelled. Two delivered to Saudi Arabia. The engines have been governed back and the top speed correspondingly reduced from the original 12,000 hp and 40 kt.



SG 67 5/2004, Martin Mokrus / 0589878

4 SAR 35 TYPE (LARGE PATROL CRAFT) (WPB)

SG 71-74

Displacement, tons: 210 full load
Dimensions, feet (metres): 120 × 28.3 × 6.2 (36.6 × 8.6 × 1.9)
Main machinery: 3 SACM AGO 195 V16 CSHR diesels; 7,200 hp(m) (5.29 MW) sustained; 3 shafts, cp props
Speed, knots: 33
Range, n miles: 450 at 24 kt, 550 at 18 kt
Complement: 24
Guns: 1 Bofors 40 mm/60 2—12.7 mm MGs.
Radars: Surface search: Racal Decca 1226; I-band

Comment: A slightly enlarged version of the Serter designed SAR 33 Type built by Taşkızak Shipyard between 1985 and 1987. A contract was signed on 21 May 2007 with Istanbul Denizcilik Gemi İnşaa Shipyard for the modernisation of the main machinery.



SG 71 8/2000, C D Yeylali / 0108645

9 KAAN 29 CLASS (LARGE PATROL CRAFT) (WPBF)

SG 101-109

Displacement, tons: 98 full load
Dimensions, feet (metres): 104.0 × 22.0 × 4.6 (31.7 × 6.7 × 1.4)
Main machinery: 2 MTU 16V 400 M90 diesels; 7,393 hp(m) (5.44 MW); 2 MJP 753DD waterjets
Speed, knots: 49
Range, n miles: 750 at 20 kt
Complement: 13 (2 officers)
Guns: 4—12.7 mm MGs.
Radars: Surface search/navigation: Raytheon; I-band

Comment: All built at Yonca Shipyard. Onuk MRTP 29 design. Advanced composites structure. TCSG 101-103 commissioned 25 July 2001, TCSG 104-105 on 25 July 2002, TCSG 106-108 in 2003 and TCSG 109 in February 2004. A stabilised machine gun is under development for installation in the Kaan 29 and 33 classes.



SG 107 6/2007, Turkish Coast Guard / 1353421

13 + 9 KAAN 33 CLASS (LARGE PATROL CRAFT) (WPBF)

SG 301-313

Displacement, tons: 115 full load
Dimensions, feet (metres): 116.8 × 22.0 × 4.7 (35.6 × 6.7 × 1.4)
Main machinery: 2 MTU 16V 4000 M90 diesels; 7,396 hp(m) (5.44 MW); 2 MJP 753DD waterjets
Speed, knots: 47
Range, n miles: 650 at 20 kt
Complement: 18 (2 officers)
Guns: 4—12.7 mm MGs
Radars: Navigation: Raytheon; I-band.

Comment: All built at Yonca Shipyard. Onuk MRTP 33 design. Advanced composites structure TCSG 301 commissioned in July 2004, TCSG 302 in July 2005, TCSG 303 in September 2005, TCSG 304-306 in September 2006, TCSG 307 in December 2006, TCSG 308 (April 2007), TCSG 309 (July 2007), TCSG 310 (April 2008), TCSG 311 (July 2008), TCSG 312 (October 2008) and TCSG 313 (January 2009). A further nine craft have been ordered. ASELSAN stabilised gun (STAMP) fitted in some Kaan 33 and 29 craft



SG 307 (with STAMP mounting) 6/2008, Yonca-Onuk / 1353422

4 KW 15 CLASS (LARGE PATROL CRAFT) (WPB)

SG 113-114 SG 118-119

Displacement, tons: 70 full load
Dimensions, feet (metres): 94.8 × 15.4 × 4.6 (28.9 × 4.7 × 1.4)
Main machinery: 2 MTU diesels; 2,700 hp(m) (1.98 MW); 2 shafts
Speed, knots: 20. **Range, n miles:** 550 at 16 kt
Complement: 16
Guns: 1 Bofors 40 mm/60. 2 Oerlikon 20 mm
Radars: Surface search: Racal Decca; I-band

Comment: Built by Schweers, Bardenfleth. Commissioned 1961-62



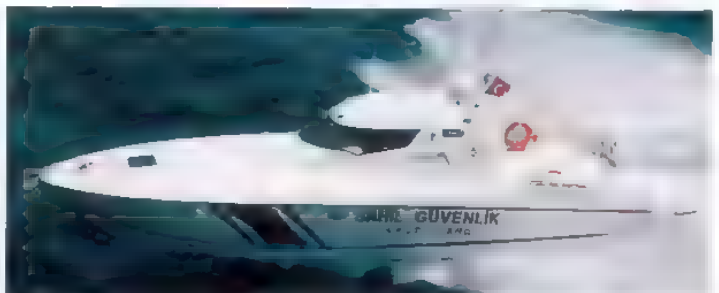
SG 119 9/2002, Selim San / 0533264

18 KAAN 15 CLASS (FAST INTERVENTION CRAFT) (WPBF)

SG 1-18

Displacement, tons: 20 full load
Dimensions, feet (metres): 54.8 × 13.2 × 3.9 (16.7 × 4.04 × 1.2)
Main machinery: 2 MTU 12V 183TE93 diesels; 2,300 hp(m) (1.69 MW); 2 Arneson ASD 12 B1L surface drives
Speed, knots: 54. **Range, n miles:** 350 at 35 kt
Complement: 4 plus 8 mission crew
Guns: 2—12.7 mm MGs.
Radars: Surface search: Raytheon; I-band

Comment: Contract for first six with Yonca Technical Investment signed in May 1997, second order for six more in February 1999, and third for 6 more in August 2000. All built at Tuzla-Istanbul shipyard. Three delivered in 1998, seven in 1999, two in April 2000, four in July 2001 and two in July 2002. Onuk MRTP 15 design. Advanced composites structure. Two based in northern Cyprus with pennant numbers KKTC SG 11-12



SG 1 6/2007, Turkish Coast Guard / 1353423



SG 11 6/2007, Maritime Photographic / 1167866

3 KAAN 19 CLASS (FAST INTERVENTION CRAFT) (WPBF)

SG 19-21

Displacement, tons: 38 full load
Dimensions, feet (metres): 74.0 × 15.6 × 4.3 (22.55 × 4.76 × 1.3)
Main machinery: 2 MTU 12V 2000 M 92 diesels; 3,600 hp(m) (2.7 MW); 2 MJP waterjets
Speed, knots: 60
Range, n miles: 350 at 35 kt
Complement: 5
Guns: 2—12.7 mm MGs.

Comment: Yonuk MRTP 20 (enlarged MRTP 15) design built at Yonca shipyard. Prototype completed in 2006. An order for two further craft was made on 2 March 2007



SG 19 6/2008, Yonca-Onuk / 1353424

11 COASTAL PATROL CRAFT (WPB)

SG 50-58 KKTCSG 102-103

Displacement, tons: 29 full load
Dimensions, feet (metres): 47.9 x 13.7 x 3.6 (14.6 x 4.2 x 1.1)
Main machinery: 2 diesels; 700 hp(m) (514 kW); 2 shafts
Speed, knots: 15
Complement: 7
Guns: 1 12.7 mm MG or 1 Oerlikon 20 mm (SG 102-103)
Radars: Surface search: Raytheon; I-band

Comment: KKTCSG 102-103 were built for North Cyprus and have been based there since August 1990 and July 1991 respectively. Both these craft were given a heavier gun in 1992. Second batch of three completed by Taşkızak in October 1992, three more in June 1993, three more in December 1993.



SG 58 6/2007, Maritime Photographic / 1167865

1 INSHORE PATROL CRAFT (WPB)

RAIF DENKTAŞ 101 (ex-74)

Displacement, tons: 10 full load
Dimensions, feet (metres): 38 x 11.5 x 2.4 (11.6 x 3.5 x 0.7)
Main machinery: 2 Volvo Aquamatic AQ200F petrol engines; 400 hp(m) (294 kW); 2 shafts
Speed, knots: 28
Range, n miles: 250 at 25 kt
Complement: 6
Guns: 1—12.7 mm MG
Radars: Surface search Raytheon; I-band

Comment: Built by Protokson, Istanbul. Transferred to North Cyprus 23 September 1988. Can be equipped with a rocket launcher.



RAIF DENKTAŞ 6/2004, Selçuk Emre / 1044201

1 HARBOUR PATROL CRAFT (WPB)

SG 41

Displacement, tons: 35
Dimensions, feet (metres): 55.8 x 16.4 x 3.3 (17 x 5 x 1)
Main machinery: 2 diesels; 1,050 hp(m) (771 kW)
Speed, knots: 20
Complement: 7
Radars: Surface search: I-band.

Comment: Used for anti-smuggling duties. Probably confiscated drug smuggling craft.



SG 41 5/2006, C D Yaylali / 1158735

10 SECURITY AND SAFETY CRAFT (PBR)

Displacement, tons: To be announced
Dimensions, feet (metres): 25.4 x 9.5 x 1.6 (7.75 x 2.9 x 0.5)
Main machinery: 2 outboard motors; 180 hp (135 kW)
Speed, knots: 36
Complement: 3

Comment: Rigid-inflatable hull with fibre cabin



SECURITY CRAFT 9/2008, C D Yaylali / 1153475

20 SECURITY AND SAFETY CRAFT (PBR)

Displacement, tons: To be announced
Dimensions, feet (metres): 31.1 x 9.8 x 1.6 (9.5 x 3.0 x 0.5)
Main machinery: 2 outboard motors; 350 hp (260 kW)
Speed, knots: 40
Complement: 3

Comment: Rigid-inflatable hull with fibre cabin.

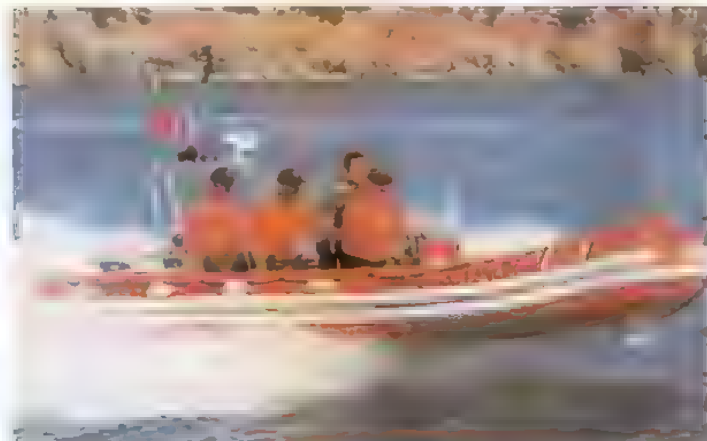


SECURITY CRAFT 6/2007, Turkish Coast Guard / 1170048

10 SAFETY CRAFT (PBR)

Displacement, tons: To be announced
Dimensions, feet (metres): 19.0 x 7.2 x 2.6 (5.8 x 2.2 x 0.8)
Main machinery: 2 outboard motors; 140 hp (105 kW)
Speed, knots: 30
Complement: 7

Comment: Inflatable hull craft.



SAFETY CRAFT 6/2007, Turkish Coast Guard / 1170046

45 CONTROL CRAFT (PBR)

Displacement, tons: To be announced
Dimensions, feet (metres): 19.0 x 7.2 x 2.6 (5.8 x 2.2 x 0.8)
Main machinery: 2 outboard motors; 100 hp (75 kW)
Speed, knots: 35
Complement: 3

Comment: inflatable hull craft.



CONTROL CRAFT

6/2007, Turkish Coast Guard / 1170047



AB 412

6/2007, Turkish Coast Guard / 1353477

Numbers/Type: 3 Casa CN 235
Operational speed: 240 kt (445 km/h).
Service ceiling: 25,600 ft (8,110 m)
Range: 669 n miles (1,240 km).
Role/Weapon systems: Three delivered in July 2002. Long range maritime patrol for surveillance.



CN-235

6/2007, Turkish Coast Guard / 1353475

LAND-BASED MARITIME AIRCRAFT

Numbers/Type: 8 Agusta AB 412 EP
Operational speed: 122 kt (226 km/h).
Service ceiling: 17,000 ft (5,180 m).
Range: 374 n miles (686 km).
Role/Weapon systems: Nine aircraft ordered 15 April 1999. One lost on 30 July 2005. A further six ordered in early 2005. Operated by Coast Guard/Frontier Force for patrol SAR. Sensors: Radar and FLIR. Weapons: Unarmed.

Turkmenistan**Country Overview**

Formerly part of the USSR, the Republic of Turkmenistan declared its independence in 1991. Situated in Central Asia, it has an area of 188,460 square miles and is bordered to the north by Kazakhstan, to the east by Uzbekistan and Afghanistan and to the south by Iran

It has a 954 n mile coastline with the Caspian Sea. Türkmenbashi, the principal port, is linked by rail to Ashgabat, the capital and largest city. Maritime claims in the Caspian Sea are yet to be resolved. The Navy acts under the operational control of the Border Guard but is the weakest component of the Turkmen armed forces.

Personnel:

2009. 700

Flags:

Türkmenbashi (formerly Krasnovodsk)

**PATROL FORCES**

Notes: One 40 m Stenka class patrol craft has been reported operational.

1 POINT CLASS (WPB)

Name	No	Builders	Commissioned
MERJEN (ex-Point Jackson)	PB-129 (ex-82378)	USCG Yard Curtis Bay	3 Aug 1970

Displacement, tons: 66; 69 full load
Dimensions, feet (metres): 83 x 17.2 x 5.8 (25.3 x 5.2 x 1.8)
Main machinery: 2 Caterpillar 3412 diesels; 1,600 hp (1.19 MW); 2 shafts
Speed, knots: 23.5
Range, n miles: 1,200 at 8 kt
Complement: 10 (1 officer)
Guns: 2 – 12.7 mm MGs.
Radars: Surface search: Hughes/Furuno SPS-73; I-band.

Comment: Steel hulled craft with aluminium superstructure. Transferred from United States on 30 May 2000.



MERJEN (inboard ship)

11/2000, Selim San / D104495

4 KALKAN (PROJECT 50030) M CLASS (INSHORE PATROL CRAFT) (PBI)

Displacement, tons: 8.5 full load
Dimensions, feet (metres): 38.1 x 10.8 x 2.0 (11.6 x 3.3 x 0.6)
Main machinery: 1 Type 475K diesel, 496 hp (370 kW); 1 waterjet
Speed, knots: 34
Complement: 2
Guns: 1 – 12.7 mm MG

Comment: Four craft delivered during 2002. Further craft were expected but reportedly not delivered. Built by Moryc Feodosiya (Ukraine) and constructed with aluminium hulls and GRP superstructure. Can be armed with 7.62 mm or 12.7 mm MGs.



KALKAN

6/2003, Moryc 05/3598

5 GRIF-T CLASS (PB)

Displacement, tons: 39 full load
Dimensions, feet (metres): 80.05 x 17.1 x 5.1 (24.4 x 5.2 x 1.57)
Main machinery: 2 MTU 12V 2000 M 90 diesels; 2,700 hp (2 MW); 2 shafts
Speed, knots: 40. **Range, n miles:** 500 at 15 kt
Complement: 13 (1 officer)
Guns: 1 – 20 mm. 1 – 12.7 mm MG.
Radars: Surface search: I-band.

Comment: Built by Moryc Shipyard, Feodosia, Ukraine and delivered in about 2005. Modified versions of Zhuk class. Aluminium construction.



Tuvalu

Country Overview

Tuvalu, formerly the Ellice Islands, is a south Pacific island group which gained independence in 1978; the other part of the former British colony, the Gilbert Islands, became independent as Kiribati the following year. Situated some 1,600 n miles east of Papua New Guinea,

the country comprises nine atolls of which Funafuti is the location of the capital, Fongafale, and home to more than 30 per cent of the population. An archipelagic state, territorial seas (12 n miles) are claimed. An Exclusive Economic Zone (EEZ) (200 n miles) is also claimed but limits have not been fully defined by boundary agreements.

Headquarters Appointments

Commander Maritime Wing:
Inspector Motulu Pedro

Bases

Funafuti

PATROL FORCES

1 PACIFIC CLASS (LARGE PATROL CRAFT) (PB)

Name	No	Builders	Commissioned
TE MATAILI	801	Transfield Shipbuilding, WA	8 Oct 1994

Displacement, tons: 165 full load

Dimensions, feet (metres): 103.3 x 26.6 x 6.5 (31.5 x 8.1 x 2.1)

Main machinery: 2 Caterpillar 3516TA diesels; 4,400 hp (3.28 MW) sustained; 2 shafts

Speed, knots: 18 **Range, n miles:** 2,500 at 12 kt

Complement: 18 (3 officers)

Guns: Can carry 1 – 12.7 mm MG but is unarmed.

Radars: Navigation: Furuno 1011; I-band.

Comment: This is the 18th of the class to be built by the Australian Government for Exclusive Economic Zone (EEZ) patrols in the Pacific islands. The programme originally terminated at 15 but was re-opened on 19 February 1993 to include construction of five more craft for Fiji, Kiribati and Tuvalu. Training and support assistance is given by the Australian Navy. Half-life refit completed at Gladstone in 2001. Following the decision by the Australian government to extend the Pacific Patrol Boat programme, *Te Mataili* will require a life-extension refit in 2011 in order to achieve a 30-year ship life.



TE MATAILI
2000, RAN
0106647



Ukraine

Country Overview

Formerly part of the USSR, Ukraine declared its independence in 1991. Situated in eastern Europe, it has an area of 233,090 square miles and is bordered to the north by Belarus, to the east by Russia, to the south-west by Romania and Moldova and to the west by Hungary, Slovakia and Poland. It has a 1,501 n mile coastline with the Black Sea and the Sea of Azov. Kiev is the capital and largest city while Sevastopol, Odessa, Kerch, and Mariupol are the principal ports. Territorial Seas (12 n miles) have been claimed. An EEZ (200 n miles) has been claimed but the limits have not been defined.

Division of the former Soviet Black Sea Fleet between Russia and Ukraine had been achieved on 28 May 1997. The agreement allows for the leasing of port facilities to the Russian Navy until 2017.

Headquarters Appointments

Commander of the Navy:
Vice Admiral Igor Tenukh
First Deputy Commander of the Navy and Chief of Staff:
Rear Admiral Mykola Kostrov
Commander Western Naval District:
Rear Admiral Dmytro Ukrainets
Commander Southern Naval District:
Rear Admiral Borys Rekut

Bases

Sevastopol (HQ), Donuzlav (Southern Region), Odessa (Western Region), Mikolaiv, Feodosiya, Izmail, Balaklava, Kerch

Personnel

2009: 13,000 navy

Border Guard

The Maritime Border Guard is an independent subdivision of the State Committee for Border Guards, and is not part of the Navy. It has three cutter brigades, based in Kerch, Odessa and Balaklava, to patrol the 827 mile coastline and two river brigades, which include a gunship squadron, a minesweeping squadron, an auxiliary ship group and a training division. Pennant numbers changed in July 1999

PENNANT LIST

Frigates

U 130 Hetman Sagaidachny
U 205 Lutsk
U 206 Vinnitsa
U 209 Ternopil

Patrol Forces

U 120 Skadovsk
U 153 Priluki
U 154 Kahovka
U 155 Nikopol
U 156 Kremenchuk
U 207 Uzhgorod
U 208 Khmelnytsky

Mine Warfare Forces

U 310 Zhovti Vody
U 311 Cherkasy
U 330 Melitopol
U 331 Mariupol
U 360 Genichesck

Amphibious Forces

U 410 Kirovograd
U 402 Konstantin Olshansky
U 420 Donetsk
U 862 Korosten
U 904 Bilyayivka

Auxilleries

U 240 Feodosiya
U 510 Slavutich
U 540 Chyhirin
U 541 Smila
U 542 Dornicha
U 635 Skvyra
U 700 Netisin
U 705 Kremenets
U 706 Izyaslav
U 722 Borshev
U 728 Evpatoriya
U 733 Tokmak

U 753 Kriviy Rig
U 756 Sudek
U 757 Makvka
U 759 Bahmach
U 760 Fastiv
U 782 Sokal
U 783 Illichivsk
U 803 Krasnodon
U 811 Balta
U 830 Korets
U 831 Kovel
U 852 Shostka
U 860 Kamyankha
U 881 Kherson
U 947 Krasnoperekovsk
U 953 Dubno

Survey Ships

U 511 Simferopol
U 512 Pereyaslav
U 601 Alchevsk
U 754 Dzhanok

SUBMARINES

Notes: The Foxtrot-class submarine *Zaporizya* was expected to return to operational service in 2004 but repairs were not completed and, in 2007, the Defence Minister stated that the boat was to be sold. Meanwhile, the submarine remains at Balaklava. Although plans for repairs were announced in early 2009, the future of the submarine is uncertain.

FRIGATES

1 KRIVAK III (NEREY) CLASS (PROJECT 1135.1) (FFHM)

Name	No	Builders	Laid down	Launched	Commissioned
HETMAN SAGAIDACHNY (ex-Kirov)	U 130 (ex-201)	Kamysh-Burun, Kerch	5 Oct 1990	29 Mar 1992	5 July 1993

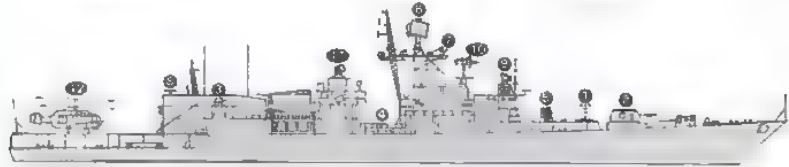
Displacement, tons: 3,100 standard; 3,650 full load
Dimensions, feet (metres): 405.2 × 46.9 × 16.4
 (123.5 × 14.3 × 5)

Main machinery: COGAG; 2 gas turbines; 55,500 hp(m)
 (40.8 MW); 2 gas turbines; 13,600 hp(m) (10 MW); 2 shafts

Speed, knots: 32

Range, n miles: 4,600 at 20 kt; 1,600 at 30 kt

Complement: 180 (18 officers)



HETMAN SAGAIDACHNY

(Scale 1 : 1,200), Ian Sturton / 0506208

Missiles: SAM: 1 SA-N-4 Gecko twin launcher ●; semi-active radar homing to 15 km (8.7 n miles) at 2.5 Mach; warhead 50 kg; altitude 9.1-3,048 m (30-10,000 ft); 20 missiles. The launcher retracts into the mounting for stowage and protection, rising to fire and retracting to reload. The two mountings are forward of the bridge and abaft the funnel.

Guns: 1—3.9 in (100 mm)/70 AK 100 ●; 60 rds/min to 21.5 km (11.5 n miles); weight of shell 15.6 kg
 2—30 mm/65 ●; 6 barrels per mounting; 3,000 rds/min combined to 2 km.

Torpedoes: 8—21 in (533 mm) (2 quad) tubes ●
 Combination of Russian 53 cm torpedoes.

A/S mortars: 2 RBU 6000 12-tubed trainable ●; range 6,000 m; warhead 31 kg.

Countermeasures: Decoys: 4 PK 16 chaff launchers. Towed torpedo decoy.

ESM 2 Bell Shroud; intercept.

ECM 2 Bell Squat; jammers.

Radars: Air search: Top Plate ●; 3D; D/E-band

Surface search: Spin Trough ●; I-band. Peel Cone ●;

E-band.

Fire control: Pop Group ●; F/H/I-band (for SA-N-4)

Kite Screech ●; H/I/K-band. Bass Tilt (Krivak III) ●;

H/I-band

Navigation: Kivach; I-band.

IFF: Salt Pot (Krivak III).

Sonars: Bull Nose (MGK 335MS); hull-mounted; active search and attack; medium frequency.

Helicopters: 1 Ka-27 Helix ●.

Programmes: This is the last of the 'Krivak IIIs' originally designed for the USSR Border Guard. The seven others are based in the Russian Pacific Fleet. A ninth of class was not completed.

Operational: *Sagaidachny* has so far not been sighted with a helicopter embarked. Deployed to the Mediterranean in 1994 and late 1995, to the Indian Ocean in early 1995 and to the US in late 1996. Three further Krivak class have been decommissioned: 'Krivak II' *Sevastopol* (U 132) is probably being used for spares while 'Krivak I' *Mikolaiv* is to be scrapped. *Dnipropetrovsk* is reported to have sunk in the Black Sea in 2005.



HETMAN SAGAIDACHNY

7/2000 / 0106650



HETMAN SAGAIDACHNY

6/2003, *Ships of the World* / 0577651

3 GRISHA CLASS (PROJECT 1124EM/P) (FFLM)

Name	No	Builders	Laid down	Launched	Commissioned
LUTSK	U 205	Leninskaya Kuznitsa, Kiev	-	12 May 1993	12 Feb 1994
VINNITSA (ex-Dnepri)	U 206	Zelenodolsk	23 Dec 1975	12 Sep 1976	31 Dec 1976
TERNOPIL	U 209	Leninskaya Kuznitsa, Kiev	-	20 Mar 2002	16 Feb 2006

Displacement, tons: 950 standard; 1,150 full load
 Dimensions, feet (metres) 233.6 x 32.2 x 12.1
 (71.2 x 9.8 x 3.7)
 Main machinery: CODAG; 1 gas turbine; 15,000 hp(m)
 (11 MW); 2 diesels; 16,000 hp(m) (11.8 MW); 3 shafts
 Speed, knots: 30
 Range, n miles: 2,500 at 14 kt; 1,750 at 20 kt diesels; 950 at 27 kt
 Complement: 70 (5 officers)

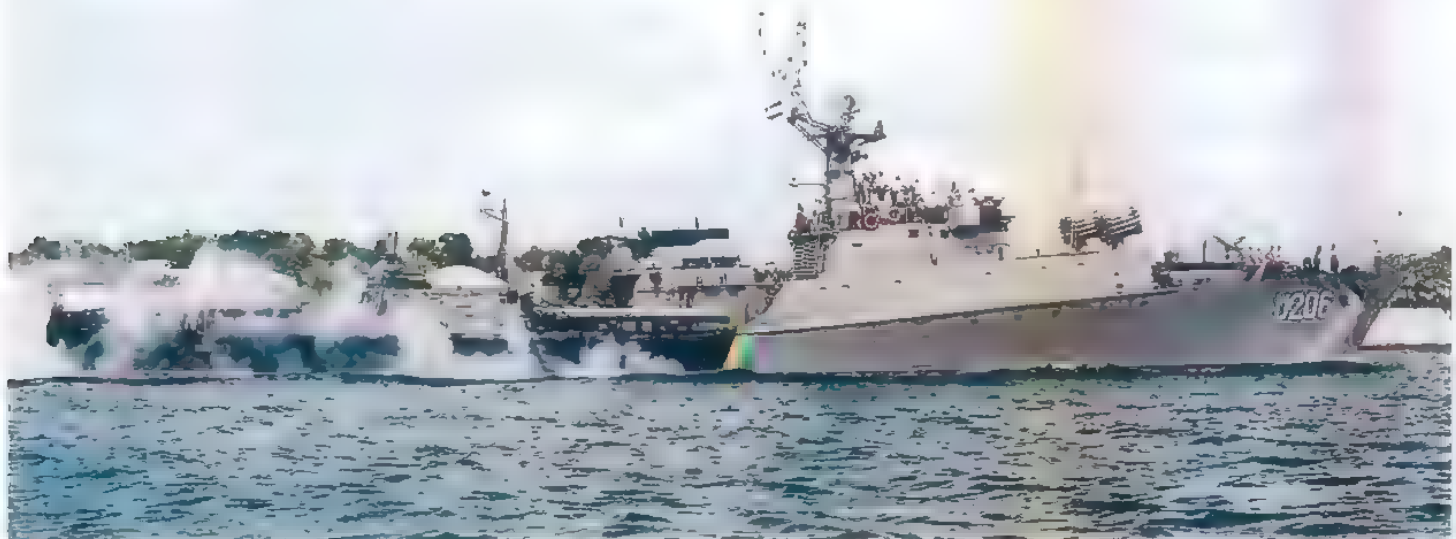


(Scale 1 : 900), Ian Sturton / 0506709

Missiles: SAM: SA-N-4 Gecko twin launcher (Lutsk), semi-active radar homing to 15 km (8 n miles) at 2.5 Mach; warhead 50 kg; altitude 9.1-3,048 m (30-10,000 ft); 20 missiles.
 Guns: 1-3 in (76 mm)/59 AK 176 (Lutsk and Ternopil); 120 rds/min to 15 km (8 n miles); weight of shell 5.9 kg
 4-57 mm/75 AK 725 (twin) (Vinnitsa); 120 rds/min to 12.7 km (6.8 n miles); weight of shell 2.8 kg.
 1 -30 mm/65 (Lutsk and Ternopil); 6 barrels; 3,000 rds/min combined to 2 km
 Torpedoes: 4-21 in (533 mm) (2 twin) tubes (SAE T-60; passive homing to 15 km (8.1 n miles) at 40 kt; warhead 400 kg
 A/S mortars: 1 or 2 RBU 6000 12-tubed trainable (range 6,000 m; warhead 31 kg

LUTSK
 Depth charges: 2 racks (12)
 Mines: Capacity for 18 in lieu of depth charges.
 Countermasures: ESM. 2 Watch Dog. 2 PK 16 chaff launchers.
 Radars: Air/surface search: Half Plate B (Lutsk and Ternopil); E/F-band
 Strut Curve (Vinnitsa); F-band.
 Navigation: Don 2; I-band.
 Fire control: Pop Group (Lutsk and Ternopil); F/H/I-band (for SA-N-4). Bass Tilt (Lutsk and Ternopil); H/I-band (for 76 mm and 30 mm).
 Muff Cobb (Vinnitsa); G/H-band.
 IFF: High Pole A or B. Square Head. Salt Pot.

Sonars: Bull Nose (MGK 335MS); hull-mounted; active search and attack, high/medium frequency
 Elk Tail VDS (active search); high frequency.
 Programmes: Lutsk is a 'Grisha V' (Type 1124EM) launched 12 May 1993 and completed 27 November 1993. Ternopil is also a Grisha V and was the first new ship to join the fleet since 1992 when it commissioned in 2006. Vinnitsa is a 'Grisha II' (Type 1124P) ex-Russian Border Guard ship transferred in 1996 Two 'Grisha I' were also transferred but have been deleted
 Operational: All three are active. Vinnitsa damaged in storm on 11 November 2007.



VINNITSA

7/2000, Hartmut Ehlers / 0106652



TERNOPIL

12/2005, Lemachko Collection / 0581616

LAND-BASED MARITIME AIRCRAFT

Notes: The Naval Aviation Force is based at Sevastopol. It comprises 17 Ka-25 Hormone ASW helicopters, 2 Ka-27 Helix A ASW helicopter, 30 Mi-14 Haze, 5 An-12 Cub, 5 An-26 Curl and 11 Be-12 Mail. The Air Force inventory includes 100 Su-24 Fencer and 170 MiG-29 Fulcrum

PATROL FORCES

Notes: A new corvette class is reported to be under development.

2 PAUK I (MOLNYA) (PROJECT 1241P) CLASS (PCM)

KHMELNITSKY (ex-MPK 116) U 208 UZHGOROD (ex-MPK 93) U 207

Displacement, tons: 440 full load
Dimensions, feet (metres): 189 × 33.5 × 10.8 (57.6 × 10.2 × 3.3)
Main machinery: 2 Type M 521 diesels; 16,184 hp(m) (11.9 MW) sustained; 2 shafts
Speed, knots: 32 **Range, n miles:** 2,400 at 14 kt
Complement: 32

Missiles: SAM: SA-N-5 Grail quad launcher, manual aiming; IR homing to 6 km (3.2 n miles) at 1.5 Mach; altitude to 2,500 m (8,000 ft); warhead 1.5 kg; 8 missiles
Guns: 1–3 in (76 mm)/59 AK 176; 120 rds/min to 15 km (8 n miles); weight of shell 5.9 kg
 1–30 mm/65 AK 630; 6 barrels, 3,000 rds/min combined to 2 km.
Torpedoes: 4–16 in (406 mm).
A/S mortars: 2 RBU 1200 5-tubed fixed; range 1,200 m; warhead 34 kg.
Depth charges: 2 racks (12).
Countermeasures: Decoys: 2 PK 16 or 4 PK 10 chaff launchers.
ESM: 3 Brick Plug and 2 Half Hat; radar warning.
Weapons control: Hood Wink optronic director
Radars: Air/surface search: Peel Cone; E/F-band
 Surface search: Kivach or Pechora; I-band.
Fire control: Bass Tilt; H/I-band.
Sonars: Foal Tail; VDS (mounted on transom); active attack; high frequency

Programmes: Built at Yaroslavl in 1985. Transferred from Black Sea Fleet Border Guard in 1996. Others of this class are in the Ukraine Border Guard
Structure: ASW version of the Russian Tarantul class.
Operational: Second of class *Uzhgorod* was reportedly back in service in 2006 but operational status has not been confirmed.



KHMELNITSKY 7/2000, Hartmut Ehlers / 0106553

1 ZHUK (GRIF) CLASS (PROJECT 1400M) (PB)

SKADOVSK (ex-AK 327) U 120

Displacement, tons: 39 full load
Dimensions, feet (metres): 78.7 × 16.4 × 3.9 (24 × 5 × 1.2)
Main machinery: 2 Type M 401B diesels; 2,200 hp(m) (1.6 MW) sustained; 2 shafts
Speed, knots: 30
Range, n miles: 1,100 at 15 kt
Complement: 13
Guns: 2–14.5 mm (twin). 1–12.7 mm MG
Radars: Surface search: Spin Trough; I-band

Comment: Transferred from Russia in 1997 and became operational in 2000. Others of the class are in service with the Border Guard



SKADOVSK 7/2000, Hartmut Ehlers / 0106555

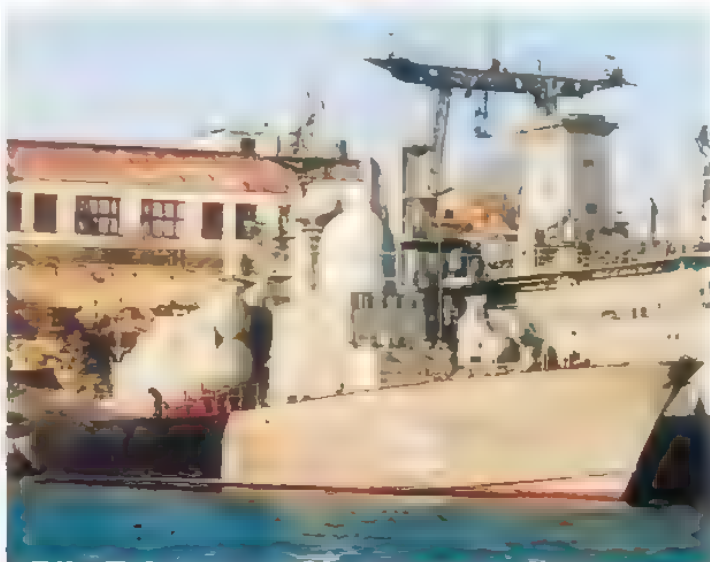
2 TARANTUL II (MOLNYA) (PROJECT 1241.1/2) CLASS (FSGM)

PRIDNEPROVYE (ex-Nikopol, ex-R-54) U 155 KREMENCHUK (ex-R 63) U 156

Displacement, tons: 385 standard; 455 full load
Dimensions, feet (metres): 184.1 × 37.7 × 8.2 (56.1 × 11.5 × 2.5)
Main machinery: COGAG: 2 Nikolayev Type DR 77 gas turbines; 16,016 hp(m) (11.77 MW), 2 Nikolayev DR 76 gas turbines with reversible gearboxes; 4,993 hp(m) (3.67 MW) sustained 2 shafts; cp props
Speed, knots: 36
Range, n miles: 1,650 at 14 kt
Complement: 34 (5 officers)

Missiles: SSM: 4 Raduga SS-N-2D Styx (2 twin); active radar or IR homing to 83 km (45 n miles) at 0.9 Mach; warhead 513 kg, sea skimmer at end of run
SAM: 1 SA-N-5 Grail quad launcher; manual aiming; IR homing to 6 km (3.2 n miles) at 1.5 Mach; warhead 1.5 kg.
Guns: 1–3 in (76 mm)/59 AK 176; 120 rds/min to 15 km (8 n miles); weight of shell 5.9 kg
 2–30 mm/65 AK-630; 6 barrels per mounting; 3,000 rds/min to 2 km.
Countermeasures: Decoys: 4 PK 16 chaff launchers.
Weapons control: Hood Wink optronic director. Light bulb datalink. Band Stand; I-band (datalink).
Radars: Plank Shave; I-band.
Fire control: Bass Tilt; H/I-band (for guns).
 Band Stand (Mineral ME), D-band (for SS-N-2D)
Navigation: Kivach III; I-band
 IFF: High Pole B

Programmes: Built at Kolpino. U 155 originally commissioned in 1983 and U 156 in 1985. Both transferred in 1997 and recommissioned in 2002.



PRIDNEPROVYE 3/2002, Hartmut Ehlers / 0529997

2 MATKA (VEKHR) CLASS (PROJECT 206MP)
(FAST ATTACK CRAFT — MISSILE HYDROFOIL) (PGGK)

PRILUKI (ex-R-262) U 153 KAHOVKA (ex-R 265) U 154

Displacement, tons: 225 standard; 260 full load
Dimensions, feet (metres): 129.9 × 24.9 (41 over foils) × 6.9 (13.1 over foils) (39.6 × 7.6; 12.5 × 2.1; 4)
Main machinery: 3 Type M 504 diesels; 10,800 hp(m) (7.94 MW) sustained; 3 shafts
Speed, knots: 40
Range, n miles: 600 at 35 kt foilborne; 1,500 at 14 kt hullborne
Complement: 33

Missiles: SSM: 2 SS-N-2C/D Styx; active radar or IR homing to 83 km (45 n miles) at 0.9 Mach; warhead 513 kg; sea skimmer at end of run.
Guns: 1–3 in (76 mm)/59 AK 176; 120 rds/min to 15 km (8 n miles); weight of shell 5.9 kg
 1–30 mm/65 AK 630; 6 barrels per mounting; 3,000 rds/min to 2 km
Countermeasures: Decoys: 2 PK 16 chaff launchers.
ESM: Clay Brick; intercept
Weapons control: Hood Wink optronic directors.
Radars: Air/surface search: Plank Shave; E-band.
Navigation: SRN-207; I-band.
Fire control: Bass Tilt; H/I-band.
 IFF: High Pole B or Salt Pot B and Square Head

Comment: Five Russian Black Sea Fleet units transferred in 1996. Built between 1978 and 1983 with similar hulls to the Osa class. One was transferred to Georgia in 1999 and two others (*Uman* and *Tsurupinsk*) have been cannibalised for spares.



PRILUKI 6/2006, Lemachko Collection / 1307219

AMPHIBIOUS FORCES

Notes: Two Vydra class LCU's, *Korosten* U 862 and *Bilyivka* U 904, are used as trials and transport craft. There are also two non-operational Ondatra class LCM, *Svatova* U 430 and *Vii* U 537 and a T-4LCM *Terpan* U 538 which are laid up.

1 ROPUCHA I (PROJECT 775) CLASS (LST)

KONSTANTIN OLSHANSKY (ex-BDK 56) U 402

Displacement, tons: 4,400 full load
Dimensions, feet (metres): 370.7 × 47.6 × 11.5 (113 × 14.5 × 3.6)
Main machinery: 2 Zgoda-Sulzer 16ZV840/48 diesels; 19,230 hp(m) (14.14 MW) sustained; 2 shafts
Speed, knots: 17.5. **Range, n miles:** 3,500 at 16 kt
Complement: 95 (7 officers)
Military lift: 10 MBT plus 190 troops or 24 AFVs plus 170 troops
Missiles: SAM: 4 SA-N-5 Grail quad launchers.
Guns: 4—57 mm/75 AK 725 (2 twin); 120 rds/min to 12.7 km (6.8 n miles); weight of shell 2.8 kg.
Weapons control: 2 Squeeze Box optronic directors.
Radars: Strut Curve; F-band.
Navigation: Don 2; I-band.
Fire control: Muff Cob; G/H-band.
IFF: High Pole B.

Comment: Built at Gdansk, Poland in 1978 and transferred from Russia in 1996. Can be used to carry mines. Ro-Ro design with 540 m² of parking space between the stern gate and the bow doors.



KONSTANTIN OLSHANSKY 10/2008*, *Laurson/Jarnason* / 1353566

1 POLNOCHNY C (PROJECT 773 I) CLASS (LSM)

KIROVOGRAD (ex-SDK 123) U 401

Displacement, tons: 1,120 standard; 1,150 full load
Dimensions, feet (metres): 266.7 × 31.8 × 7.9 (81.3 × 9.7 × 2.4)
Main machinery: 2 Kolomna Type 40-D diesels; 4,400 hp(m) (3.2 MW) sustained; 2 shafts
Speed, knots: 18. **Range, n miles:** 2,000 at 12 kt
Complement: 40-42
Military lift: 350 tons including 6 tanks; 180 troops
Missiles: 4 SA-N-5 Grail quad launchers; manual aiming, IR homing to 6 km (3.2 n miles) at 1.5 Mach; warhead 1.5 kg; 32 missiles.
Guns: 4—30 mm/65 (2 twin), 2—140 mm 18-tubed rocket launchers.
Radars: Surface search: Spin Trough; I-band.
Fire control: Drum Tilt; H/I-band (for 30 mm guns).

Comment: Built in 1970s and transferred from Russian Fleet in 1994. Reported operational again in 2001 following refit.



KIROVOGRAD 6/2003, *Ships of the World* / 0572650

1 POMORNIK (ZUBR) (PROJECT 1232.2) CLASS (ACV/LCUJM)

DONETSK U 420

Displacement, tons: 550 full load
Dimensions, feet (metres): 189 × 70.5 (57.6 × 21.5)
Main machinery: 5 Type NK-12MV gas turbines; 2 for lift, 23,672 hp(m) (17.4 MW) nominal, 3 for drive, 35,508 hp(m) (26.1 MW) nominal
Speed, knots: 60. **Range, n miles:** 300 at 55 kt
Complement: 31 (4 officers)
Military lift: 3 MBT or 10 APC plus 230 troops (total 170 tons)
Missiles: SAM: 2 SA-N-5 Grail quad launchers; manual aiming; IR homing to 6 km (3.2 n miles) at 1.5 Mach; altitude to 2,500 m (8,000 ft); warhead 1.5 kg.
Guns: 2—30 mm/65 AK 630, 6 barrels per mounting, 3,000 rds/min combined to 2 km. 2 retractable 122 mm rocket launchers.
Mines: 80
Countermeasures: Decoys, TSP 41 chaff
ESM: Tool Box, Intercept
Weapons control: Quad Look (modified Squeeze Box) (DWJ 3) optronic director.
Radars: Air/surface search: Cross Dome (Ekran); I-band.
Fire control: Bass Tilt MR 123; H/I-band.
IFF: Salt Pot A/B, Square Head.

Comment: *Donetsk* was completed by Morye, Feodosiya on 20 July 1993. Sister *U 421* was incomplete in 1999 when procured by Greece, delivery being made in 2001. Three further craft were transferred from Russia in 1996. Of these, *U 423* (ex-MDK 123) was also sold to Greece, *U 422* (ex-MDK 57) and *U 424* (ex-MDK 93) have been decommissioned.



DONETSK 8/2000, *Lemachka Collection* / 0131164

MINE WARFARE FORCES

2 NATYA I CLASS (PROJECT 266M) (MSO)

CHERNIGIV (ex-Zhovti Vody, ex-Zemitchik) U 310

CHEKASY (ex-Razvedchik) U 311

Displacement, tons: 804 full load
Dimensions, feet (metres): 200.1 × 33.5 × 9.8 (61 × 10.2 × 3)
Main machinery: 2 Type M 504 diesels; 5,000 hp(m) (3.67 MW) sustained; 2 shafts; cp props
Speed, knots: 16. **Range, n miles:** 3,000 at 12 kt
Complement: 67 (8 officers)
Guns: 4—30 mm/65 (2 twin) AK 306 or 2 30 mm/65 AK 630; 4—25 mm/80 (2 twin)
A/S mortars: 2 RBU 1200 5-tubed fixed
Depth charges: 62.
Mines: 10.
Countermeasures: MCM: 1 or 2 GKT-2 contact sweeps; 1 AT-2 acoustic sweep. 1 TEM-3 magnetic sweep
Radars: Surface search: Long Trough; E-band
Fire control: Drum Tilt; H/I-band.
IFF: 2 Square Head, High Pole B.
Sonars: MG 79/89; hull-mounted; active minehunting; high frequency.

Comment: Built in the mid-1970s. Transferred from Russia in 1996. Both are operational.



ZHOVTI VODY 9/2002, *C D Vaylali* / 0530030

2 SONYA (YAKHONT) (PROJECT 1265) CLASS (MHSC)

MELITOPOL (ex-BT 79) U 330

MARIUPOL (ex-BT 126) U 331

Displacement, tons: 460 full load
Dimensions, feet (metres): 157.4 × 28.9 × 6.6 (48 × 8.8 × 2)
Main machinery: 2 Kolomna diesels; 2,000 hp(m) (1.47 MW) sustained; 2 shafts
Speed, knots: 15. **Range, n miles:** 3,000 at 10 kt
Complement: 43
Guns: 2—30 mm/65 (twin), 2—25 mm/80 (twin)
Mines: 8.
Radars: Surface search: Don 2, I-band
IFF: Two Square Head.
Sonars: MG 69/79; hull-mounted; active, high frequency.

Comment: Built in 1978. Transferred from Russia in 1996. Wooden hull



MELITOPOL 10/2006*, *Laurson/Jarnason* / 1353555

1 YEVGENYA (KOROND) (PROJECT 1258) CLASS (MHC)

GENICHESK (ex-RT 214) U 360

Displacement, tons: 77 standard; 90 full load
Dimensions, feet (metres): 80.7 × 18 × 4.9 (24.6 × 5.6 × 1.5)
Main machinery: 2 Type 3-D-12 diesels; 600 hp(m) (440 kW) sustained; 2 shafts
Speed, knots: 11. **Range, n miles:** 300 at 10 kt
Complement: 10
Guns: 2—14.5 mm (twin) MGs.
Mines: 8 racks
Radars: Surface search: Spin Trough or Mius; I-band.
IFF: Salt Pot.
Sonars: A small MG-7 sonar is lifted over stern on crane; a TV system may also be used.

Comment: Transferred from Russia in 1996. Reported as being operational



GENICHESK 6/2003, *Ships of the World* / 0572652

SURVEY SHIPS

Notes: (1) Also transferred in 1997 were two Muna class AGIs, *Pereyaslav* U 512 and *Dzhankoi* U 754. Both are used as transports, mostly for commercial goods.
 (2) Ten former Russian civilian research ships were transferred in 1996/97. All are now in commercial service
 (3) There is an Onega class, *Severodonetsk* U 812.

1 MOMA (PROJECT 861M) CLASS (AGS)

SIMFEROPOL (ex-*Jupiter*) U 511

Displacement, tons: 1,600 full load
 Dimensions, feet (metres): 240.5 x 36.8 x 12.8 (73.3 x 11.2 x 3.9)
 Main machinery: 2 Zgoda-Sulzer diesels; 3,300 hp(m) (2.43 MW) sustained, 2 shafts, cp props
 Speed, knots: 17. Range, n miles: 9,000 at 11 kt
 Complement: 56
 Radars: Navigation. Don 2; I-band.

Comment: U 511 transferred from Russia in February 1996 and is active. A second of class U 602 has been decommissioned.



SIMFEROPOL 7/2000, Hartmut Ehlers / 0106659

1 BIYA (PROJECT 870) CLASS (AGS)

ALCHEVSK U 601 (ex-GS 212)

Displacement, tons: 766 full load
 Dimensions, feet (metres): 190.4 x 32.1 x 8.5 (55 x 9.8 x 2.6)
 Main machinery: 2 diesels; 1,200 hp(m) (882 kW); 2 shafts; cp props
 Speed, knots: 13. Range, n miles: 4,700 at 11 kt
 Complement: 25
 Radars: Navigation: Don 2; I-band.

Comment: Built at Northern Shipyard, Gdansk 1972–76. Transferred from Russia in 1997. Laboratory and one survey launch, and a 5 ton crane.



ALCHEVSK 6/2005, Lemachko Collection / 1305218

TRAINING SHIPS

Note: In addition there is one *Bryza* class training cutter U 544.

3 PETRUSHKA (UK-3) CLASS (AXL)

CHIGIRIN U 540 **SMILA** U 541 **NOVA KAHOVKA** (ex-*Darnicha*) U 542

Displacement, tons: 335 full load
 Dimensions, feet (metres): 129.3 x 27.6 x 7.2 (39.4 x 8.4 x 2.2)
 Main machinery: 2 Wola H12 diesels; 756 hp(m) (556 kW); 2 shafts
 Speed, knots: 11. Range, n miles: 1,000 at 11 kt
 Complement: 13 plus 30 cadets

Comment: Training vessels built at Wisla Shiyard, Poland in 1989. Transferred from Russia in 1997. Used for seamanship and navigation training



CHIGIRIN 10/2008*, Laursen/Jarnasen / 1353564

AUXILIARIES

Notes: Other ships transferred from Russia in 1997, and possibly still in limited service, are a *Keyla II* class tanker, *Krivyj Rig* U 753, two *Toplivo* class tankers, *Fastiv* U 760 and *Bahmach* U 759 and a *Shalanda* class trials craft *Kamyanka* U 860.



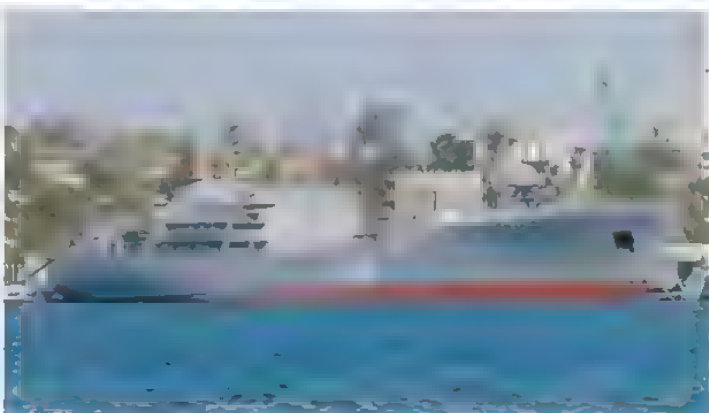
FASTIV 10/2008*, Laursen/Jarnasen / 1353563

1 AMUR (PROJECT 304) CLASS SUPPORT SHIP (AGF/AR)

DONBAS (ex-*Krasnodon*) U 500 (ex-U 803)

Displacement, tons: 5,500 full load
 Dimensions, feet (metres): 400.3 x 55.8 x 16.7 (122 x 17 x 5.1)
 Main machinery: 1 Zgoda 8TAD-48 diesel; 3,000 hp(m) (2.2 MW); 1 shaft
 Speed, knots: 12
 Range, n miles: 13,000 at 8 kt
 Complement: 145
 Radars: Navigation: Don 2; I-band.

Comment: Transferred in 1977. Completed refit in 2001 to serve as command ship and support ships for surface ships and submarines based at Sevastopol. Has two 3-ton cranes and one 1.5-ton crane.



DONBAS 10/2008*, Laursen/Jarnasen / 1353569

1 VODA (PROJECT 561) CLASS (WATER TANKER) (AWT)

SUDAK (ex-*Sura*) U 756

Displacement, tons: 982 standard; 2,250 full load
 Dimensions, feet (metres): 266.8 x 37.4 x 11.3 (81.3 x 11.4 x 3.44)
 Main machinery: 2 diesels; 2 shafts
 Speed, knots: 12
 Range, n miles: 2,900 at 10 kt
 Complement: 22
 Radars: Navigation: Don 2; I-band.

Comment: Transferred in 1977. Has a 3 ton derrick.



SUDAK 10/2008*, Laursen/Jarnasen / 1353561

1 BEREZA CLASS (PROJECT 18061) (ADG)

BALTA U 811 (ex-SR 568)

Displacement, tons: 1,850 standard; 2,051 full load
Dimensions, feet (metres): 228 x 45.3 x 13.1 (69.5 x 13.8 x 4)
Main machinery: 2 Zgoda-Sulzer 8AL26/30 diesels; 2,938 hp(m) (2.16 MW) sustained;
 2 shafts
Speed, knots: 14
Range, n miles: 1,000 at 14 kt
Complement: 88
Radars: Navigation; Kivach, I-band.

Comment: Built at Northern Shipyard, Gdansk in 1987. Transferred from Russia in 1997. Degaussing vessel with an NBC citadel and three laboratories



BALTA 10/2008, Laursen/Jarnesen / 1353562

1 BAMBUK (PROJECT 12884) CLASS (AGFHM)

Name	No	Builders	Launched	Commissioned
SLAVUTICH	U 510 (ex-800, ex-SSV 189)	Nikolayev	12 Oct 1990	28 July 1992

Displacement, tons: 5,403 full load
Dimensions, feet (metres): 350.1 x 52.5 x 19.7 (106.7 x 16 x 6)
Main machinery: 2 Skoda 6L2511 diesels; 6,100 hp(m) (4.5 MW); 2 shafts
Speed, knots: 16
Range, n miles: 8,000 at 12 kt
Complement: 178
Missiles: SAM: 2 SA-N-5/8 Grail quad launchers; manual aiming; IR homing to 6 km (3.2 n miles) at 1.5 Mach; altitude to 2,500 m (8,000 ft); warhead 1.5 kg.
Guns: 2-30 mm/65 AK 630; 6 barrels per mounting
Countermeasures: Decoys: 2 PK 16 chaff launchers.
Radars: Navigation; 3 Palm Frond; I-band.
CCA: Fly Screen, I-band
Tacan: 2 Round House.

Comment: Laid down on 20 March 1988. Second of a class built for acoustic research but taken over before completion and used as a command ship by the Ukrainian Navy. The ship is not capable of helicopter operations as previously reported.



SLAVUTICH 10/2008, Laursen/Jarnesen / 1353560

1 SURA (PROJECT 145) CLASS (ABU)

SHOSTKA (ex-Kil 33) U 852

Displacement, tons: 2,370 standard; 3,150 full load
Dimensions, feet (metres): 285.4 x 48.8 x 16.4 (87 x 14.8 x 5)
Main machinery: Diesel-electric; 4 diesel generators; 2 motors; 2,240 hp(m) (1.65 MW); 2 shafts
Speed, knots: 12
Range, n miles: 2,000 at 11 kt
Complement: 40
Cargo capacity: 900 tons cargo; 300 tons fuel for transfer
Radars: Navigation; 2 Don 2; I-band.

Comment: Transferred from Russia in 1997. Heavy lift ship built at Rostock in 1973. Lifting capacity includes one 65 ton derrick and one 65 ton stern cage. Can carry a 12 m DSRV, although this has not been seen in Ukrainian service.



SHOSTKA 10/2008, Laursen/Jarnesen / 1353550

1 YELVA (PROJECT 535M) CLASS (DIVING TENDER) (YDT)

NETISIN (ex-VM 114) U 700

Displacement, tons: 295 full load
Dimensions, feet (metres): 134.2 x 26.2 x 6.6 (40.9 x 8 x 2)
Main machinery: 2 Type 3-D-12A diesels, 630 hp(m) (463 kW) sustained; 2 shafts
Speed, knots: 12.5
Range, n miles: 1,870 at 12 kt
Complement: 30
Radars: Navigation; Spin Trough; I-band.

Comment: Diving tender built in mid-1970s. Transferred from Russia in 1997. Carries a 1 ton crane and diving bell. Operational.



YELVA CLASS (to left) 6/1998, van Ginderen Collection / 0050315

12 HARBOUR CRAFT (YDT/VFL/YPT)

FEODOSIYA U 240 U 241 U 631-634	SKVYRA U 635 U 732 ILLICHIVSK U 783	SHULYAVKA U 853 KHERSON (ex-Monastirishze) U 891 U 926
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Displacement, tons: 42 full load
Dimensions, feet (metres): 72.8 x 12.8 x 4.6 (22.2 x 3.9 x 1.4)
Main machinery: 1 diesel, 300 hp(m) (220 kW) sustained; 1 shaft
Speed, knots: 12
Complement: 8

Comment: Details given are for the Flamingo class harbour patrol craft of which there are four (U 240, U 241, U 634, U 732). There are also four 'Nyrvat1' diving tenders and inshore survey craft (U 631, U 632, U 633, U 635) and one PO 2 class tender (U 926). There is also one Shelon class YPT (U 891), an ambulance craft (U 783) and a flag officers' yacht (U 853).



ILLICHIVSK 7/2003, Lemachko Collection / 1043554



KHERSON 9/2004, Hartmut Ehlers / 1043553

1 SK 620 CLASS (DRAKON) (YH/TFL)

SOKAL U 782

Displacement, tons: 236 full load
Dimensions, feet (metres): 108.3 x 24.3 x 6.9 (33 x 7.4 x 2.1)
Main machinery: 2 56ANM30-H12 diesels, 620 hp(m) (456 kW) sustained, 2 shafts
Speed, knots: 12
Range, n miles: 1,000 at 12 kt
Complement: 14 plus 3 spare

Comment: Built at Wisla Shipyard, Poland as a smaller version of the Petrushka class training ship. Transferred from Russia in 1997. Used as a general purpose craft. The status of two other craft, Akar and Suvar is not known.

2 POZHARNY (PROJECT 364) CLASS (FIREFIGHTING CRAFT) (YTR)

BORSZIV U 722 EVPATORIYA U 728

Displacement, tons: 180 full load
Dimensions, feet (metres): 114.5 x 20 x 6 (34.9 x 6.1 x 1.8)
Main machinery: 2 Type M 50 diesels; 2,200 hp(m) (1.6 MW) sustained; 2 shafts
Speed, knots: 12. **Range, n miles:** 250 at 12 kt
Complement: 26

Comment: A total of 84 built from mid-1950s to mid 1960s. Two craft transferred to Ukraine in 1996 and another 27 remain in Russian naval service



BORSZIV 8/2006, Lemachko Collection / 1159410

TUGS

6 TUGS (ATA/YTM)

KREMENETS U 705 KORETS U 830 KRASNOPEREKOPSK U 947
IZYASLAV U 706 KOVEL U 831 DUBNO U 953

Comment: All transferred from Russia in 1997. U 706 and U 831 are Okhtensky class coastal tugs built in 1958. U 705 is a Goryn class ocean going tug with a bollard pull of 45 tons, U 830 is a Sorum class and U 947 a Prometay class large tug. U 953 is a Sidehole II class harbour tug.



KORETS 10/2008*, Laursen/Jarnesen / 1353557

BORDER GUARD (MORSKA OKHORONA)

Notes: (1) There are plans to build new patrol cutters of the 'Kordon' (47 m) and 'Afalina' (44 m) classes, and new patrol boats of the 'Scif' (26 m) class. These new designs are also on offer for export by the Feodosiya Shipbuilding Association Morye. A 67 m OPV design, by Nikolayev 61 Kommuna shipyard, is also in the export market.
 (2) The river brigades also include four minesweeping boats, and 16 training craft. Not all of these are operational.
 (3) Border Guard vessels are painted dark grey with a thick yellow and thin blue diagonal line on the hull. From July 1999, pennant numbers were changed and are preceded by the letters BG.
 (4) BG 01 Krym is a 45 m craft used for VIP duties.

1 SSV-10 CLASS (SUPPORT SHIP) (AGF)

DUNAI BG 80 (ex-500)

Displacement, tons: 340 full load
Dimensions, feet (metres): 129.3 x 23 x 3.9 (39.4 x 7 x 1.2),
Main machinery: 2 diesels, 2 shafts
Speed, knots: 12
Complement: 20 (4 officers)

Comment: Headquarters ship built in 1940. Taken over from the Russian Danube Flotilla and now acts as the command ship for the river brigades. Based at Odessa.



DUNAI (old number) 4/1998, Ukraine Coast Guard / 0060322

3 PAUK I (MOLNYA) CLASS (PROJECT 1241) (PC)

GRIGORY KUROPATNIKOV BG 50 (ex-PSKR 817) POLTAVA BG 51 (ex-PSKR 813)
GRIGORY GNATENKO BG 52 (ex-PSKR 815)

Displacement, tons: 475 full load
Dimensions, feet (metres): 189 x 33.5 x 10.8 (57.6 x 10.2 x 3.3)
Main machinery: 2 Type M 521 diesels, 16,184 hp(m) (11.9 MW) sustained; 2 shafts
Speed, knots: 32
Range, n miles: 1,260 at 14 kt
Complement: 44 (7 officers)

Guns: 1—3 in (76 mm)/60; 120 rds/min to 15 km (8 n miles); weight of shell 7 kg.
 1—30 mm/65 AK 630; 6 barrels; 3,000 rds/min combined to 2 km.
Torpedoes: 4—16 in (406 mm) tubes. SAET-40; anti-submarine; active/passive homing to 10 km (5.4 n miles); at 30 kt; warhead 100 kg.
A/S mortars: 2 RBU 1200 5-tubed fixed; range 1,200 m; warhead 34 kg
Depth charges: 2 racks (12)
Countmeasures: Decoys: 2 PK 16 or 4 PK 10.
ESM: Brick Plug and Half Hat; radar warning
Weapons control: Hood Wink optronic director.
Radars: Air/surface search: Peel Cone; E/F-band.
 Surface search: Kivach or Pechora or SRN 207; I-band
 Fire control: BassTilt, H/I band
Sonars: FoalTail, VDS (mounted on transom); active attack; high frequency.

Comment: Built at Yaroslavl in the early 1980s and transferred from Russian Black Sea Fleet. Pennant numbers changed from July 1999. All are based at Balaklava.



POLTAVA 9/2004, Hartmut Ehlers / 1043548



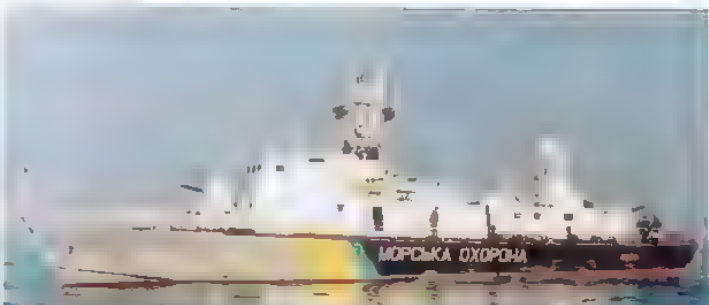
GRIGORY GNATENKO 6/2003, B Lemachko / 05/6460

6 STENKA (TARANTUL) CLASS (PROJECT 205P) (PCF)

DONBAS BG 32 (ex-PSKR 705) BUKOVINA BG 31 (ex-034, ex-PSKR 702)
MIKOLAJV BG 57 (ex-PSKR 722) PODILLIYA BG 62 (ex-036, ex-PSKR 709)
ODESSA BG 61 PAVEL DERZHAVIN BG 63
 (ex-033, ex-PSKR 652) (ex-037, ex-PSKR 720)

Displacement, tons: 253 full load
Dimensions, feet (metres): 129.3 x 25.9 x 8.2 (39.4 x 7.9 x 2.5)
Main machinery: 3 Type M 517 or M 583 diesels; 14,100 hp(m) (10.36 MW); 3 shafts
Speed, knots: 37
Range, n miles: 500 at 35 kt; 1,540 at 14 kt
Complement: 30 (5 officers)
Guns: 4—30 mm/65 (2 twin) AK 230.
Torpedoes: 4—16 in (406 mm) tubes
Depth charges: 2 racks (12).
Radars: Surface search: Pot Drum or Peel Cone, H/I- or E-band
 Fire control: DrumTit, H/I-band
 Navigation: Palm Frond, I-band.
 IFF: High Pole, 2 Square Head.
Sonars: Stag Ear or FoalTail; VDS, high frequency; Hormone type dipping sonar.

Comment: Similar hull to the Osa class. Built in the 1970s and 1980s. Transferred from Russia. Others have been cannibalised for spares. Based at Kerch, Odessa and Balaklava



ODESSA 6/2001, B Lemachko / 0131160

1 MURAVEY (ANTARES) CLASS (PROJECT 133) (PCK)

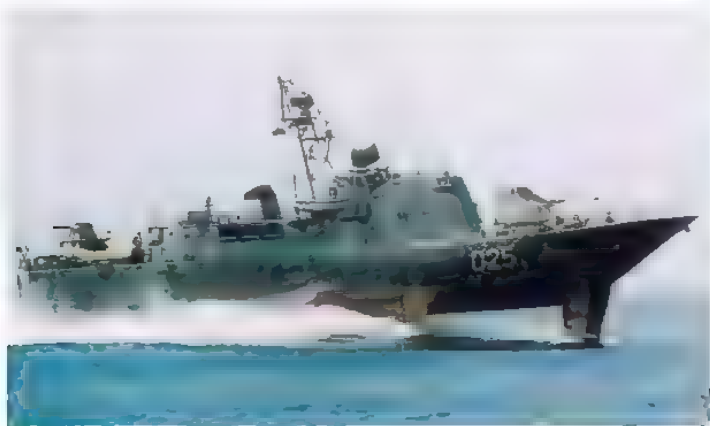
GALICHINA BG 55 (ex-PSKR 115)

Displacement, tons: 212 full load
Dimensions, feet (metres): 126.6 × 24.9 × 6.2; 14.4 (foils) (38.6 × 7.6 × 1.9; 4.4)
Main machinery: 2 gas turbines, 22,600 hp(m) (16.6 MW); 2 shafts
Speed, knots: 60
Range, n miles: 410 at 12 kt
Complement: 30 (5 officers)

Guns: 1–3 in (76 mm)/60; 120 rds/min to 15 km (8 n miles); weight of shell 7 kg.
 1–30 mm/65 AK 630, 6 barrels; 3,000 rds/min combined to 2 km
Torpedoes: 2–16 in (406 mm) tubes; SAET-40; anti-submarine; active/passive homing to 10 km (5.4 n miles) at 30 kt; warhead 100 kg
Depth charges: 6

Weapons control: Hood Wink optronic director**Radars:** Surface search: Peel Cone, E-band**Fire control:** Bass Tilt, H/I-band.**Sonars:** Rat Tail; VDS; active attack, high frequency; dipping sonar.

Comment: Built at Feodosiya in the mid-1980s for the USSR Border Guard. High speed hydrofoil craft. Based at Bataklava.



MURAVEY CLASS

3/1998, Ukraine Coast Guard / 0050319

15 ZHUK (GRIF) CLASS (PROJECT 1400M) (PB)

SIVAS BG 100

BG 101

OBOLON BG 102

DARNITSYA BG 103

BG 104–105

BG 107

BG 109

LJUBOMIR BG 110

BG 111

BG 115–116

BATUTINETS BG 117

ARABAT BG 118

BG 119

Displacement, tons: 39 full load
Dimensions, feet (metres): 78.7 × 16.4 × 3.9 (24 × 5 × 1.2)
Main machinery: 2 Type M 401B diesels, 2,200 hp(m) (1.6 MW); sustained; 2 shafts
Speed, knots: 30
Range, n miles: 1,100 at 15 kt
Complement: 13 (1 officer)
Guns: 2–14.5 mm (twin, fwd) MGs. 1–12.7 mm (aft) MG.
Radars: Surface search: Spin Trough; I-band.

Comment: Russian Border Guard vessels built in the 1980s and transferred in 1996. Pennant numbers changed from the 600 series in mid-1999.



BG 119

9/2004, Hartmut Ehlers / 104351/

4 SHMEL CLASS (PROJECT 1204) (PGR)

LUBNY BG 81 (ex-171) KANIV BG 82 (ex-173) NIZYN BG 83 (ex-172) IZMAYL BG 84 (ex-174)

Displacement, tons: 77 full load
Dimensions, feet (metres): 90.9 × 14.1 × 3.9 (27.7 × 4.3 × 1.2)
Main machinery: 2 Type M 50 diesels; 2,200 hp(m) (1.6 MW) sustained; 2 shafts
Speed, knots: 25
Range, n miles: 600 at 12 kt
Complement: 12 (4 officers)
Guns: 1–3 in (76 mm)/48 (tank turret). 2–14.5 mm (twin) MGs. 5–7.62 mm MGs. 1 BP 6 rocket launcher; 18 barrels.
Mines: Can lay 9
Radars: Surface search: Spint Trough; I band.

Comment: Built at Kerch from 1967–74. Now part of the river brigade having been transferred from the Russian Danube flotilla. New pennant numbers are unconfirmed and there is doubt about the operational status of this class.



LUBNY (old number)

4/1998, Ukraine Coast Guard / 0050373

12 KALKAN (PROJECT 50030) M CLASS (INSHORE PATROL CRAFT) (PBR)BG 07–08 BG 310 BG 333 BG 604 BG 808
BG 303–304 BG 320 BG 503–504 MATROS MIKOLA MUSHNIROV BG 807

Displacement, tons: 8.5 full load
Dimensions, feet (metres): 38.1 × 10.8 × 2.0 (11.6 × 3.3 × 0.6)
Main machinery: 1 Type 475K diesel, 496 hp (370 kW); 1 waterjet
Speed, knots: 34
Complement: 2

Comment: Built by Morye Feodosiya and entered service from 1996. Aluminium hulls and GRP superstructure. Can be armed with 7.62 mm or 12.7 mm MGs and 'Strel'a' shoulder launched missile



BG 07

7/2007, Bob Fildes / 1170242

6 PROJECT 1398B (AIST) CLASS (INSHORE PATROL CRAFT) (PBR)

BG 316 BG 318 BG 329 BG 349 BG 812 BG 814

Displacement, tons: 5 full load
Dimensions, feet (metres): To be announced
Main machinery: To be announced
Speed, knots: To be announced
Complement: To be announced

Comment: Inshore patrol craft originally designed in the 1960s by the Redan boat building yard in St Petersburg.

**United Arab Emirates****Country Overview**

The United Arab Emirates was formed on 2 December 1971 by the federation of seven states (formerly the Trucial States) lying along the east-coast of the Arabian Peninsula. With an area of 30,000 square miles, the country includes Abu Dhabi, Ajman, Dubai, al-Fujairah, Ras al Khaimah, Sharjah and Umm al-Qaiwain. It is bordered to the north by Qatar and to the south by Saudi Arabia. To the east lies Oman which is separated from its small exclave on the Musandam peninsula. There is a coastline of 713 n miles with the Gulf and with the Gulf of Oman. The city of Abu Dhabi is the capital and largest city while Dubai is the principal port and commercial centre. Territorial Seas

(12 n miles) are claimed. An EEZ (200 n miles) has also been claimed but its limits have not been defined.

Following a decision of the UAE Supreme Defence Council on 6 May 1976 the armed forces of the member states were unified and the organisation of the UAE armed forces was furthered by decisions taken on 1 February 1978.

Headquarters Appointments

Commander, Naval Forces:
 Rear Admiral Ahmed Al Sabab Al Tenajji
Deputy Commander, Naval Forces:
 Brigadier Mohammed Mahmoud Al Madini

Personnel

(a) 2008: 2,400 (200 officers) Navy, 1,200 (110 officers) Coast Guard
 (b) Voluntary service

Abu Dhabi (main base).
 Mina Rashid and Mina Jebel Ali (Dubai).
 Mina Saqr (Ras al Khaimah), Mina Sultan (Sharjah),
 Khor Fakkan (Sharjah-East Coast).

SUBMARINES

Notes: Submarine training has been conducted in the past but acquisition of submarines is understood to be a long-term aspiration.

10 SWIMMER DELIVERY VEHICLES (SDV)

Comment: Two classes of indigenously built Long Range Submersible Carriers (LRSC) have been developed by Emirates Marine Technologies. The 7.35 x 0.95 m Class 4 variant, of which approximately ten are believed to have been in service with UAE Special Forces since 1998, is capable of deploying a 200 kg payload. These are likely to be augmented by the larger 9.1 x 1.15 m Class 5 variant which can deliver 450 kg. Constructed of glass and carbon fibres, both variants are manned by two people, have a top speed of 7 kt, a range of 60 n miles at 6 kt and an operational depth of 30 m. They are equipped with depth-sounder, sonar and built-in breathing system.



CLASS 5 LRSC
2001, Emirates Marine Technologies
(A91256)

FRIGATES

1 ABU DHABI (KORTENAER) CLASS (FFGHM)

Name	No	Builders	Laid down	Launched	Commissioned
ABU DHABI (ex-Abraham Crijnsen)	F 01 (ex-F 816)	Koninklijke Maatschappij De Schelde, Flushing	25 Oct 1978	16 May 1981	27 Jan 1983

Displacement, tons: 3,050 standard; 3,630 full load
Dimensions, feet (metres): 428 x 47.9 x 14.1; 20.3 (screws)
(130.5 x 14.6 x 4.3; 6.2)

Main machinery: GOGOG, 2 RR Olympus TM3B gas turbines; 50,880 hp (37.9 MW) sustained
2 RR Tyne RM1C gas turbines; 9,900 hp (7.4 MW) sustained; 2 shafts; cp props

Speed, knots: 30

Range, n miles: 4,700 at 16 kt on Tynes

Complement: 176 (18 officers) plus 24 spare berths

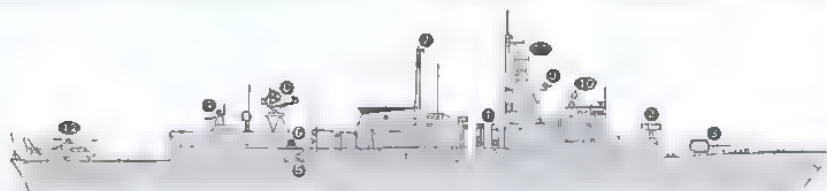
Missiles: SSM: 8 McDonnell Douglas Harpoon (2 quad) launchers ●; active radar homing to 130 km (70 n miles) at 0.9 Mach, warhead 227 kg

SAM: Raytheon Sea Sparrow RIM-7P Mk 29 octuple launcher ●; semi-active radar homing to 16 km (8.5 n miles) at 2.5 Mach; warhead 38 kg; 24 missiles.

Guns: 1 OTO Melara 3 in (76 mm)/62 compact ●; 85 rds/min to 16 km (8.6 n miles) anti-surface; 12 km (6.5 n miles) anti-aircraft; weight of shell 6 kg

1 Signaal SGE-30 Goalkeeper with General Electric 30 mm ●; 7-barrelled; 4,200 rds/min combined to 2 km 2 Oerlikon 20 mm.

Torpedoes: 4—324 mm US Mk 32 (2 twin) tubes ●. Honeywell Mk 46 or Whitehead A-2445 Mod 1.



ABU DHABI

(Scale 1 : 1,200), Ian Sturton / 0121417

Countermeasures: Decoys: 2 Loral Hycor SRBOC Mk 36 6-tube launchers ●; chaff distraction or centroid modes ESM/ECM: Ramses ●; intercept and jammer.
Combat data systems: Signaal SEWACO II action data automation; Link 11.

Radars: Air search: Signaal LW08 ●; D-band; range 264 km (145 n miles) for 2 m² target.
Surface search: Signaal Scout ●; I-band.

Fire control: Signaal STIR ●; I/J-band; range 140 km (76 n miles) for 1 m² target.
Signaal WM25 ●; I/J-band; range 46 km (25 n miles).

Sonars: Westinghouse SQS-505; bow-mounted; active search and attack; medium frequency.

Helicopters: 2 Eurocopter AS 565 Panther ●

Programmes: Contract signed on 2 April 1996 to transfer two Netherlands frigates, after refits by Royal Schelde. First one recommissioned in December 1997, second one in May 1998. Further transfers are unlikely.

Structure: Harpoon SSM and Goalkeeper CIWS has been purchased separately, as have the Scout radars. Additional air conditioning has been fitted.

Operational: Based at Jebel Ali. *Al Emirat* was sold in late 2007 for conversion into a luxury yacht and it is likely that *Abu Dhabi* is also to be decommissioned.



ABU DHABI

7/2007, M Declerck / 1170240

CORVETTES

Notes: Plans to procure a new anti-submarine corvette were announced in March 2009. The ship, to be built by Fincantieri, is to be based on the Comandante class in service in the Italian Navy. The ship is to be delivered in 2011 and there is reported to be an option for a second ship. This order has probably superseded Project Yas.

2 MURAY JIB (MGB 62) CLASS (FSGHM)

Name	No	Builders	Commissioned	Recommissioned
MURAY JIB	P 161 (ex-CM 01, ex-P 6501)	Lürssen, Bremen	Mar 1989	Nov 1990
DAS	P 162 (ex-CM 02, ex-P 6502)	Lürssen, Bremen	May 1989	Jan 1991

Displacement, tons: 630 full load
Dimensions, feet (metres): 206.7 x 30.5 x 8.2
 (63 x 9.3 x 2.6)
Main machinery: 4 MTU 16V 538 TB92 diesels; 13,640 hp(m) (10 MW) sustained; 4 shafts
Speed, knots: 32
Range, n miles: 4,000 at 16 kt
Complement: 43

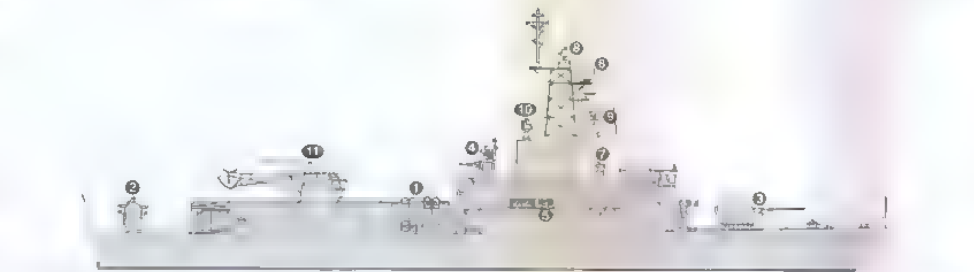
Missiles: SSM: 8 Aerospatiale MM 40 Exocet (Block II) ☉, inertial cruise; active radar homing to 70 km (40 n miles); at 0.9 Mach; warhead 165 kg; sea-skimmer
SAM: Thomson-CSF modified Crotale Navale octuple launcher ☉; radar guidance; IR homing to 13 km (7 n miles) at 2.4 Mach; warhead 14 kg.
Guns: 1 OTO Melara 3 In (76 mm) 62 Super Rapid ☉; 120 rds/min to 16 km (8.7 n miles); weight of shell 8 kg
 1 Signaal Goalkeeper with GE 30 mm 7-barrelled ☉; 4,200 rds/min combined to 2 km
 2—12.7 mm MGs.
Countermeasures: Decoys: 2 Degaie launchers ☉; IR flares and chaff
ESM/ECM: Racal Cutlass/Cygnus ☉; intercept/jammer
Weapons control: CSSE Najir optronic director ☉
Radars: Air/surface search Bofors Ericsson Sea Giraffe 50HC ☉; G-band.
Navigation: Racal Decca 1226, I-band.
Fire control: Bofors Electronic 9LV 223 ☉; J-band (for gun and SSM)
 Thomson-CSF DRBV 51C ☉; J-band (for Crotale).

Helicopters: 1 Aerospatiale Alouette SA 316 ☉.

Programmes: Ordered in late 1986. Similar vessels to Bahrain craft. Delivery in October 1991.

Structure: Lürssen design adapted for the particular conditions of the Gulf. This class has good air defence and a considerable anti-ship capability. The helicopter hangar is reached by flight deck lift.

Operational: Pennant numbers changed in 2002.



MURAY JIB

(Scale 1 : 600), Ian Sturton / 0080321



MURAY JIB

5/2003, A Sharma / 0567564



MURAY JIB

3/2005, Ships of the World / 1127284

0 + 6 BAYNUNAH CLASS (FAST ATTACK CRAFT—MISSILE) (PGGMH)

Name	No	Builders	Laid down	Launched	Commissioned
-	-	CMN, Cherbourg	8 Sep 2005	2009	2010
-	-	Abu Dhabi Shipbuilding	6 July 2006	2010	2011
-	-	Abu Dhabi Shipbuilding	21 June 2007	2010	2011
-	-	Abu Dhabi Shipbuilding	5 Dec 2007	2010	2012
-	-	Abu Dhabi Shipbuilding	26 Oct 2008	2011	2013
-	-	Abu Dhabi Shipbuilding	2009	2012	2014

Displacement, tons: 630 full load

Dimensions, feet (metres): 229.6 x 36.1 x 9.2
(70.0 x 11.0 x 2.8)

Main machinery: 4 MTU 12V 595 TE 90 diesels; 22,500 hp
(16.8 MW); 3 (2-112 SII, 1-125 SII) Kamewa waterjets

Speed, knots: 32

Range, n miles: 2,400 at 15 kt

Complement: 37 (accommodation for 45)

Missiles: SSM: 8 MBDA MM 40 Block III; inertial cruise; active radar homing to 70 km (40 n miles) at 0.9 Mach; warhead 165 kg.

SAM: Raytheon Evolved Sea Sparrow RIM 162 Mk 56 8-cell VLS; semi-active homing to 18 km (9.7 n miles) at 3.6 Mach; warhead 38 kg.

1 GMLS Mk 49 RAM RIM-116B 21-cell launcher; passive IR/anti-radiation homing to 9.8 km (5.2 n miles) at 2.5 Mach; warhead 9.1 kg. 21 rounds.

Guns: 1 OTO Melara 3 in (76 mm)/62 Super Rapid; 120 rds/min to 16 km (8.7 n miles) weight of shell 6 kg. 2 Rheinmetall MLG 27 mm.

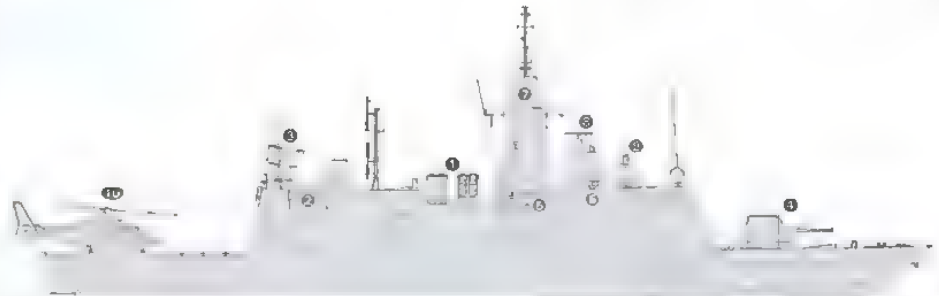
Countermeasures: Decoys: 2 Rheinmetall MASS 2L launchers.

RESM Electronics

Combat data systems: Alenia Marconi Systems IPN S. Link 11 and Link Y Mk 2

Weapons control: Sagem-EOMS optronic director

Radars: Air/surface search: Ericsson Sea Giraffe; G/H-band



BAYNUNAH CLASS

(Scale 1 : 600), Ian Sturton / 1305263

Surface search: Terma Scantar 2001; I-band. Fire control: 1 Alenia Marconi NA-25/XM; I-band. Sonars: L-3 ELAC Nautik NDS 3070 mine avoidance sonar

Helicopters: 1 Eurocopter AS 565 Panther

Comment: Project Baynunah succeeded Project LEWA 1 for the procurement of patrol boats and is a joint venture between Abu Dhabi Shipbuilding (ADSB) (Prime

Contractor) and CMN of France. Systems integration is being undertaken by Abu Dhabi Systems Integration, a joint venture between ADSB and Selex Sistemi Integrati. Contract signed 28 December 2003 for four ships and option for a further two exercised in 2005. Based on a CMN BR67 design, it has a steel hull and aluminium superstructure. The first of class is under construction at Cherbourg while CMN is providing materials for follow-on vessels to be built by ADSB.

SHIPBORNE AIRCRAFT

Numbers/Type: 4 Aerospatiale SA 316/319S Alouette.

Operational speed: 113 kt (210 km/h).

Service ceiling: 10,500 ft (3,200 m).

Range: 290 n miles (540 km).

Role/Weapon systems: Reconnaissance and general purpose helicopters. Sensors: radar. Weapons: Unarmed.

Numbers/Type: 7 Eurocopter AS 565SB Panther.

Operational speed: 165 kt (305 km/h).

Service ceiling: 16,700 ft (5,100 m).

Range: 483 n miles (895 km).

Role/Weapon systems: Ordered in March 1995 and delivered from 2001. Sensors: Thomson-CSF Agnion radar. Weapons: ASV; Aerospatiale AS 15TT ASM.



COUGAR

6/1994 0080927

PATROL FORCES

Notes: Three Fast Intercept Craft are reported to be in service.

6 ARDHANA CLASS (LARGE PATROL CRAFT) (PB)

Name	No	Builders	Commissioned
ARDHANA	P 3301 (ex-P 1101)	Vosper Thornycroft	24 June 1975
ZURARA	P 3302 (ex-P 1102)	Vosper Thornycroft	14 Aug 1975
MURBAN	P 3303 (ex-P 1103)	Vosper Thornycroft	16 Sep 1975
AL GHULLAN	P 3304 (ex-P 1104)	Vosper Thornycroft	16 Sep 1975
RADOOM	P 3305 (ex-P 1105)	Vosper Thornycroft	1 July 1976
GHANADHAN	P 3306 (ex-P 1106)	Vosper Thornycroft	1 July 1976

Displacement, tons: 110 standard; 175 full load

Dimensions, feet (metres): 110 x 21 x 8.6 (33.5 x 6.4 x 2)

Main machinery: 2 Paxman 12CM diesels; 5,000 hp (3.73 MW) sustained; 2 shafts

Speed, knots: 30

Range, n miles: 1,800 at 14 kt

Complement: 26

Guns: 2 Oerlikon/BMARC 30 mm/75 A32 (twin); 650 rds/min to 10 km (5.6 n miles); weight of shell 1 kg or 0.35 kg.

1 Oerlikon/BMARC 20 mm/80 A41A; 800 rds/min to 2 km.

2—51 mm projectors for illuminants

Radars: Surface search, Racal Decca TM 1626; I-band.

Comment: A class of round bilge steel hull craft. Originally operated by Abu Dhabi. New pennant numbers in 1996. To be replaced by the Project Baynunah craft from approximately 2009.



AL GHULLAN

2/1997, A Sharma / 0567566



AS 565SB

10/2002, Eurocopter/Patrick Penna / 0576393

LAND-BASED MARITIME AIRCRAFT

Notes: (1) Procurement of an AEW capability is under consideration. Contenders include the Northrop Grumman E-2D and the Boeing 737

(2) Acquisition of four maritime patrol aircraft is under consideration. The EADS-CASA C-295M was selected in March 2001 but the contract was not finalised. Another possibility is the Alenia Aeronautica ATR-72.

Numbers/Type: 2 Pilatus Britten-Norman Maritime Defender.

Operational speed: 150 kt (280 km/h).

Service ceiling: 18,900 ft (5,760 m).

Range: 1,500 n miles (2,775 km).

Role/Weapon systems: Coastal patrol and surveillance aircraft although seldom used in this role. Sensors: Nose-mounted search radar, underwing searchlight. Weapons: Underwing rocket and gun pods.

Numbers/Type: 5 Aerospatiale AS 332B/Super Puma.

Operational speed: 150 kt (280 km/h).

Service ceiling: 15,090 ft (4,600 m).

Range: 335 n miles (620 km).

Role/Weapon systems: Former transport helicopters. Five updated from 1995 with ASW equipment. Two others used as VIP transports. Sensors: Omara ORB 30 radar, Thomson Marconi HS 312 dipping sonar. Weapons: ASV; one AM 39 Exocet ASM. ASW; A 2445 torpedoes and mines.

2 MUBARRAZ CLASS
(FAST ATTACK CRAFT—MISSILE) (PGGFM)

Name	No	Builders	Commissioned
MUBARRAZ	P 141 (ex-P 4401)	Lürssen, Bremen	Aug 1990
MAKASIB	P 142 (ex-P 4402)	Lürssen, Bremen	Aug 1990

Displacement, tons: 260 full load
Dimensions, feet (metres): 147.3 x 23 x 7.2 (44.9 x 7 x 2.2)
Main machinery: 2 MTU 20V 538TB93 diesels; 9,370 hp(m) (6.9 MW) sustained; 2 shafts
Speed, knots: 40 **Range, n miles:** 500 at 38 kt
Complement: 40 (5 officers)

Missiles: SSM 4 Aerospatiale MM 40 Exocet; inertial cruise; active radar homing to 70 km (40 n miles) at 0.9 Mach; warhead 165 kg; sea-skimmer.
SAM: 1 Matra Sadral sextuple launcher; Mistral; IR homing to 4 km (2.2 n miles); warhead 3 kg.
Guns: 1 OTO Melara 3 in (76 mm)/62 Super Rapid; 120 rds/min to 16 km (8.7 n miles); weight of shell 6 kg
 2 Rheinmetall 20 mm.
Countermeasures: Decoys: 2 Degaie launchers; IR flares and chaff.
ESM/ECM: Racal Cutlass/Cygnus; intercept/jammer.
Weapons control: CSEE Najir optronic director (for SAM).
Radars: Air/surface search: Bofors Ericsson Sea Giraffe 50HC, G-band.
Navigation: Racal Decca 1226, I-band
Fire control: Bofors Electronic 9LV 223; J-band (for gun and SSM).

Programmes: Ordered in late 1986 from Lürssen Werft at the same time as the two Type 62 vessels. Delivered in February 1991.
Modernisation: Mid-life refits for both vessels to be undertaken by Abu Dhabi Shipbuilding from 2004.
Structure: This is a modified TNC 38 design, with the first export version of Matra Sadral. The radome houses the jammer. The 20 mm guns are mounted on the bridge deck aft of the mast.



MAKASIB 2/2002, A Sharma / 0534063



MUBARRAZ 9/2000 / 0121415

6 BAN YAS (TNC 45) CLASS
(FAST ATTACK CRAFT—MISSILE) (PGGF)

Name	No	Builders	Commissioned
BAN YAS	P 151 (ex-P 4501)	Lürssen Vegesack	Nov 1980
MARBAN	P 152 (ex-P 4502)	Lürssen Vegesack	Nov 1980
RODDM	P 153 (ex-P 4503)	Lürssen Vegesack	July 1981
SHAHEEN	P 154 (ex-P 4504)	Lürssen Vegesack	July 1981
SAGAR	P 155 (ex-P 4505)	Lürssen Vegesack	Sep 1981
TARIF	P 156 (ex-P 4506)	Lürssen Vegesack	Sep 1981

Displacement, tons: 260 full load
Dimensions, feet (metres): 147.3 x 23 x 8.2 (44.9 x 7 x 2.5)
Main machinery: 4 MTU 16V 538TB92 diesels; 13,640 hp(m) (10 MW) sustained; 4 shafts
Speed, knots: 40
Range, n miles: 500 at 38 kt
Complement: 40 (5 officers)

Missiles: SSM: 4 Aerospatiale MM 40 Exocet Block III; inertial cruise, active radar homing to 70 km (40 n miles) at 0.9 Mach; warhead 165 kg, sea-skimmer.
Guns: 1 OTO Melara 3 in (76 mm)/62; 80 rds/min to 16 km (8.7 n miles); weight of shell 6 kg.
 2 Breda 40 mm/70 (twin), 300 rds/min to 12.5 km (6.8 n miles); weight of shell 0.96 kg.
 2—7.62 mm MGS.
Countermeasures: Decoys: 1 CSEE trainable Degaie; IR flares and chaff
ESM: Thales DR 3000; intercept.
Combat data systems: Saab Systems 9LV Mk 3E CETRIS.
Weapons control: Sagem EOMS optronic tracker.
Radars: Surface search: Bofors Ericsson Sea Giraffe 50HC, G-band.
Navigation: Signaal Scout; I-band
Fire control: Philips 9LV 200 Mk 2/3; J-band.

Programmes: Ordered in late 1977. First two shipped in September 1980 and four more in Summer 1981. This class was the first to be fitted with MM 40.
Modernisation: Upgrade contract for ship and propulsion systems given to Newport News. Work done by Abu Dhabi Shipbuilding Company. First pair completed in late 1998, second pair in mid-1999 and the third pair in mid-2000. Further modernisation is being undertaken at ADSB under Project Tarif-45. The upgrade includes replacement of the combat data system with the Saab Systems 9LV Mk 3E, upgrade of the 9LV 200 radar with TV, IR and laser range-finder modules and modification of the Sea Giraffe surveillance radar. Exocet is being upgraded to Block III. The programme began in February 2004 and the first ship, *Ban Yas*, was completed in 2006.



TARIF 3/2008*, Guy Toremans / 1353501

20 RAIDING CRAFT (PBF)

Displacement, tons: 4 full load
Dimensions, feet (metres): 27.9 x 9.7 x 2 (8.5 x 3 x 0.6)
Main machinery: 2 outboards, 450 hp (336 kW)
Speed, knots: 38
Complement: 1 plus 11 troops

Comment: There are eight Arctic 28 RIBs ordered from Halmatic, Southampton in June 1992 and delivered in mid-1993. GRP hulls. Speed given is fully laden. Used by Special Forces. There are also 12 Al-Shaali type ordered in 1994 and built in Dubai.



ARCTIC 3/1995, H M Steele / 0080976

MINE WARFARE FORCES

2 FRANKENTHAL CLASS (TYPE 332)
(MINEHUNTERS—COASTAL) (MHC)

Name	No	Builders	Launched	Commissioned
AL MURJAN (ex-Frankenthal)	M 02 (ex-M 1066)	Lürssenwerft	6 Feb 1992	16 Dec 1992
AL HASBAH (ex-Weiden)	M 01 (ex-M 1060)	Abeking & Rasmussen	14 May 1992	30 Mar 1993

Displacement, tons: 650 full load
Dimensions, feet (metres): 178.8 x 30.2 x 8.5 (54.5 x 9.2 x 2.6)
Main machinery: 2 MTU 16V 396TB84 diesels; 5,550 hp(m) (4.08 MW) sustained; 2 shafts, cp props, 1 motor (minehunting)
Speed, knots: 18
Complement: 37 (5 officers)

Missiles: SAM: 2 Stinger quad launchers.
Guns: 1 Bofors 40 mm/70; being replaced by Mauser 27 mm
Combat data systems: STN MWS 80-4
Radars: Navigation: Raytheon SPS-64, I-band.
Sonars: Atlas Elektronik DSQS-11M; hull-mounted; high frequency.

Programmes: Originally ordered for the German Navy in September 1988 with STN Systemtechnik Nord as main contractor. *Al Murjan* laid down at Lürssen 6 December 1989. Agreement for the purchase of both ships to UAE concluded in early 2006. Following decommissioning from the German Navy and recommissioning in the UAE Navy on 28 June 2006, both ships undertook refit work at the Neue Jadewerft shipyard in Wilhelmshaven before being transported to Abu Dhabi. *Al Hasbah* arrived in August 2006 and *Al Murjan* in Autumn 2006. A training programme for the crews was conducted prior to transfer.

Structure: Built of amagnetic steel with same hull, similar superstructure and high standardisation as Type 333 and 352 in service with the German Navy. Equipped with two STN Systemtechnik Nord Penguin-83 drones with sonar, TV cameras and two countermining charges.

Operational: Weapons and sensors are as for the ships in German service and may be different.



AL MURJAN 9/2006, Frank Findler / 1167451

AMPHIBIOUS FORCES

Notes: There are also four civilian LCM ships, *El Nasirah 2*, *Baava 1*, *Makasib* and *Ghagha II*. Two Serna class LCUs are also civilian owned.

4 LCT

L 61-L 64 (ex-6401-6404)

Displacement, tons: 850 approx
Dimensions, feet (metres): 210 × 39.4 × 8.7 (64.0 × 12.0 × 2.7)
Main machinery: 2 Caterpillar diesels; 3,620 hp (2.7 MW); 2 shafts
Speed, knots: 12
Guns: 2—12.7 mm MGs.

Comment: Built at Abu Dhabi Naval Base and completed in 1996-99. Details are incomplete. Pennant numbers changed in 2001.



L 62 3/2006, *Ships of the World* / 1127282

3 LANDING CRAFT (LCT)

L 65-67

Displacement, tons: 850 approx
Dimensions, feet (metres): 210 × 39.4 × 8.7 (64.0 × 12.0 × 2.7)
Main machinery: 2 Caterpillar 3508 diesels, 3,620 hp (2.7 MW); 2 shafts
Speed, knots: 11
Complement: 19 (plus 56 troops)
Military lift: military vehicles

Comment: Fully designed in the UAE, the vessels were ordered from ADSB in November 2001 and laid down in early 2002 and delivery reportedly started in 2004. Details are speculative and based on the L 61 class. Weapons are expected to include medium calibre machine guns.



L 67 3/2008, *Guy Toremans* / 1353600

12 + 12 TRANSPORTBÅT 2000 (LCP)

P 201-212

Displacement, tons: 43 full load
Dimensions, feet (metres): 79.4 × 16.7 × 3.6 (24.2 × 5.1 × 1.1)
Main machinery: 2 MTU 12V 2000 diesels; 2,660 hp (2.0 MW); 2 Rolls Royce FF 550 waterjets
Speed, knots: 35
Complement: 3
Military lift: 42 troops or 10 tons
Guns: 2—12.7 mm MGs.
Raders: Navigation: Terna; I-band.

Comment: Project 'Ghannatha' was for 12 amphibious transport craft based on the Transportbåt 2000 craft in service with the Royal Swedish Navy. Three craft were constructed at the Djupviks yard in Sweden while ADSB built the other nine. Details of the aluminium craft are based on those in Swedish service. Delivery was completed in 2004. An order for a further 12 missile-armed craft was made in March 2009. These are to be stretched (26.5 m) variants equipped with MBDA Marte Mk 2 missiles. The original 12 craft are to be converted into two variants. Six are to be converted to a mortar-firing role and six to a gunboat role.



P 210 3/2008, *Michael Nitz* / 1353499

3 AL FEYI CLASS (LCU)

AL FEYI L 51 (ex-5401) DAYYINAH L 52 (ex-5402) JANANAH L 53 (ex-5403)

Displacement, tons: 650 full load
Dimensions, feet (metres): 164 × 36.1 × 9.2 (50 × 11 × 2.8)
Main machinery: 2 diesels; 1,248 hp (931 kW); 2 shafts
Speed, knots: 11
Range, n miles: 1,800 at 11 kt
Complement: 10
Military lift: 4 vehicles
Guns: 2 12.7 mm MGs

Comment: *Al Feyi* built by Siang Huet, Singapore; completed 4 August 1967. The other pair built by Argos Shipyard, Singapore to a similar design and completed in December 1988. Used mostly as transport ships. Pennant numbers changed in 2001.



DAYYINAH (old number) 6/1996 / 0080929

2 LANDING CRAFT (LCU)

L 41 UMM AL NARR L 42

Measurement, tons: 380 dwt
Dimensions, feet (metres): 145.5 × 32.8 × 7.2 (44.4 × 10.0 × 2.2)
Main machinery: 2 Caterpillar CAT 3406TA diesels; 730 hp (544 kW); 2 shafts
Speed, knots: 10
Range, n miles: 1,000 at 8.5 kt
Complement: 11 (3 officers) plus 40 troops
Military lift: Military vehicles

Comment: Fully designed in the UAE, these multimission landing craft were constructed by Abu Dhabi Shipbuilding in marine grade steel. The craft are equipped with three hydraulic deck cranes. The first ship was delivered to the navy in mid-2004 and the second to UAE Special Forces Command on 22 June 2006.



UMM AL NARR 6/2006, *Abu Dhabi Shipbuilding* / 1159231

4 FAST SUPPLY VESSELS (LCP)

L 22-25

Displacement, tons: 53 standard; 73 full load
Dimensions, feet (metres): 85.3 x 17.7 x 4.3 (26.0 x 5.4 x 1.3)
Main machinery: 2 MTU 16V 2000 M70 diesels; 2,775 hp (2.1 MW); 2 Rolls Royce FF 550 waterjets
Speed, knots: 32
Complement: 3
Military lift: 2-3 m containers plus 18 troops
Guns: 2-12.7 mm MGs.

Comment: A contract for the construction of four fast supply vessels was made with Abu Dhabi Shipbuilding on 27 June 2004. The aluminium craft were built to a SwedeShip Marine design, developed in conjunction with the Swedish Defence Material Administration. The principal design features include a hydraulically operated bow door and space for storage of two fully loaded 3 m containers or a vehicle. An NBC citadel includes the wheelhouse and medical quarters. The latter can accommodate four stretcher cases or 18 fully equipped troops. All four vessels had been delivered by March 2007.



L 22 2/2007, Patrick Allen/Jane's / 1311306



ANNAD 6/1994 D080930

2 HARBOUR TUGS (YTM)

TEMSAH A 51 UGAAB A 52

Displacement, tons: 90 full load
Dimensions, feet (metres): 54.1 x 16.4 x 5.9 (16.5 x 5.0 x 1.8)
Main machinery: 2 Volvo Penta TAMD-122A diesels; 760 hp (560 kW); 2 shafts

Comment: Ordered from Damen shipyard, Gorinchem in 1996 and entered service in 1998. Main role to attend Kortenaer class frigates. Equipped with fire-fighting platform abaft the mainmast.



TEMSAH 7/2007, M Doelrick / 1170241

AUXILIARIES

1 DIVING TENDER (YDT)

AL GAFFA D 1051

Displacement, tons: 100 full load
Dimensions, feet (metres): 103 x 22.6 x 3.6 (31.4 x 6.9 x 1.1)
Main machinery: 2 MTU 12V 396 TB93 diesels, 3,260 hp(m) (2.4 MW) sustained; 2 waterjets
Speed, knots: 26
Range, n miles: 390 at 24 kt
Complement: 6

Comment: Ordered from Croatia in December 1985 for Abu Dhabi and delivered in July 1987. GRP hull. Used primarily for mine clearance but also for diving training, salvage and SAR. Fitted with a decompression chamber and diving bell. Lengthened version of Italian *Alicide Pedretti*.



AL GAFFA 3/1997 / 0019363

1 COASTAL TUG (YTB)

ANNAD A 3501

Displacement, tons: 795 full load
Dimensions, feet (metres): 114.8 x 32.2 x 13.8 (35 x 9.8 x 4.2)
Main machinery: 2 Caterpillar 3606TA diesels; 4,180 hp (3.12 MW) sustained; 2 shafts, cp props; bow thruster; 362 hp (266 kW)
Speed, knots: 14
Range, n miles: 2,500 at 14 kt
Complement: 14 (3 officers)
Radars: Navigat.on: Racal Decca 2070; I-band

Comment: Built by Dunston Hessta, and completed in April 1989. Bollard pull, 55 tons. Equipped for SAR and is also used for logistic support.



POLICE BARRACUDA 1/2002, A Sharma / 0534111

COAST GUARD

Notes: (1) Under control of Minister of Interior. In addition to the vessels listed below there is a number of Customs and Police launches including Barracuda craft, three Swedish Boghammar 13 m craft of the same type used by Iran and delivered in 1985, two Baglietto police launches acquired in 1988, about 10 elderly Dhafeer and Spear class of 12 and 8 m respectively, and two Halmatic Arun class Pilot craft delivered in 1990-91; some of these launches carry light machine guns.

(2) Plans to procure a fleet of 34 fast intercept craft for the UAE Critical National Infrastructure Authority were announced in March 2009. Capable of 50 kt, the craft are to be based on the Yonca-Onuk MRTIP 16 design, which are extended versions of the Kaan 15 craft in service with the Turkish Coast Guard. The first 12 craft are to be built by Yonca-Onuk at Tuzla, Turkey, and the remaining 22 by Abu Dhabi Shipbuilding. Delivery of the first craft is expected in 2010.

2 PROTECTOR CLASS (WPB)

101 (ex-1101) 102 (ex-1102)

Displacement, tons: 180 full load
Dimensions, feet (metres): 108.3 x 22 x 6.9 (33 x 6.7 x 2.1)
Main machinery: 2 MTU 16V 396TE94 diesels, 5,911 hp(m) (4.35 MW) sustained; 2 shafts; LIPS propa
Speed, knots: 33
Complement: 14
Guns: 1 Mauser 20 mm, 2—12.7 mm MGs.
Weapons control: 1 SAGEM optronic director
Radars: Surface search; I-band.

Comment: Ordered from FBM Marine, Cowes in 1998. Aluminium hulls. First one laid down 15 June 1998. Both delivered in late 1999. More may be built by Abu Dhabi Shipbuilders. Similar to Bahamas and Chilean naval craft.



PROTECTOR 101 (old number)

11/1999, UAE Coast Guard / 0106675

5 CAMCRAFT 77 ft (COASTAL PATROL CRAFT) (WPB)

753-757

Displacement, tons: 70 full load
Dimensions, feet (metres): 76.8 x 18 x 4.9 (23.4 x 5.5 x 1.5)
Main machinery: 2 GM 12V-71TA diesels; 840 hp (627 kW) sustained; 2 shafts
Speed, knots: 25
Complement: 8
Guns: 2 Lawrence Scott 20 mm (not always embarked)
Radars: Surface search; Racal Decca; I-band.

Comment: Completed 1975 by Camcraft, New Orleans. Not always armed.



CAMCRAFT 755

6/1997 / 0019364

16 CAMCRAFT 65 ft (COASTAL PATROL CRAFT) (WPB)

650-665

Displacement, tons: 50 full load
Dimensions, feet (metres): 65 x 18 x 5 (19.8 x 5.5 x 1.5)
Main machinery: 2 MTU 6V 396TB93 diesels; 1,630 hp(m) (1.2 MW) sustained; 2 shafts (in 14)
 2 Detroit 8V-92TA diesels; 700 hp (522 kW) sustained; 2 shafts (in 2)
Speed, knots: 25
Complement: 8
Guns: 1 Oerlikon 20 mm GAM BO1
Radars: Surface search; Racal Decca; I-band.

Comment: Built by Camcraft, New Orleans and delivered by September 1978.



CAMCRAFT 655

12/2001, A Sharma / 0534118

6 BAGLIETTO GC 23 TYPE (COASTAL PATROL CRAFT) (WPBF)

758-763

Displacement, tons: 50.7 full load
Dimensions, feet (metres): 78.7 x 18 x 3 (24 x 5.6 x 0.9)
Main machinery: 2 MTU 12V 396TB93 diesels; 3,280 hp(m) (2.4 MW) sustained; 2 Kamewa water-jets
Speed, knots: 43
Range, n miles: 700 at 20 kt
Complement: 9
Guns: 1 Oerlikon 20 mm, 2—7.62 mm MGs.
Radars: Surface search; I-band.

Comment: Built by Baglietto, Varazze. First two completed in March and May 1986, second pair in July 1987 and two more in 1988. All were delivered to UAE Coast Guard in Dubai.



BAGLIETTO 758

1987, UAE Coast Guard / 0080934

3 BAGLIETTO 59 ft (COASTAL PATROL CRAFT) (WPBF)

501-503

Displacement, tons: 22 full load
Dimensions, feet (metres): 59.4 x 13.9 x 2.3 (18.1 x 4.3 x 0.7)
Main machinery: 2 MTU 12V 183TE92 diesels; 2 shafts
Speed, knots: 40
Complement: 6
Guns: 2—7.62 mm MGs.
Radars: Surface search; Racal Decca; I-band.

Comment: Ordered in 1992 and delivered in late 1993.



BAGLIETTO 503

10/1993, UAE Coast Guard / 0080935

For details of the latest updates to *Jane's Fighting Ships* online and to discover the additional information available exclusively to online subscribers please visit
jfs.janes.com

6 WATERCRAFT 45 ft (COASTAL PATROL CRAFT) (PB)

Displacement, tons: 25 full load
Dimensions, feet (metres): 45 x 14.1 x 4.6 (13.7 x 4.3 x 1.4)
Main machinery: 2 MAN D2542 diesels; 1,300 hp(m) (956 kW); 2 shafts
Speed, knots: 26
Range, n miles: 380 at 18 kt
Complement: 5
Guns: Mounts for 2—7.62 mm MGs.
Radars: Surface search: Racal Decca; I-band.

Comment: Ordered from Watercraft, UK in February 1982. Delivery in early 1983. Four deleted. Two similar craft built by Halmatic were delivered to the Dubai Port Authority in October 1997.



WATERCRAFT 45 ft 1984, UAE Coast Guard / 0506115

35 HARBOUR PATROL CRAFT (PB/YDT)

Comment: The latest are 11 Shark 33 built by Shaali Marine, Dubai and delivered in 1993-94. The remainder are a mixture of Barracuda 30 ft and FPB 22 ft classes. All are powered by twin outboard engines and most carry a 7.62 mm MG and have a Norden radar. There are also two Rotork craft used as diving tenders. Customs boats are operated separately by each of the UAE states. Some have been built for Kuwait.



BARRACUDA 271 12/2001, A Sharma / 0534117

0 + 12 AL SABER CLASS (PATROL BOATS) (PB)

Displacement, tons: 100
Dimensions, feet (metres): 111.5 x 23.0 x 5.2 (34.0 x 7.0 x 1.6)
Main machinery: 2 MTU diesels; 2 shafts
Speed, knots: 25
Range, n miles: 440 at 12 kt
Complement: 7
Guns: 1—25 mm, 1—12.7 mm MG.
Electro-optic systems: To be announced.
Radars: Surface search/navigation: I-band
Navigation: I-band.

Comment: The contract for the construction of 12 patrol craft was announced on 6 March 2008. The vessels, to be constructed in composite materials, are to be built by Abu Dhabi Shipbuilding. The design features a stern-ramp to enable the accommodation of a fast intercept craft in a mother-daughter arrangement. The vessels are to be delivered from 2009.



AL SABER CLASS 6/2008*, ADSB / 1353498

54 SEASPRAY ASSAULT BOATS (PB)

Displacement, tons: To be announced
Dimensions, feet (metres): 31.2 x 10.2 x 1.6 (9.5 x 3.1 x 0.5)
Main machinery: 2 outboards, 500 hp (375 kW)
Speed, knots: 50
Range, n miles: 450 at 17 kt
Complement: 5
Radars: Navigation: I-band.

Comment: Initial batch of 24 craft delivered in September 2003. A further thirty were ordered in early 2004. Designed by Sea Spray Aluminium Boats.



SEASPRAY 2/2004, ADSB / 0563487

1 + 11 HALMATIC WORK BOATS (PB)

Displacement, tons: 13.3
Dimensions, feet (metres): 52.6 x 13.1 x 2.3 (16.0 x 4.0 x 0.7)
Main machinery: 2 diesels, 2 waterjets
Speed, knots: 24
Complement: 5
Radars: Navigation: I-band.

Comment: Construction of 12 craft started at Abu Dhabi Shipbuilding Composites in mid-2006. The first of class was completed by March 2007 but the delivery schedule for the remainder has not been confirmed. Based on the VT Halmatic Sea Keeper design with an asymmetric catamaran hull, the craft are highly manoeuvrable and are capable of carrying a 10 tonne payload.



WORK BOAT 2/2007, Patrick Allen/Jane's / 1321982

United Kingdom



Country Overview

The United Kingdom of Great Britain and Northern Ireland is situated in north-western Europe. It has a coastline of 6,700 n miles with the English Channel, the North Sea, the Irish Sea and the Atlantic Ocean. With an area of 93,341 square miles, it comprises the island of Great Britain (England, Scotland and Wales) and the six counties of Ulster that remained a constituent part of UK after Irish independence in 1922. It also includes the Isle of Wight, Anglesey, the Scilly, Orkney, Shetland, and Hebridean archipelagos and numerous smaller islands. The Isle of Man and the Channel Islands are direct dependencies but are not part of the UK. Other dependent territories are: Anguilla, Bermuda; British Antarctic Territory; British Indian Ocean Territory (BIOT); British Virgin Islands; Cayman Islands; Cyprus Sovereign Base Areas; Falkland Islands; Gibraltar; Montserrat; Ducie, Henderson and Oeno; St Helena and Dependencies (Ascension and Tristan da Cunha); South Georgia and South Sandwich Islands and the Turks and Caicos Islands. London is the capital, largest city and a major port. Major oil ports are at Forth, Sullom Voe and Milford Haven and non-oil ports at Tees and Hartlepool, Grimsby and Immingham, Southampton, Liverpool, Felixstowe, Medway, and Dover. Territorial seas of 12 n miles are claimed around the UK mainland and many dependencies. An EEZ (200 n miles) is claimed for Bermuda, South Georgia and South Sandwich Islands and Pitcairn. A Fishery Zone (200 n miles) is claimed for the mainland and some dependencies.

Headquarters Appointments

Chief of the Naval Staff and First Sea Lord:

Admiral Sir Mark Stanhope, KCB, OBE

Commander-in-Chief, Fleet:

Admiral Sir Trevor Soar, KCB

Chief of Naval Personnel and Commander-in-Chief, Naval Home Command:

Vice Admiral A M Messay, CBE

Chief of Material (Fleet):

Vice Admiral A D H Matthews, CB

Controller of the Navy:

Rear Admiral A M Hussain

Assistant Chief of the Naval Staff:

Rear Admiral R G Cooling

Flag Officers, Operational and National Commanders

Chief of Joint Operations:

Lieutenant General Sir Nick Houghton, KCB, CBE

Deputy Commander-in-Chief, Fleet:

Vice Admiral R J Ibbotson, DSC

Chief of Staff (Capability) (Commandant General Royal Marines):

Major General A Salmon, OBE

Commander, Operations (Rear Admiral Submarines):

Rear Admiral M Anderson

Commander, UK Maritime Forces:

Rear Admiral P A Jones

Flag Officer, Sea Training:

Rear Admiral C A Snow

Flag Officer, Scotland, Northern England and Northern Ireland:

Rear Admiral M B Alabaster

Commander, British Forces Cyprus:

Air Vice-Marshal R Lacey, CBE

Commander United Kingdom Task Group:

Commodore D L Potts

Commander, UK Maritime Component, Bahrain:

Commodore T M Lowe

Commander Amphibious Task Group:

Commodore P D Hudson, CBE

Commander, 3 Commando Brigade:

Brigadier G K Messenger

Commander, British Forces Gibraltar:

Commodore M J Parr

Flag Officers, Operational and National Commanders—continued

Commander, British Forces South Atlantic Islands:

Air Commodore G Moulds, MBE

Commodore Royal Fleet Auxiliary:

Commodore W M Walworth

Commodore Portsmouth Flotilla:

Commodore M P Mansergh

Commodore Devonport Flotilla:

Commodore J S Westbrook, MBE

Captain Faslane Flotilla:

Captain S W Garrett, OBE

Hydrographer of the Navy:

Captain R G Stewart

Diplomatic Representation

Defence Attaché in Ankara:

Colonel C O Hodges MBE

Defence Attaché in Athens:

Colonel P Lodge

Defence Attaché in Bahrain:

Commander W Scarth

Deputy Attaché in Beijing:

Captain A J Tate

Naval Attaché in Berlin:

Group Captain F Simpson

Defence Attaché in Brasilia:

Group Captain W G S Dobson

Defence Adviser in Bridgetown:

Captain PT Morgan

Defence Adviser in Brunei:

Captain A E Rycroft

Defence Attaché in Buenos Aires:

Colonel A Thomson

Defence Attaché in Cairo:

Colonel N F W Hile

Defence Adviser/Naval Adviser in Canberra:

Brigadier J Robbins RM

Defence Attaché in Copenhagen:

Wing Commander R MacCormac

Defence Attaché in The Hague:

Colonel J Heat

Naval Adviser in Islamabad:

Group Captain F Harbottle

Defence Attaché in Jakarta:

Colonel N D J Rowe

Defence Attaché in Kiev:

Captain J L R Foreman

Defence Adviser in Kuala Lumpur:

Colonel P Edwards

Defence Attaché in Lisbon (based in London):

Commander D Fields

Naval Attaché in Madrid:

Captain D E Wolfe

Defence Attaché in Moscow:

Captain G Newton

Naval Attaché in Muscat:

Commander P Moss

Naval Adviser in New Delhi:

Captain A C Ashcroft

Naval Adviser in Ottawa:

Captain P Steel

Deputy Attaché in Paris:

Captain P F A Stonor

Naval Adviser in Pretoria:

Wing Commander R Whitworth

Naval Attaché in Riyadh:

Commander K Broadley

Naval Attaché in Rome:

Commander S Steeds

Defence Attaché in Santiago:

Colonel R Carrow

Defence Attaché in Seoul:

Brigadier M O'Hanlon

Defence Adviser in Singapore:

Group Captain T P Brewer OBE

Defence Attaché in Stockholm:

Commander B H G Falk

Diplomatic Representation—continued

Defence Attaché in Tokyo:

Captain G G J Derrick

Defence Attaché in Warsaw:

Lieutenant Colonel A Nowak

Naval Attaché in Washington:

Captain S C Ramm

Royal Marines Operational Units

HQ 3 Commando Brigade RM; 40 Commando RM, 42 Commando RM, 45 Commando RM; Commando Logistic Regiment RM (RN/RM/Army); 3 Commando Brigade Command Support Group, EW Troop RM, Tactical Air Command Posts RM (3 regular, 1 reserve); 539 Assault Squadron RM (hovercraft, landing craft and raiding craft); Brigade Patrol Troop (reconnaissance); Special Boat Service RM; Fleet Royal Marines Protection Group (FRMPG); T Company RMR; 29 Commando Regiment RA (Army); 59 Independent Commando Squadron RE (Army); 20 Commando Battery RA; 131 Independent Squadron RE (Volunteers).

Bases

Northwood: C-In-C Fleet; CJO; Commander Operations
Portsmouth: C-in-C Navhome; DC-in-C Fleet; COS Warfare; COS Support; COMUKMARFOR; COMUKAMPHIBFOR; Com Portsmouth Flotilla; COMUKTG
Devonport: FOST; Com Devonport Flotilla, COMATG
Faslane: FOSNNI; Captain Faslane Flotilla

Prefix to Ships' Names

HMS (Her Majesty's Ship)

Personnel

2009:

(a) Regulars: RN 27,490 (5,720 officers)

RM 6,600 (660 officers)

(b) Reserves: RN 2,200 (830 officers)

RM 980 (90 officers)

Fleet Disposition

Portsmouth: 2 CV; 8 Type 42 DDG; 6 Type 23 FFG; 2nd MCM Squadron; Fishery Protection Squadron; Antarctic Patrol Ship; 1st Patrol Boat Squadron; Fleet Diving Squadron; Gibraltar and Cyprus Squadrons; Falkland Islands Patrol Vessel
Devonport: 1 LPH; 2 LPD; 4 Type 22 FFG; 7 Type 23 FFG; 7 Trafalgar Class SSN; Surveying Squadron
Faslane: 4 SSBN; 1 Swiftsure class SSN; 1st MCM Squadron

Strength of the Fleet

Type	Active (Reserve)	Building (Projected)
SSBNs	4	—
Submarines—Attack	8	4 (3)
Aircraft Carriers	2 (1)	2
Destroyers	7	5
Frigates	17	—
Assault Ships (LPD)	2	—
Helicopter Carriers (LPH)	1	—
LSD (RFA)	4	—
Offshore Patrol Vessels	4	—
Patrol Craft	18	—
Minehunters	16	—
Repair/Maintenance Ships (RFA)	1	—
Survey Ships	5	—
Antarctic Patrol Ships	1	—
Large Fleet Tankers (RFA)	2	—
Support Tankers (RFA)	2	—
Small Fleet Tankers (RFA)	2	—
Casualty Receiving Ship (RFA)	1	—
Fleet Replenishment Ships (RFA)	4	—
Transport Ro-Ro (RFR)	6	—

Principal Fleet Air Arm Squadrons (see Shipborne Aircraft section) on 1 January 2009

HMA Helicopter Maritime Attack.

F/W	Aircraft	Role	Deployment	Squadron no	F/W	Aircraft	Role	Deployment	Squadron no
12	Harrier	GR 7A/GR 9A	RAF Cottesmore	800/801	5	Grob	Aircraw Training	Yeovilton, Heron	727
13	Jetstream	Aircraw Training	Culdrose, Seahawk	750					
Helicopters									
2	Merlin HM Mk 1	OEU	Culdrose, Seahawk	700M	10	Sea King HC 4	Commando Assault	Yeovilton, Heron	845
6	Merlin HM Mk 1	ASW/ASUW	Culdrose, Seahawk	814	10	Sea King HC 4	Commando Assault	Yeovilton, Heron	846
4	Merlin HM Mk 1	ASW/ASUW	Culdrose, Seahawk	820	10	Sea King HC 4	Commando Assault	Yeovilton, Heron	848
8	Merlin HM Mk 1	ASW/ASUW	Culdrose, Seahawk	824	13	Lynx Mk 3/8	ASUW/ASW	Yeovilton, Heron	815
8	Merlin HM Mk 1	ASW/ASUW	Culdrose, Seahawk	829	35	Lynx Mk 3/8	ASUW/ASW Aircraw training	Yeovilton, Heron	702
13	Sea King ASAC Mk 7	AEW	Culdrose, Seahawk	849/854/857					
2	Sea King HU Mk 5	SAR	Prestwick, Gannet	SAR Flight	6	Lynx Mk 7	Commando Support	Yeovilton, Heron	847
8	Sea King HU Mk 5	SAR/Training	Culdrose, Seahawk	771					

Notes:

(1) Joint Force Harrier (JFH) formed on 1 April 2000. Operating Harrier GR 9 aircraft and complemented by RN and RAF pilots, it comprises four squadrons. No 1(F) Sqn RAF, No 4 (AC) Sqn RAF and 800 and 801 Squadrons Naval Strike Wing (NSW).

(2) The Joint Helicopter Command (JHC) became operational on 1 April 2000 and brought all battlefield helicopters from all three services under one command at HQ Land, Wilton. Total helicopter assets number some 450. The command includes the Commando Helicopter Force (CHF), a group of four RN/RM squadrons, based at Yeovilton, which specialises in amphibious warfare and whose prime task is to support 3 Cdo Brigade.

(3) Mirach 100/5 subsonic drones are operated by 792 Squadron at Culdrose

(4) The Royal Navy SAR force comprises 771 Squadron (Culdrose) and the Gannet SAR flight (Prestwick). 771 Squadron covers the SW approaches and the Gannet SAR flight the NW approaches and northern Irish Sea. In the future a Joint Search and Rescue Service is to be provided for the UK SAR region under a single contract. The service is to be manned by military and civilian aircraw and is to be managed jointly by the MoD and Maritime Coast Guard Agency.

DELETIONS

Submarines

2006 *Spartan, Sovereign*
2008 *Superb*

Destroyers

2009 *Southampton, Exeter*

Frigates

2006 *Grafton* (to Chile)

Patrol Forces

2007 *Dumbarton Castle*

Auxiliaries

2006 *Gray Rover, Sir Tristram, Sir Galahad*
2007 *Oakleaf, Brambleleaf*
2008 *Sir Bedivere*

PENNANT LIST

Notes: Numbers are not displayed on Submarines.

Submarines

Ballistic Missile Submarines

S 28 Vanguard
S 29 Victorious
S 30 Vigilant
S 31 Vengeance

Attack Submarines

S 20 Astute (bldg)
S 21 Arful (bldg)
S 22 Ambush (bldg)
S 23 Audacious (bldg)
S 87 Turbulent
S 88 Tireless
S 90 Torbay
S 91 Trenchant
S 92 Talent
S 93 Triumph
S 104 Sceptre
S 107 Trafalgar

Aircraft Carriers

R 06 Illustrious
R 07 Ark Royal

Destroyers

D 32 Daring
D 33 Dauntless (bldg)
D 34 Diamond (bldg)
D 35 Dragon (bldg)
D 36 Defender (bldg)
D 37 Duncan (bldg)

D 91 Nottingham
D 92 Liverpool
D 96 Manchester
D 98 Gloucester
D 97 Edinburgh
D 98 York

Frigates

F 78 Kent
F 79 Portland
F 81 Sutherland
F 82 Somerset
F 83 St Albans
F 85 Cumberland
F 86 Campbeltown
F 87 Chatham
F 99 Cornwall
F 229 Lancaster
F 231 Argyll
F 234 Iron Duke
F 235 Monmouth
F 236 Montrose
F 237 Westminster
F 238 Northumberland
F 239 Richmond

Amphibious Warfare Forces

L 12 Ocean
L 14 Albion
L 15 Bulwark
L 105 Arromanches
L 107 Andalsnes
L 109 Akyab
L 110 Aachen
L 111 Arezzo

L 113 Audemer
L 3006 Largs Bay
L 3007 Lyme Bay
L 3008 Mounts Bay
L 3009 Cardigan Bay

Mine Warfare Forces

M 30 Ledbury
M 31 Cattistock
M 33 Brocklesby
M 34 Middleton
M 37 Chiddingfold
M 38 Atherstone
M 39 Hurworth
M 41 Quorn
M 104 Walney
M 106 Penzance
M 107 Pembroke
M 108 Grimsby
M 109 Bangor
M 110 Ramsay
M 111 Blyth
M 112 Shorham

Patrol Forces

P 163 Express
P 164 Explorer
P 165 Example
P 167 Exploit
P 257 Clyde
P 264 Archer
P 270 Biter
P 272 Smiter
P 273 Pursuer
P 274 Tracker

P 275 Raider
P 279 Blazor
P 280 Dasher
P 281 Tyne
P 282 Severn
P 283 Mersey
P 284 Scimitar
P 285 Sabre
P 291 Puncher
P 292 Charger
P 293 Ranger
P 294 Trumpeter

Survey Ships

H 86 Gleaner
H 87 Echo
H 88 Enterprise
H 130 Roebuck
H 131 Scott

Auxiliaries

A 109 Bayleaf
A 110 Orangeleaf
A 132 Diligence
A 135 Argus
A 171 Endurance
A 271 Gold Rover
A 273 Black Rover
A 385 Fort Rosalie
A 386 Fort Austin
A 387 Fort Victoria
A 388 Fort George
A 389 Wave Knight
A 390 Wave Ruler

SUBMARINES

Notes: Three 6.7 m US-made Mk VIII Mod 1 Swimmer Delivery Vehicles were acquired in 1999. Battery-powered, they can transport six combat swimmers and have a radius of 67 km (36 n miles).



SDV Mk VIII

1/2002, M Declerck / 0137551

Attack Submarines (SSN)

Notes: Future submarine requirements are being taken forward in a twin-track approach. In the short-term, technology advances to an extended Astute class are under consideration. Conceptual studies are also investigating requirements for a 'Maritime Underwater Future Capability' (MUFC) post 2020. Options are likely to include a development of the Astute class and linkage to future SSBN concept work is also a possibility.

0 + 4 (3) ASTUTE CLASS (SSN)

Name	No	Builders	Laid down	Launched	Commissioned
ASTUTE	S 20	BAE Systems, Barrow	31 Jan 2001	8 June 2007	2009
AMBUSH	S 21	BAE Systems, Barrow	22 Oct 2003	Dec 2009	2010
ARTFUL	S 22	BAE Systems, Barrow	11 Mar 2005	Apr 2011	2012
AUDACIOUS	S 23	BAE Systems, Barrow	24 Mar 2009	2013	2015
—	—	BAE Systems, Barrow	2010	2015	2017

Displacement, tons: 6,500 surfaced; 7,400 dived
Dimensions, feet (metres): 318.2 x 37.0 x 32.8
 (97 x 11.27 x 10)

Main machinery: Nuclear; 1 RR PWR 2; 2 Aisthom turbines; 27,500 hp (20.5 MW); 1 shaft; pump jet propulsor; 2 turbo generators; 2 diesel alternators; 2 motors for emergency drive; 1 auxiliary retractable prop

Speed, knots: 29 dived
Complement: 140 (12 officers)

Missiles: SLCM: Raytheon Tomahawk Block IV; TERCOM and GPS aided navigation with DSMAC to 1,600+ km (865+ n miles) at 0.7 Mach; warhead (WDU 36B) 454 kg.

Torpedoes: 6–21 in (533 mm) tubes for Tomahawk, Sub Harpoon and Spearfish torpedoes. Total of 38 weapons.
Mines: In lieu of torpedoes.

Countermeasures: Decoys. ESM. Racal UAP 4, intercept.
Combat data systems: BAE Systems ACMS tactical data handling system. Links 11/16.

Radars: Navigation: I-band.

Sonars: Thomson Marconi 2076 integrated suite (bow, flank, fin and towed arrays)

Programmes: Invitations to tender issued on 14 July 1994 to build three of the class with an option for two more. GEC Marconi selected as prime contractor in December 1995. Contract to start building the first three placed on 17 March 1997. First steel cut late 1999 but although formal



ASTUTE

6/2007, Richard Scott / 1167735

keel-laying took place in 2001, design, engineering and programme management difficulties led to a three-year delay to the first of class. This was extended to four years by a range of emergent first of class issues. There were similar delays to the second and third of class. Approval for construction of the fourth of class was given on 21 May 2007. A contract funded initial manufacture work and a follow-on contract is expected in mid-2009 to cover the balance of construction. A further three boats are expected to be built to a 22-month production 'drumbeat'.

Structure: An evolution of the Trafalgar design with increased weapon load and reduced radiated noise

but with overall performance similar to Trafalgar after full modernisation. The fin is slightly longer and there are two Thales Optronics CM010 non-hull-penetrating optronic masts. A more advanced variant is to be fitted to *Audacious* and subsequent boats. The boats are to have a dry dock hangar capability (Project Chaffont). A fully reelable towed-array handling system is incorporated. A 'Thin Flank' array is to be fitted in *Audacious* and a lighter bow array in *Boat 5*.

Operational: Fitted with Core H, nuclear refuelling will not be necessary in the lifetime of the submarine. To be based at Faslane. Sea trials of *Astute* are to begin in mid-2009.

1 SWIFTSURE CLASS (SSN)

Name	No	Builders	Laid down	Launched	Commissioned
SCEPTRE	S 104	Vickers Shipbuilding & Engineering, Barrow-in-Furness	19 Feb 1974	20 Nov 1976	14 Feb 1978

Displacement, tons: 4,000 light; 4,400 standard; 4,900 dived

Dimensions, feet (metres): 272 x 32.3 x 28
 (82.9 x 9.8 x 8.5)

Main machinery: Nuclear; 1 RR PWR 1; 2 GEC turbines; 15,000 hp (11.2 MW); 1 shaft; pump jet propulsor; 2 WH Allen turbo generators; 3.6 MW; 1 Paxman diesel alternator; 1,900 hp (1.42 MW); 1 motor for emergency drive; 1 auxiliary retractable prop

Speed, knots: 30+ dived
Complement: 116 (13 officers)

Missiles: SLCM: Hughes Tomahawk Block III; TERCOM aided inertial navigation system with GPS back-up to 1,600+ km (865+ n miles) at 0.7 Mach; warhead (WDU 36B) 454 kg. Fitted in S 104 only

Torpedoes: 5–21 in (533 mm) bow tubes. Marconi Spearfish; wire-guided; active/passive homing to 26 km (14 n miles) at 65 kt; or 31.5 km (17 n miles) at 50 kt; attack speed 55 kt; warhead 300 kg directed charge; 20 reloads.

Mines: Can be carried in lieu of torpedoes.

Countermeasures: Decoys: SAWCS from 2002, 2 SSE Mk 6 launchers Type 2066 torpedo decoys.

ESM: Racal UAP; passive intercept

Combat data systems: Dowty Sema SMCS tactical data handling system. Link 11 can be fitted.

Radars: Navigation: Kelvin Hughes Type 1007; I-band

Sonars: TUSL Type 2074 LRE; hull-mounted; active/passive search and attack; low frequency.

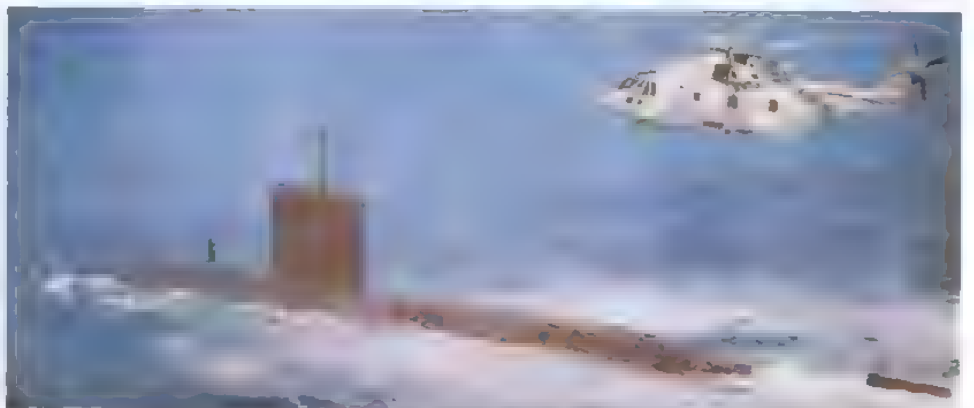
TUSL Type 2046; towed array; passive search; very low frequency.

Ultra Electronics 2082; active intercept and ranging.

Marconi Type 2077; ice navigation; active; high frequency

Programmes: *Sceptre* ordered 1 November 1971.

Modernisation: Fitted with a PWR 1 Core Z during major refits to give a 8 to 10 year refit cycle (12 year life). *Sceptre* completed major refits in 1987 and 2001. Other improvements included acoustic elastomeric tiles, sonar processing equipment and improved decoys. Equipped with Tomahawk Block III in 2006



SWIFTSURE CLASS

9/2001, Lockheed Martin / 0131748



SWIFTSURE CLASS

1/2002, Ships of the World / 0131754

Structure: The pressure hull in the Swiftsure class maintains its diameter for much greater length than earlier classes. Control gear by MacTaggart, Scott & Co Ltd for: attack and search periscopes, snort induction and exhaust, radar and ESM masts. The forward hydroplanes house within the casing. Fitted with Pilkington

Optronics CK 33 search and CH 83 attack electro-optic periscopes.

Operational: Based at Faslane. *Swiftsure* paid off in 1992, *Splendid* in 2003, *Spartan* in early 2006, *Sovereign* on 26 September 2006 and *Superb* on 26 September 2008. *Sceptre* is to decommission in 2010



SWIFTSURE CLASS

5/2003, B Prözelin / 0517589

7 TRAFALGAR CLASS (SSN)

Name	No	Builders	Laid down	Launched	Commissioned
TRAFALGAR	S 107	Vickers Shipbuilding & Engineering, Barrow-in-Furness	25 Apr 1979	1 July 1981	27 May 1983
TURBULENT	S 87	Vickers Shipbuilding & Engineering, Barrow-in-Furness	8 May 1980	1 Dec 1982	28 Apr 1984
TIRELESS	S 88	Vickers Shipbuilding & Engineering, Barrow-in-Furness	6 June 1981	17 Mar 1984	5 Oct 1985
TORBAY	S 90	Vickers Shipbuilding & Engineering, Barrow-in-Furness	3 Dec 1982	8 Mar 1985	7 Feb 1987
TRENCHANT	S 91	Vickers Shipbuilding & Engineering, Barrow-in-Furness	28 Oct 1985	3 Nov 1986	14 Jan 1989
TALENT	S 92	Vickers Shipbuilding & Engineering, Barrow-in-Furness	13 May 1986	15 Apr 1988	12 May 1990
TRIUMPH	S 93	Vickers Shipbuilding & Engineering, Barrow-in-Furness	2 Feb 1987	16 Feb 1991	12 Oct 1991

Displacement, tons: 4,740 surfaced, 5,208 dived
Dimensions, feet (metres): 280.1 x 32.1 x 31.2 (85.4 x 9.8 x 9.5)
Main machinery: Nuclear; 1 RR PWR 1; 2 GEC turbines; 15,000 hp (11.2 MW); 1 shaft; pump jet propulsor; 2 WH Allen turbo generators; 3.2 MW; 2 Paxman diesel alternators; 2,800 hp (2.09 MW); 1 motor for emergency drive; 1 auxiliary retractable prop
Speed, knots: 32 dived
Complement: 130 (18 officers)

Missiles: SLCM: Raytheon Tomahawk Block IV; TERCOM and GPS aided inertial navigation system with DSMAC to 1,600 km (865+ n miles) at 0.7 Mach; warhead (WDU 36B) 454 kg. Being fitted to all from 2008.
Torpedoes: 5-21 in (533 mm) bow tubes. Marconi Spearfish; wire-guided; active/passive homing to 26 km (14 n miles) at 65 kt; or 31.5 km (17 n miles) at 50 kt, attack speed 55 kt; warhead 300 kg directed charge, 20 reloads.
Mines: Can be carried in lieu of torpedoes.
Countermeasures: Decoys. SAWCS from 2002. 2 SSE Mk 8 launchers. Type 2066 torpedo decoys.
RESM: Racal UAP 1; passive intercept.
CESM: Eddystone.
Combat data systems: BAE Systems SMCS tactical data handling system.
Weapons control: BAE Systems SMCS.
Radars: Navigation; Kelvin Hughes Type 1007; I-band.
Sonars: TUSL 2074 LRE; hull-mounted; passive/active, search and attack; low frequency. TUSL 2046; towed array,

passive search, very low frequency. Ultra Electronics 2082, active intercept and ranging.
 TUSL 2076 (S90-93) integrated sonar suite comprising flank array, towed array, conformal bow array, mine avoidance array.
 TUSL 2077; ice navigation.

Programmes: *Trafalgar* ordered 7 April 1977; *Turbulent* 28 July 1978; *Tireless* 5 July 1979; *Torbay* 26 June 1981; *Trenchant* 22 March 1983; *Talent* 10 September 1984; *Triumph* 3 January 1986

Modernisation: *Trafalgar* completed refuel in December 1995 and was fitted with SMCS and Spearfish torpedoes. *Turbulent* refuelled by mid-1997 and was refitted with sonar 2074, SMCS and Spearfish. *Tireless* completed similar modernisation and refuelling in January 1999. Refuel periods for the last four boats are being undertaken in parallel with a major tactical modernisation programme, the main feature of which is installation of the sonar 2076 integrated sonar suite to replace the 2074 bow array and 2046 towed array. Other upgrades include enhancements to SMCS, a new command console and improved signature reduction measures. *Torbay* and *Trenchant* were the first and second boats to complete a 2076 refit and refuel in 2003 and 2004 respectively. *Talent* completed her three-year refit in January 2007 and *Triumph* is expected to complete her refit in 2009. Meanwhile, an ongoing programme of software replacement will continue to realise capability improvements in the last four boats.

As a parallel programme, SMCS is being upgraded to SMCS NG and Tomahawk cruise missiles are being fitted to the whole class. *Triumph* and *Trafalgar* were completed by mid-2001, *Turbulent* in 2002 and *Trenchant* in 2004. *Tireless* and *Talent* were completed in 2006 and *Torbay* in 2007. Tomahawk Block IV missiles started to replace Block III missiles in March 2008. Following a joint UK/US feasibility study, a Torpedo-Tube Launched (TTL) variant of the missile was developed for UK use. A series of developmental tests began in 2005, culminating in the successful completion of a 650 n mile flight of a TTL missile, fired from *Trenchant*, on 21 June 2007. In parallel, the Tactical Tomahawk Weapons Control (TTWC) and Tomahawk Strike Network (TSN), first installed in *Trafalgar* in 2004, has been fitted in six of the class. *Triumph* is being upgraded during refit. Replacement of the CESM system was initiated in 2002 and upgrade of the RESM system UAP 1, was initiated in 2006.

Structure: The pressure hull and outer surfaces are covered with conformal anechoic noise reduction coatings. Retractable forward hydroplanes and strengthened fins for under ice operations. Diving depth in excess of 300 m (985 ft). Fitted with Pilkington Optronics CK 34 search and CH 84 attack periscopes.

Operational: Trials of a high-frequency active sonar (AN/BOS-15/A derivative) conducted in *Trenchant* in 2008. All of the class based at Devonport. The class is planned to pay off as follows: *Trafalgar* 2009; *Turbulent* 2011; *Tireless* 2013 and the remainder of the class by 2022.



TRAFALGAR

6/2005, Per Körnefeldt / 1153922



TORBAY

8/2008, B Sullivan / 1353553



TRAFALGAR

8/2006, Derek Fox / 1167727



TRENCHANT

7/2008, Ian Harris / 1363552



TIRELESS

5/2008, B Sullivan / 1363554

Strategic Missile Submarines (SSBN)

Notes: It was announced on 4 December 2006 that the UK nuclear deterrent is to be maintained beyond the life of the Vanguard-class submarines. Detailed concept work on a next-generation nuclear-powered ballistic submarine (SSBN) began in 2007 with a view to a contract for their detailed design being let in 2012-14. Work on a common UK/US missile compartment was initiated in January 2009.

Replacement of the current fleet of SSBNs, assuming a life extension of five years, is required from 2024. The future SSBN force is to be comprised of three or four boats. In parallel, UK is to participate in the US Navy's Trident D5 life-extension programme that is to prolong missile life to about 2042. Decisions on whether to acquire a successor to the life-extended D5 missile, and what form it is to take, are

required in the 2020s. Policy to deploy up to 48 warheads on a single submarine is to continue and it was announced that the current inventory of operationally available warheads is to be reduced from 'fewer than 200' to 'fewer than 180'. Current warheads are expected to remain in service until the 2020s and a decision as to whether they are to be refurbished or replaced is expected by 2014.

4 VANGUARD CLASS (SSBN)

Name	No	Builders	Laid down	Launched	Commissioned
VANGUARD	S 28	Vickers Shipbuilding & Engineering, Barrow-in-Furness	3 Sep 1986	4 Mar 1992	14 Aug 1993
VICTORIOUS	S 29	Vickers Shipbuilding & Engineering, Barrow-in-Furness	3 Dec 1987	29 Sep 1993	7 Jan 1995
VIGILANT	S 30	Vickers Shipbuilding & Engineering, Barrow-in-Furness	16 Feb 1991	15 Oct 1995	2 Nov 1996
VENGEANCE	S 31	Vickers Shipbuilding & Engineering, Barrow-in-Furness	1 Feb 1993	19 Sep 1998	27 Nov 1999

Displacement, tons: 15,980 dived
Dimensions, feet (metres): 491.8 x 42 x 39.4
 (149.9 x 12.8 x 12)

Main machinery: Nuclear; 1 RR PWR 2; 2 GEC turbines; 27,500 hp (20.5 MW); 1 shaft; pump jet propulsor; 2 auxiliary retractable propulsion motors; 2 WH Allen turbo generators; 6 MW; 2 Paxman diesel alternators; 2,700 hp (2 MW)

Speed, knots: 25 dived
Complement: 135 (14 officers)

Missiles: SLBM: 16 Lockheed Trident 2 (D5) 3-stage solid fuel rocket; inertial guidance with stellar update to 12,000 km (6,500 n miles); cap 90 m. Each missile can carry up to 12 warheads of (reported) selected yield up to 100 kT although, following a 1990 government decision, a maximum of 48 warheads is carried in UK SSBNs. The precise number deployed depends on prevailing circumstances

Torpedoes: 4-21 in (533 mm) tubes. Marconi Spearfish; dual purpose; wire-guided; active/passive homing to 26 km (14 n miles) at 65 kt; or 31.5 km (17 n miles) at 50 kt; attack speed 55 kt; warhead 300 kg directed charge

Countermeasures: Decoys: 3 SSE Mk 10 launchers Type 2066 and 2071 decoys.
 ESM: Racal UAP 3; intercept.

Combat data systems: Alenia Marconi Systems SMCS NG.

Weapons control: Ultra Electronics Outfit DCM 4

Radars: Navigation: Kelvin Hughes Type 1007; I-band.

Sonars: TMSL Type 2054 composite multifunctioned sonar suite includes towed array, hull-mounted active/passive search and passive intercept and ranging. Type 2081 Environmental Sensor System.

Programmes: On 15 July 1980 the decision was made to buy the US Trident I (C4) weapon system. On 11 March 1982 it was announced that the government had opted for the improved Trident II weapon system, with the D5 missile, to be deployed in a force of four submarines. *Vanguard* ordered 30 April 1986; *Victorious* 6 October 1987; *Vigilant* 13 November 1990 and *Vengeance* 7 July 1992

Modernisation: *Vanguard* underwent LOP(R) at Devonport February 2002 to June 2005. *Victorious* started LOP(R) in April 2005 and completed in May 2008. *Vigilant* LOP(R) started in October 2008 and is to be completed in 2011. A contract for the upgrade of the inboard signal, data and display processing systems of sonar Type 2054 was let to Lockheed Martin in September 2006. The upgrade is to include open architecture processing based on the ARCI model in service in the US Navy. The first full system is to be in service in 2009. There are no plans to deploy conventional warheads on Trident or to modify

launch tubes to accommodate cruise missiles. Upgrade of UAP 3 RESM is planned. Invitations to tender for the SMART programme, which is to modernise the inboard portion of the equipment, were issued in June 2006.

Structure: A new reactor core, Core H, has been fitted to *Vanguard* and *Victorious* and is to be installed in the other two boats at their LOP(R). No further reactor fuelling will be required during their service lives. The outer surface of the submarine is covered with conformal anechoic noise reduction coatings. Fitted with Pilkington Optronics CK 51 search and CH 91 attack periscopes.

Operational: Three successful submerged launched firings of the D5 missile from USS *Tennessee* in December 1989 and the US missile was first deployed operationally in March 1990. *Vanguard* started sea trials in October 1992; the first UK missile firing was on 26 May 1994 and the first operational patrol in early 1995. The eighth successful UK firing of a D5 missile was made by *Vanguard* on 10 October 2005. At least one SSBN has been at immediate readiness to fire ballistic missiles since 1969, but as a result of the Strategic Defence Review in 1998, readiness to fire has been relaxed 'to days rather than minutes'. There are no plans to phase out the two crew system. Submarines on patrol can be given secondary tasks without compromising security. Based at Faslane.



VENGEANCE

6/2000, 0106576



VIGILANT

7/2005, H M Steele / 1153921



VENGEANCE

6/2000 / 01066/1



VENGEANCE

9/2007, B Moultrie / 1305171

AIRCRAFT CARRIERS

2 INVINCIBLE CLASS (CV)

Name	No	Builders	Laid down	Launched	Commissioned
ILLUSTRIOUS	R 06	Swan Hunter Shipbuilders, Wallsend	7 Oct 1976	1 Dec 1978	20 June 1982
ARK ROYAL	R 07	Swan Hunter Shipbuilders, Wallsend	14 Dec 1978	2 June 1981	1 Nov 1985

Displacement, tons: 20,600 full load
Dimensions, feet (metres): 685.8 oa; 632 wl x 118 oa; 90 wl x 26 (screws) (209.1; 192.6 x 36; 275 x 8)

Flight deck, feet (metres): 550 x 44.3 (1678 x 13.5)

Main machinery: COGAG; 4 RR Olympus TM3B gas turbines; 97,200 hp (72.5 MW) sustained; 2 shafts

Speed, knots: 28

Range, n miles: 7,000 at 19 kt

Complement: 685 (80 officers) plus 366 (80 officers) aircrew plus up to 600 marines

Guns: 3 Signaal/General Electric 30 mm 7-barrelled Gatling Goalkeeper (R 06); 4,200 rds/min to 1.5 km
 3 General Dynamics 20 mm Phalanx Mk 15 (R 07) ●
 6 barrels/launcher; 4,500 rds/min to 1.5 km.
 2 Derikon/BMARC 20 mm GAM-801 ●
 4 M 323 Mk 44 7.62 mm Miniguns.

Countermeasures: Decoys: Outfit DLH; 8 Sea Gnat 6-barrelled 130 mm/102 mm dispensers ●.

ESM: Racal UAT Mod 1 ●; intercept.

Torpedo defence: Preina Masker noise suppression system Type 2170 (SLQ-25A).

Combat data systems: ADAWS 20 Ed 3; Link 11 and Siemens Plessey JTIDS Link 16. JMCIS. SCOT 5 SATCOM ● WECDIS. AIS. CSS BOWMAN.

Weapons control: Rademec optronic director

Radars: Air search Marconi/Signaal Type 1022 ●, D-band.

Air/surface search AMS Type 996 ●, E/F-band.

Navigation 2 Kelvin Hughes Type 1007 ●; I-band.

1 Racal Decca 1008, E/F-band.

CCA: Finmeccanica SPN 720 (V)5; I/J-band

Tacan: TRN 26(M)

Fixed-wing aircraft: Tailored air group of up to 24 aircraft including: BAE Harrier GR 9A ●

Helicopters: Westland Merlin HM.Mk 1 ●, Westland Sea King ASAC Mk 7. Chinook HC2 Apache AH1.

Programmes: The first of class (decommissioned in 2005), the result of many compromises, was ordered from Vickers on 17 April 1973. The order for the second ship was placed on 14 May 1976, the third in December 1978.



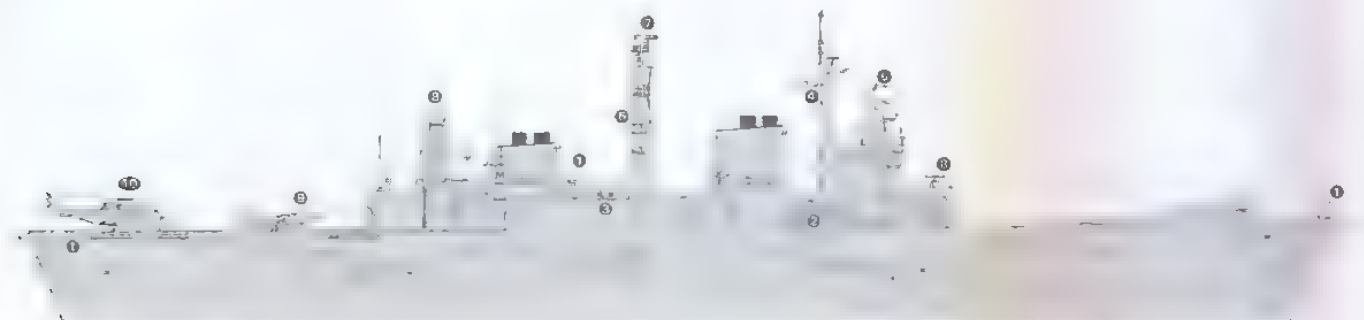
ARK ROYAL

8/2008*, Maritime Photographic / 1353550

Modernisation: In February 1994, R 06 completed modernisation which included a 12° ski ramp, space and support facilities for at least 21 aircraft, three Goalkeeper systems, Sea Gnat decoys, 996 radar, Flag and Command facilities and accommodation for an additional 120 aircrew and Flag Staff. Ski ramp was increased to 13°. Modifications to operate Harrier GR 7 were completed in both ships (R 06 – 1998 and R 07 – 2001). This included the removal of Sea Dart, increasing the flight deck area by 7 per cent (23 x 18 m) and fitting GR.7 support facilities. Both *Illustrious* (2004) and *Ark Royal* (2006) converted to undertake secondary role as LPH including the installation of additional accommodation, rework of magazines, improvement of amphibious command and control systems, including BOWMAN, and installation of the MARINARC mass escape system. TACAN and SPN 720(X) precision approach radar also fitted. Air planning spaces have also been refitted to undertake maritime strike role. Planned conversion of *Ark Royal* to replace Phalanx with Goalkeeper was cancelled.

Structure: The forward end of the flight deck (ski ramp) allows STOVL aircraft of greater all-up weight to operate more efficiently. *Illustrious* fitted with a composite third mast at the after end of the island structure to provide mountings for additional communications. She has also had substantial internal changes to accommodate troops in the LPH role. *Ark Royal* received an advanced technology mast in 2006 to house precision approach radar, 1007 radar and NEST.

Operational: The primary role of this class is to operate STOVL aircraft and helicopters. Sea Harriers were phased out in 2006 and the embarked fixed-wing air-group has migrated to an all Harrier GR Mk 9A ground-attack force. Following a restorative docking in 2006, *Ark Royal* returned to service in 2007. *Invincible* decommissioned in 2005 and to be maintained at extended (18 months) readiness until 2010. Decommissioning dates of the other two ships are likely to be 2013 (*Ark Royal*) and 2015 (*Illustrious*).



ARK ROYAL

(Scale 1 : 1,200), Ian Sturton / 1305265



ARK ROYAL

(Scale 1 : 1,200), Ian Sturton / 1305264



ILLUSTRIOUS

9/2008*, B Sullivan / 1353549



ARK ROYAL

1/2007, B Sullivan / 1167469



ILLUSTRIOUS

9/2008*, B Sullivan / 1353548

0 + 2 QUEEN ELIZABETH CLASS (CV)

Name	No	Builders	Laid down	Launched	Commissioned
QUEEN ELIZABETH	—	BVT Surface Fleet Ltd/Babcock International	2009	2013	2015
PRINCE OF WALES	—	BVT Surface Fleet Ltd/Babcock International	2011	2015	2018

Displacement, tons: 68,600 full load
Dimensions, feet (metres): 931.7 x 127.9 x 32.5
 (284.0 x 39.0 x 9.9)
Flight deck, feet (metres): 908.8 x 239.5 (277.0 x 73.0)
Main machinery: Integrated Full Electric Propulsion; 2 Rolls-Royce MT 30 gas turbine alternators; 93,870 hp (70 MW); 4 Wärtsilä diesel generators; 53,064 hp (39.6 MW); 2 induction motors; 53,640 hp (40 MW); 2 shafts
Speed, knots: 26+ **Range, n miles:** To be announced
Complement: 572 (ship) + 810 (air group) + 95 (staff)

Guns: 3 General Dynamics 20 mm Phalanx ● 4—30 mm ● Miniguns.
Countermeasures: Torpedo defence, Type 2170 (SLQ-25A)
Combat data systems: BAE CMS-1, Link 16.
Weapons control: To be announced.
Radars: Air search: Thales Type 1046 (S 1850M) ●; D-band
Air/surface search: BAE Insyte ARTISAN ●; 3D; E/F-band.
Navigation: To be announced ●
CCA: Finmeccanica SPN 720(V)5; I-band.
Tacan: To be announced.

Fixed-wing aircraft: Approximately 40; typically a mix of 30 F-35B combat aircraft, six Merlin anti-submarine aircraft and four Maritime Airborne Surveillance & Control aircraft

Programmes: Following completion of the Demonstration Phase in 2007, it was announced on 25 July 2007 that approval (Main Gate) for the procurement of two aircraft carriers had been given. Approval for the Manufacturing Phase was announced on 20 May 2008 and, following the formation of BVT Surface Fleet Ltd (BAE Systems and VT Group joint venture) contracts for construction were signed on 3 July 2008. Construction of the ships is to be undertaken by the Aircraft Carrier Alliance (ACA) formed of BVT Surface Fleet Ltd, Thales UK, BAE Systems (Marine and Insyte), Babcock Marine and UK MoD as both client and participant. An Alliance Management Board, chaired by the UK MoD, leads and collectively manages the project; BVT Surface Fleet Ltd, is to be responsible for the integration of design, build, commissioning and acceptance of the ships; BAE Insyte has responsibility for mission systems design; Thales leads the management of the Stage 1 design of platform, power and propulsion and takes responsibility for the aviation interface. Construction and assembly of the ships is to be as follows: Blocks 3 and 4 (aft section) at BVTSF Govan; Block 2 (forward midships section) and the two superstructure islands at BVTSF Portsmouth; Block 1 (bow section) and final assembly at Babcock, Rosyth. The remaining 40 per cent of the ship (superstructure) is to be open to competition. Following a delay of up to two years to the construction programme announced on 11 December 2008, it is expected that *Queen Elizabeth* will be formally laid down in 2009. First steel was cut in December 2008.

Structure: The systems and structural design is to Lloyds Naval Ships Rules with some specific naval standards for certain equipments. Of steel construction, the principal design features include a two island arrangement, with flight control from the after island, two deck-edge aircraft lifts and a ski-jump to operate Short Take-Off and Vertical Landing (STOVL) aircraft. Planning assumptions are that CVF is to operate the F-35B STOVL variant of the Joint Strike Fighter, the preferred choice to meet the UK Joint Combat Aircraft requirement; UK signed the MoU for the PFSD phase on 12 December 2008. The flight-deck has a single runway and ramp; five landing spots are positioned on the runway and there is a sixth spot to starboard for helicopter landings only. The design is adaptable in that it allows for the retrofit of catapults and arrestor gear at a later date if required. Other features include eight internal decks, 19 watertight sections each of which



CVF

7/2008, Thales / 45451



CVF

9/2007, Thales / 1167814

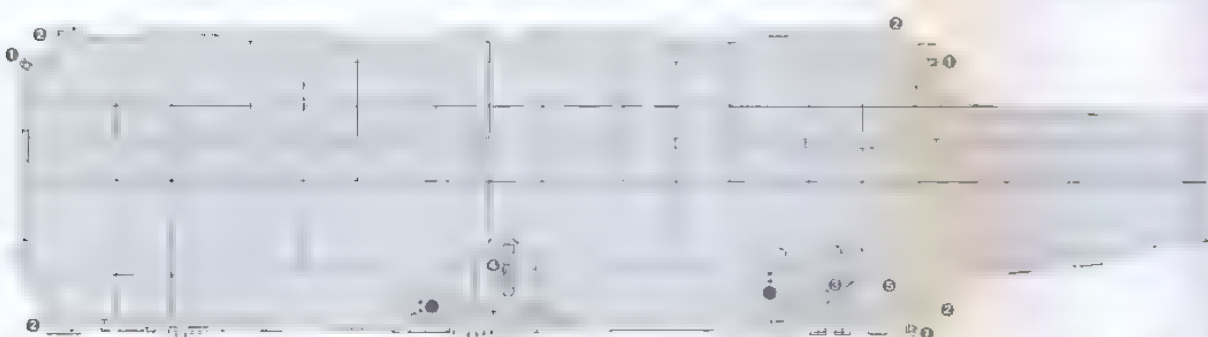
contains vertical access trunks for fire-fighting, and an integrated waste management system which is fully MARPOL compliant. Key spaces, such as the Operations Room, have been designed with reconfigurability in mind. All major machinery is controlled and monitored by an Integrated Platform Management System

Air weapons are supplied from two automated deep stores by a Highly Mechanised Weapon Handling System which uses commercial warehousing techniques. Blown Fibre Optic technology is used to connect over 850 compartments via 112 km of fibre.
Operational. To be based at Portsmouth



CVF

(Scale 1 : 1,800), Ian Sturton / 1352510



CVF

(Scale 1 : 1,800), Ian Sturton / 1353509

DESTROYERS

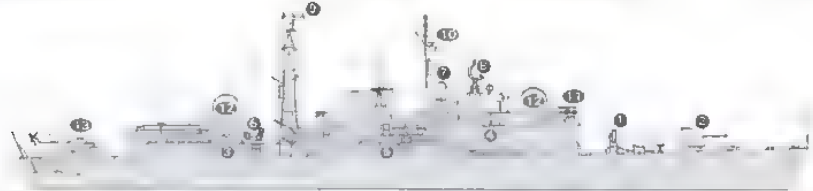
Notes: *Bristol* (D 23) is an immobile tender used for training in Portsmouth Harbour.

2 TYPE 42 CLASS (BATCH 2) (DDGH)

Name	No	Builders	Laid down	Launched	Commissioned
NOTTINGHAM	D 91	Vosper Thornycroft, Woolston	6 Feb 1978	18 Feb 1980	14 Apr 1983
LIVERPOOL	D 92	Cammell Laird, Birkenhead	5 July 1978	25 Sep 1980	1 July 1982

Displacement, tons: 4,500 standard, 4,800 full load
Dimensions, feet (metres): 412 oa; 392 wl x 47 x 19 (screws) (125; 119.5 x 14.3 x 5.8)
Main machinery: COGOG; 2 RR Olympus TM3B gas turbines, 50,000 hp (37.3 MW) sustained; 2 RR Tyne RM1C gas turbines (cruising); 9,900 hp (7.4 MW) sustained; 2 shafts; cp props
Speed, knots: 29
Range, n miles: 4,000 at 18 kt
Complement: 287 (24 officers) (accommodation for 312)

Missiles: SAM: BAE Systems Sea Dart twin launcher ●; semi-active radar guidance to 40 km (21.5 n miles) at 2 Mach; height envelope 100-18,300 m (328-60,042 ft); 22 missiles, limited anti-ship capability
Guns: 1 Vickers 4.5 in (114 mm)/55 Mk 8 ●; 25 rds/min to 22 km (11.9 n miles) anti-surface; weight of shell 21 kg.
 2 BMARC 20 mm GAM-BO1 ● or ●; 1,000 rds/min to 2 km.
 2 General Dynamics 20 mm Phalanx Mk 15 Mod 1b ●, 6 barrels per launcher; 4,500 rds/min combined to 1.5 km.
 2 M 323 Mk 44 7.62 mm Miniguns. 4-7.62 mm MGs
Countermeasures: Decoys: Outfit DLH; 4 Sea Gnat 130 mm/102 mm 6-barrelled launchers ●. Irvin DLF 3 offboard decoys.
ESM: Racal UAT Mod 1; Intercept.
Torpedo defence: Type 2170 (SLQ-25A).
Combat data systems: ADAWS 20 Ed 3.1 2 SCOT 1C (to be replaced by SCOT 1A and SCOT 5 (D 91 only) SATCOMS ●; Link 11. JTIDS. Link 16 WECDIS AIS CSS BOWMAN
Weapons control: GWS 30 Mod 2; GSA 1 secondary system.
 2 Radamec 2100 series optronic surveillance directors.
Radars: Air search Marconi/Signal Type 1022 ●, D-band
 Air/surface search: AMS Type 996 ●; E/F-band
Navigation: Kelvin Hughes Type 1007 ●; I-band and Racal Decca Type 1008 ●; E/F-band.
Fire control: 2 Marconi Type 909 ●; I/J-band
Sonars: Ferranti/Thomson Type 2050 or Plessey Type 2016, hull-mounted; active search and attack; medium frequency.



TYPE 42 BATCH 2 CLASS

(Scale 1 : 1,200), Ian Sturton / 0577735



NOTTINGHAM

7/2007, John Brodie / 1305236

Helicopters: 1 Westland Lynx HAS 3/8 ●.

Programmes: Batch 1 ships decommissioned. All remaining ships Batch 2.

Modernisation: Phalanx replaced 30 mm guns in 1987-89. Batch 2 have had a command system update JTIDS (Link 16) improved ammunition.

Structure: Torpedo tubes removed.

Operational: *Birmingham* paid off in 1999, *Newcastle* and *Glasgow* in January 2005, *Cardiff* in August 2005 and *Southampton* on 12 February 2009. Decommissioning plans: *Exeter* 2009; *Nottingham* 2010; *Liverpool* 2012. Sonars not operational.



NOTTINGHAM

9/2005, Derek Fox / 1153946



LIVERPOOL

9/2007, Shaun Jones / 1305167

4 TYPE 42 CLASS (BATCH 3) (DDGH)

Name	No	Builders	Laid down	Launched	Commissioned
MANCHESTER	D 95	Vickers Shipbuilding & Engineering, Barrow-in-Furness	19 May 1978	24 Nov 1980	16 Dec 1982
GLOUCESTER	D 96	Vesper Thornycroft, Woolston	29 Oct 1979	2 Nov 1982	11 Sep 1985
EDINBURGH	D 97	Cammell Laird, Birkenhead	8 Sep 1980	14 Apr 1983	17 Dec 1985
YORK	D 98	Swan Hunter Shipbuilders, Wallsend-on-Tyne	18 Jan 1980	21 June 1982	9 Aug 1985

Displacement, tons: 4,500 standard; 5,200 full load
Dimensions, feet (metres): 462.8 oa; 434 wl x 49.9 x 19 (screws) (141.7; 132.3 x 15.2 x 5.8)
Main machinery: COGOG; 2 RR Olympus TM3B gas turbines, 50,000 hp (37.3 MW) sustained, 2 RR Tyne RM1C gas turbines (cruising); 10,680 hp (8 MW) sustained; 2 shafts; cp props
Speed, knots: 30+ **Range, n miles:** 4,000 at 18 kt
Complement: 287 (26 officers)

Missiles: SAM BAE Systems Sea Dart twin launcher ①; semi-active radar guidance to 40 km (21 n miles); warhead HE, 22 missiles; limited anti-ship capability.
Guns: 1 Vickers 4.5 in (114 mm)/55 Mk 8 Mod 1 ②; 25 rds/min to 27 km (14.6 n miles) anti-surface; weight of shell 21 kg. Mod 1 (range 33.5 km (18.7 n miles)) in D 97 and D 98.
 2 BMARC 20 mm GAM-801 ③; 1,000 rds/min to 2 km.
 2 General Dynamics 20 mm Phalanx Mk 15 Mod 1b ④; 6 barrels per launcher; 4,500 rds/min combined to 1.5 km.
 2 M 323 Mk 44 7.62 mm Miniguns 4—762 mm MGs.
Countermeasures: Decoys: Outfit DLH, 4 Sea Gnat 130 mm/102 mm 6-barrelled launchers ⑤. DLF-3 offboard decoys.
 ESM. Racal UAT Mod 1; intercept.
 Torpedo defence: Type 2170 (SLQ-25A).
Combat data systems: ADAWS 20 Ed 3.1 action data automation. SCOT 5 SATCOM ⑥; Link 11. JTIDS. Link 16. WECDIS. AIS. CSS BOWMAN.



MANCHESTER

(Scale 1 : 1,200), Ian Sturton / 0572735

Weapons control: GWS 30 Mod 2 (for SAM); GSA 1 secondary system. 2 Radamec 2100 series optronic surveillance directors.
Radars: Air search: Marconi/Signaal Type 1022 ⑦; D-band. Air/surface search: AMS Type 996 ⑧; E/F-band. Navigation. Kelvin Hughes Type 1007 ⑨; I-band and Racal Decca Type 1008 ⑩; E/F-band.
Fire control: 2 Marconi Type 909 Mod 1 ⑪; I/J-band.
Sonars: Ferranti/Thomson Type 2050 or Plessey Type 2016; hull-mounted; active search and attack.

Helicopters: 1 Westland Lynx HAS Mk 3/8 ⑫.

Programmes: The completion of the last three ships was delayed to allow for some modifications resulting from experience in the Falklands' campaign (1982).

Modemisation: Vulcan Phalanx replaced 30 mm guns 1987–89. D 97 had a partial conversion in 1990 with the Phalanx moved forward and a protective visor fitted around the bow of the ship but reverted to the standard armament in 1994. All have had a command system update. Sea Gnat decoy launchers can fire a variety of devices. Mk 8 Mod 1 gun is being progressively fitted.

Structure: A strengthening beam has been fitted on each side which increased displacement by 50 tons and beam by 2 ft. Torpedo tubes removed. Transom flaps, to improve fuel efficiency, fitted in D 95 in 2006.

Operational: The helicopter carries the Sea Skua air-to-surface weapon for use against lightly defended surface ship targets. Sonars not operational. Decommissioning plans: Manchester 2011; Gloucester 2011, York 2012; Edinburgh 2013. Based at Portsmouth.



YORK

11/2006, Michael Nitz / 1167545



EDINBURGH

6/2006, Per Körnefeldt / 1167547



MANCHESTER

5/2008, Camil Busquets i Vilanova / 1353547

1 + 5 (0) DARING CLASS (TYPE 45) (DDG(HM))

Name	No	Builders	Laid down	Launched	Commissioned
DARING	D 32	BAE Systems Marine/Vosper Thornycroft	28 Mar 2003	1 Feb 2006	Dec 2009
DAUNTLESS	D 33	BAE Systems Marine/Vosper Thornycroft	26 Aug 2004	23 Jan 2007	2010
DIAMOND	D 34	BAE Systems Marine/Vosper Thornycroft	25 Feb 2005	27 Nov 2007	2011
DRAGON	D 35	BAE Systems Marine/Vosper Thornycroft	19 Dec 2005	17 Nov 2008	2011
DEFENDER	D 36	BAE Systems Marine/Vosper Thornycroft	31 July 2006	2009	2012
DUNCAN	D 37	BAE Systems Marine/Vosper Thornycroft	26 Jan 2007	2010	2013

Displacement, tons: 5,800 standard, 7,450 full load
Dimensions, feet (metres): 500.1 oa; 462.9 wl x 69.6 x 17.4 (152.4; 141.1 x 21.2 x 5.3)

Main machinery: Integrated Electric Propulsion; 2 RR WR-21 gas turbine alternators; 42 MW; 2 Wärtsilä diesel generators; 4 MW; 2 motors; 40 MW; 2 shafts; fixed props

Speed, knots: 31
Range, n miles: 7,000 at 18 kt
Complement: 191 plus 41 spare

Missiles: SSM. Space for 8 Harpoon (2 quad) ●
SAM: 6 DCN Sylver A 50 48 cell VLS ● Sea Viper (GWS 45); typical mix of 32 Aster 30, active pulse doppler radar homing to 80 km (43.2 n miles) at 4.0 Mach; warhead 15 kg and 16 Aster 15; active pulse doppler radar homing to 30 km (16 n miles) at 3.0 Mach

Guns: 1 Vickers 4.5 in (114 mm)/55 Mk 8 Mod 1 ● 25 rds/min to 27 km (14.8 n miles); weight of shell 21 kg
 2—20 mm Vulcan Phalanx Mk 15 Mod 1b (fitted for both not with) ● 2 REMS G MSI DS 30A 30 mm/75; 650 rds/min to 10 km (5.4 n miles); weight of shell 0.36 kg ●

Countermeasures: Decoys: 4 DLH (chaff, IR); DLF offboard decoys, ● Type 2170 torpedo defence system.
 ECM: to be decided.

RESM Thales Type UAT (mod) ●; intercept.
 CEM: to be decided.

Combat data systems: CMS-1 (based on DNA SSCS with additional AAW functions); Links 11, 16 STDL and 22 SATCOM ●

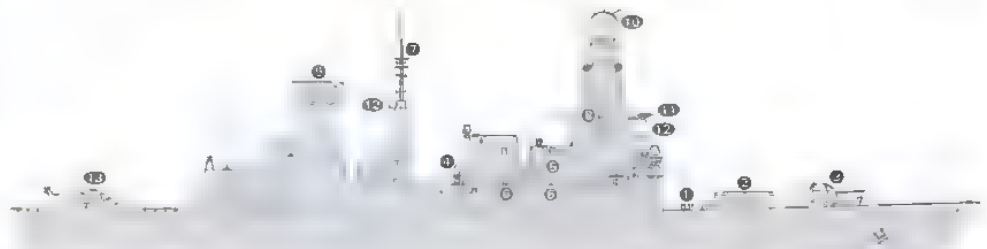
Weapons control: GSA 9 with 2 EOSP sensor heads (EOGCS) (based on Radamec 2500)

Radars: Air/surface search: Signal/Marconi Type 1046 (S 1850M) ●, D-band

Surveillance/fire control: BAE Systems Type 1045 (Sampson) ●, E/F-band; multifunction.

Surface search Raytheon Type 1048 ● E/F-band
 Navigation: 2 Raytheon Type 1047 ●, I-band.

Sonars: EDO/ULTRA MFS-7000; bow mounted; medium frequency



DARING

(Scale 1 : 1,200), Ian Sturton / 1353511

Helicopters: Lynx Mk HMA 8 (first batch) or Merlin HM Mk 1 ●.

Programmes: This project has gone through many stages, the result of which has been a delay in the provision of a replacement anti-air warfare capability until 2010 and the concomitant extension of the ship-lives of the ageing Type 42s. Starting life as NFR 90 in the 1980s, it was taken forward via the Anglo-French Future Frigate, the tri-nation Common New Generation Frigate (Horizon) and finally, when UK withdrew from the collaborative ship programme on 25 April 1999, a national Type 45 ship project. The contract for the design and build of the first three ships (Batch 1) was placed with the prime contractor, BAE Systems, on 20 December 2000. This was amended in late 2001 to reflect a new procurement strategy in which commitment was made to the first six ships. The second three ships comprise Batch 2. Vosper Thornycroft is building and outfitting Blocks E/F, the forward section of each ship together with the masts and funnel. The remaining Blocks A-D are being built by BAES Surface Fleet Solutions. Final assembly of D 32 was at Scotstoun and assembly of follow-on ships is at Govan. It was announced on 19 June 2008 that plans to build two

Batch 3 ships had been cancelled. Procurement of the missile system was pursued separately and a contract for full development and initial production of PAAMS (Sea Viper) was placed with the tri-national consortium, EUROPAAMS, in August 1999. Test firings are being conducted from the trials barge *Longbow* from 2008–09. System qualification is expected by the end of 2009 and the first ship-launched firing is planned from *Dauntless* in 2010.

Structure: Built to Lloyd's Naval Ship Rules. Provision for future installation of CEC, 155 mm gun or a 16-cell VLS silo, SSM, CIWS and magazine-launched torpedoes. An integrated technology mast is another potential modification. The ships are designed to support and deploy at least 30 troops. OTC facilities are to be included. The suitability of the Type 45 as a BMD platform is being studied.

Operational: Stage 1 sea trials of *Daring* were completed in September 2008 and the ship was accepted off contract on 10 December 2008. Stage 2 trials are to be conducted during 2009. *Dauntless* began sea trials in November 2008. In-service dates are likely to be about a year after commissioning dates.



DARING

7/2007, BAE Systems / 1167805



DARING

5/2008, B Moultrie / 1353546

FRIGATES

Notes: The Sustained Surface Combatant Capability (S2C2) study, started in 2006 by a joint MoD/industry team as a MoD 'Pathfinder' initiative, was completed in March 2007. The aim of the study was to balance the future capability and structure of the surface fleet while safeguarding the UK's long-term complex warship shipbuilding capacity. The conclusions of the study included the plan to procure a new family of ships (collectively known as the Future

Surface Combatant (FSC)) to replace the Type 22 Batch 3 and Type 23 frigates and a range of minor war vessels. Reduction of whole-life costs is to be achieved by the use of common systems and equipment and open architecture technologies. Modular capabilities, particularly mine warfare, embarked military forces and unmanned vehicles will also be important features. The family is likely to include a high-capability multimission ASW and land-attack

capable combatant (C1), a lower capability stabilisation combatant (C2) and an ocean-capable patrol vessel (C3). C1 and C2 would replace the Type 22 and 23 classes and may use the same generic 6,000 ton hull. C3 is likely to be of the order of 2,000 tons. The Assessment Phase (Initial Gate) is to be launched in 2009, the Demonstration and Manufacture Phase (Main Gate) in 2011 and the first of class is to enter service in 2019.

13 DUKE CLASS (TYPE 23) (FFGHM)

Name	No	Builders	Laid down	Launched	Commissioned
ARGYLL	F 231	Yarrow Shipbuilders, Glasgow	20 Mar 1987	8 Apr 1989	31 May 1991
LANCASTER	F 229 (ex-F 232)	Yarrow Shipbuilders, Glasgow	18 Dec 1987	24 May 1990	1 May 1992
IRON DUKE	F 234	Yarrow Shipbuilders, Glasgow	12 Dec 1988	2 Mar 1991	20 May 1993
MONMOUTH	F 235	Yarrow Shipbuilders, Glasgow	1 June 1989	23 Nov 1991	24 Sep 1993
MONTROSE	F 236	Yarrow Shipbuilders, Glasgow	1 Nov 1989	31 July 1992	2 June 1994
WESTMINSTER	F 237	Swan Hunter Shipbuilders, Wallsend-on-Tyne	18 Jan 1991	4 Feb 1992	13 May 1994
NORTHUMBERLAND	F 238	Swan Hunter Shipbuilders, Wallsend-on-Tyne	4 Apr 1991	4 Apr 1992	29 Nov 1994
RICHMOND	F 239	Swan Hunter Shipbuilders, Wallsend-on-Tyne	16 Feb 1992	6 Apr 1993	22 Jun 1995
SOMERSET	F 82	Yarrow Shipbuilders, Glasgow	12 Oct 1992	25 Jun 1994	20 Sep 1996
SUTHERLAND	F 81	Yarrow Shipbuilders, Glasgow	12 Oct 1993	9 Mar 1996	4 July 1997
KENT	F 78	Yarrow Shipbuilders, Glasgow	16 Apr 1997	27 May 1998	8 June 2000
PORTLAND	F 79	Yarrow Shipbuilders, Glasgow	14 Jan 1998	15 May 1999	3 May 2001
ST ALBANS	F 83	Yarrow Shipbuilders, Glasgow	18 Apr 1999	6 May 2000	6 June 2002

Displacement, tons: 3,500 standard; 4,200 full load
Dimensions, feet (metres): 436.2 x 52.8 x 18 (screws), 24 (sonar) (133 x 16.1 x 6.5; 7.3)

Main machinery: CODLAG; 2 RR Spay SM1A (F 229-F 236) or SM1C (F 237 onwards) gas turbines (see *Structure*); 31,100 hp (23.2 MW) sustained; 4 Paxman 12CM diesels; 8,100 hp (6 MW); 2 GEC motors; 4,000 hp (3 MW); 2 shafts
Speed, knots: 28; 15 on diesel-electric
Range, n miles: 7,800 miles at 15 kt
Complement: 181 (13 officers)

Missiles: SSM: 8 McDonnell Douglas Harpoon (2 quad) launchers; active radar homing to 92 km (50 n miles) at 0.9 Mach; warhead 227 kg (84C). 4 normally carried.
 SAM: British Aerospace Seawolf GWS 26 Mod 1 VLS; command line of sight (CLOS) radar/TV tracking to 6 km (3.3 n miles) at 2.5 Mach; warhead 14 kg; 32 canisters.

Guns: 1 Vickers 4.5 in (114 mm)/55 Mk 8; 25 rds/min to 22 km (11.9 n miles); 275 km (14.8 n miles) Mod 1 anti-surface; weight of shell 21 kg. Mk 8 Mod 1 being progressively fitted.
 2 DES/MSI DS 30B 30 mm/75 (being replaced by 30 mm ASCG); 650 rds/min to 10 km (5.4 n miles) anti-surface; 3 km (1.6 n miles) anti-aircraft; weight of shell 0.36 kg.
 2 M 323 Mk 44 7.62 mm Miniguns. 4—7.62 mm MGs.

Torpedoes: 4 Cray Marine 324 mm fixed (2 twin) tubes; Marconi Stingray; active/passive homing to 11 km (5.9 n miles) at 45 kt; warhead 35 kg (shaped charge); depth to 750 m (2,460 ft). Reload in 9 minutes.

Countermeasures: Decoys: Outfit DLH; 4 Sea Gnat 6-barrelled 130 mm/102 mm launchers; DLF 2/3 offboard decoys. Type 2170 torpedo defence system.

ESM: Rascal UAT; intercept

Combat data systems: Insyte Surface Ship Command System (DNA); Link 11. 2 Matra Marconi SCOT 5 SATCOMs; BOWMAN RNCSS. WECDIS

Weapons control: BAe GSA 88/GPEOD optronic director; GWS 60 (for SSM). GWS 26 (for SAM).

Radars: Air/surface search. Plessey Type 996(I); 3D; E/F-band

Surface search: Rascal Decca Type 1008; E/F-band.

Navigation: Kelvin Hughes Type 1007; I-band.

Fire control: 2 Marconi Type 911; I/Ku-band.

IFF: 1010/1011 or 1018/1019.

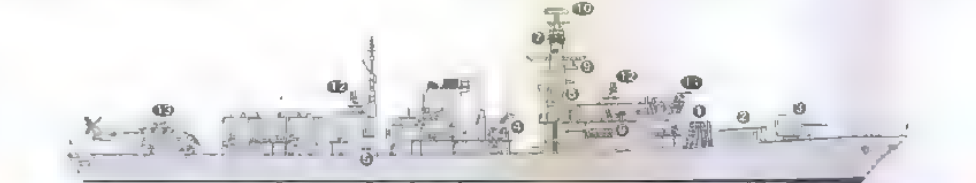
Sonars: Ferranti/Thomson Sintra Type 2050, bow-mounted; active search and attack

Dowty Type 2031Z (F 229, 231, 234-236), towed array, passive search; very low frequency.

Thales Type 2087 (F 237, 238, 239, 82, 83, 81); active low-frequency (500 Hz) towed body with passive array (100 Hz).

Helicopters: 1 Westland Lynx HMA 3/8 or 1 Merlin HM 1 (Soner 2087 fitted ships).

Programmes: The first of this class was ordered from Yarrow on 29 October 1984. Further batches of three



IRON DUKE

(Scale 1 : 1,200), Ian Sturton / 0530055



PORTLAND

9/2008*, John Brodie / 1353506

ordered in September 1986, July 1988, December 1989, January 1992 and February 1996. Further orders are unlikely. F 229 pennant number changed, because 232 was considered unlucky, as it is the RN report form number for collisions and groundings.

Modernisation: Major improvement programmes are in progress. The Command System has been upgraded to Phase 5 and DNA(2) is to be progressively installed from 2009 (F 236 first ship). The Mk 8 Mod 1 gun is to be installed in the whole class by 2009. Modifications to improve the performance of Type 966 radar are being made and 996 radar is to be replaced by BAe Insyte ARTISAN 3D radar 2010-14. The SeaWolf system is being upgraded from 2008-2014; F 81 is the first ship to be upgraded, enhancements include improved I-band radar, an additional optronic tracker to improve low level performance and improved software. In a separate contract the Mk 4 SWELL (Seawolf Enhanced Low Level) fuze is being incorporated into existing rounds and in Block 2 missiles. Surface Ship Torpedo Defence, a development of Sonar 2070, is being fitted. Low Frequency Active Sonar (Type 2087) is replacing Type 2031 in eight ships. F 237, F 238, F 239, F 82, F 83 and F 81 have been fitted. F 78 and F 79 are to follow in 2010. Trial launch and recovery of a Scan Eagle UAV were conducted

in March 2006. The 30 mm gun is being replaced by the MSI Automated Small Calibre Gun (ASCG) from 2008 (F 82 first to be fitted).

Structure: Incorporates stealth technology to minimise acoustic, magnetic, radar and IR signatures. The design includes a 7° slope to all vertical surfaces, rounded edges, reduction of IR emissions and a hull bubble system to reduce radiated noise. The combined diesel electric and GT propulsion system provides quiet motive power during towed sonar operations. The SM1C engines although capable of 41 MW of power combined are constrained by output into the gearbox. MacTaggart Scott Helios hoist landing system. PRISM enhanced helicopter landing and handling system being fitted to all except F 231.

Operational: F 78, F 83, F 229, F 234, F 237 and F 239 are based at Portsmouth and the remainder, at Devonport. *Norfolk* and *Marlborough* decommissioned in 2005 and *Grafton* in March 2006. All three ships have been sold to Chile. Further decommissionings are not planned to start until 2023, thereby extending ship-life to up to 35 years. ASW trials to test and prove Sonar 2087 and the Merlin helicopter were conducted in the Indian Ocean during 2008.



KENT

8/2008*, Junichi Hayashi / 1353507



SOMERSET

6/2008, Giorgio Ghiglione / 1353508



LANCASTER

11/2008, Guy Toremans / 1353543



IRON DUKE

3/2008, B Sullivan / 1353542

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4 BROADSWORD CLASS (TYPE 22 BATCH 3) (FFGHM)

Name	No	Builders	Laid down	Launched	Commissioned
CORNWALL	F 99	Yarrow Shipbuilders, Glasgow	14 Dec 1983	14 Oct 1986	23 Apr 1988
CUMBERLAND	F 85	Yarrow Shipbuilders, Glasgow	12 Oct 1984	21 June 1986	10 June 1989
CAMPBELTOWN	F 86	Cammell Laird, Birkenhead	4 Dec 1985	7 Oct 1987	27 May 1989
CHATHAM	F 87	Swan Hunter Shipbuilders, Wallsend-on-Tyne	12 May 1986	20 Jan 1988	4 May 1990

Displacement, tons: 4,200 standard, 4,900 full load
Dimensions, feet (metres): 485.9 x 48.5 x 21 (148.1 x 14.8 x 6.4)
Main machinery: COGAG; 2 RR Spey SM1A gas turbines; 29,500 hp (22 MW) sustained; 2 RR Tyne RM3C gas turbines; 10,680 hp (8 MW) sustained; 2 shafts; LIPS cp props
Speed, knots: 30; 18 on Tynes
Range, n miles: 4,500 at 18 kt on Tynes
Complement: 250 (31 officers) (accommodation for 301)



Missiles: SSM: 8 McDonnell Douglas Harpoon Block 1C (2 quad) launchers ●; preprogrammed; active radar homing to 92 km (50 n miles) at 0.9 Mach; warhead 227 kg.
SAM: 2 British Aerospace Seawolf GWS 25 Mod 3 ●; command line of sight (CLOS) with 2 channel radar tracking to 5 km (2.7 n miles) at 2+ Mach; warhead 14 kg.
Guns: 1 Vickers 4.5 in (114 mm)/55 Mk 8 ●; 25 rds/min to 22 km (11.9 n miles); 27 km (14.6 n miles) Mod 1 anti-surface; weight of shell 21 kg.
 1 Signal/General Electric 30 mm 7-barrelled Goalkeeper ●; 4,200 rds/min combined to 15 km.
 2 GAM-BO1-1 20 mm ●; 700-900 rds/min to 1 km
 2 M 323 Mk 44 7.62 mm Miniguns. 4—7.62 mm MGs.
Countermeasures. Decoys: Outfit DLH; 4 Sea Gnat 6-barrelled 130 mm/102 mm fixed launchers ●. DLF offboard decoys
 Type 2170 torpedo defence system.
RESM Rascal UAT; intercept.
CESM CoBLU; intercept.

CORNWALL

(Scale 1 : 1,200), Ian Sturton / 0572734

Combat data systems. CACS 5 action data automation. Link 11. 2 Matra Marconi SCOT 5 SATCOMs ●. ICS-3 integrated comms. INMARSAT. BOWMAN. RNCSS. WECDIS
Weapons control. 2 BAe GSA 8B GPEOD Sea Archer optronic directors with TV and IR imaging and laser rangefinders ●. GWS 25 Mod 3 (for SAM) GWS 60
Radars: Air/surface search: Marconi Type 967/968 ●; D/E band. Navigation: Kelvin Hughes Type 1007; I-band.
Fire control: 2 Marconi Type 911 ●; I/Ku-band (for Seawolf).
Sonars: Ferranti/Thomson Sintra Type 2050; hull-mounted; active search and attack.

by 2012. Enhancements include an improved I-band radar, an additional optronic tracker to improve low level performance and improved software. In a separate contract, the Mk 4 SWELL (Seawolf Enhanced Low Level) fuze is being incorporated into existing rounds and in Block 2 missiles. Mk 8 Mod 1 gun is being progressively fitted to the class. Replacement of the CESM system (Project Shaman) is under consideration.
Structure: Batch 3 are stretched versions of original Batch 1. Flight decks enlarged to operate Sea King helicopters
Operational. This class is primarily designed for ASW operations and is capable of acting as OTC All have facilities for flag and staff. One Lynx normally embarked. All are based at Devonport. Decommissioning plans. Cornwall 2019; Campbeltown 2020; Cumberland 2021, Chatham 2022.
Sales: All Batch 1 to Brazil. Batch 2 ships London and Coventry to Romania and Sheffield to Chile.

Helicopters: 2 Westland Lynx HMA. Mk 3/8 ●

Modernisation: A major upgrade to the Seawolf system is being implemented; starting with F 86 in 2009, a rolling installation programme is planned to be completed



CHATHAM

3/2008, B Sullivan / 1353545



CAMPBELTOWN

3/2008, Michael Nitz / 1353544



CORNWALL

4/2008, John Brodie / 1353545

SHIPBORNE AIRCRAFT

Notes: (1) The F-35B STOVL (Short Take-Off and Vertical Landing) variant of the Lockheed Martin Lightning II Joint Strike Fighter selected on 30 September 2002 to fulfil the Joint Combat Aircraft (JCA) requirement. The aircraft is to replace the RAF/RN aircraft operated by the Joint Force Harrier for operation both from the future carriers and from landbases. There are 138 aircraft planned, first delivery of which is expected to meet an in-service date of 2017. UK signed an MoU to begin full cooperation in the Production, Sustainment and Follow-on Development (PFSD) phase on 12 December 2005. The maiden flight of the F-35B took place on 11 June 2008 and the first full STOVL test is expected in 2009.

(2) Following the withdrawal from service of Sea Harrier, the Harrier force has migrated to an all GR force. 85 GR.7 and GR.7A and nine T10 aircraft to receive an avionics and weapons upgrade to GR 9/GR 9A/T.12 standard by late 2009.

(3) A programme to replace the current organic airborne early-warning capability in 2012 is in progress. Initial Gate for The Maritime Airborne Surveillance and Control (MASC) programme was passed in July 2005 with Main Gate decisions to follow in 2009. Potential solutions are likely to be based on rotary-wing platforms and UAVs. The V-22 Osprey is a further option.

(4) AgustaWestland Future Lynx selected on 27 March 2005 as preferred option to meet the requirement for the Maritime (Surface) Attack Helicopter. Entry into service is expected in 2015. Overall naval numbers are expected to be of the order of 28.

(5) Dauphin 2 helicopters with Royal Naval markings are leased by FOST for staff transfers.

(6) Proposals for a maritime version of the Chinook medium-lift helicopter were formalised in September 2004 with the launch of a three-year assessment phase.



DAUPHIN 2 9/2008*, Ian Harris / 1353541

Numbers/Type: 40 British Aerospace Harrier GR.7A/9A.
Operational speed: 575 kt (1,065 km/h).
Service ceiling: 45,000 ft (13,716 m).
Range: 594 n miles (1,101 km).
Role/Weapon systems: RAF all weather single-seat close support, battlefield interdiction night attack and reconnaissance aircraft, first operated from HMS *Illustrious* in 1994. All GR.7A (with upgraded engines) are being upgraded to GR.9A standard by late 2009. Sensors: FLIR, TIALD, Joint Recce pod, SNIPER Advanced Targeting Pod, ESM, ECM, chaff dispensers and BOL IR. Weapons: AAM; 2 or 4 AIM-9L Sidewinder ASRAAM CRV7. Ground attack: 'iron' bombs, Paveway II LGB, Paveway III LGB, Paveway IV Precision guided bomb, Maverick IR and TV, Brimstone advanced anti-armour weapon system.



HARRIER GR. 7A 6/2004, Royal Navy / 1043610

Numbers/Type: 42 Westland/Agusta Merlin HM Mk 1
Operational speed: 150 kt (277 km/h)
Service ceiling: 10,000 ft (3,048 m).
Range: 550 n miles (1,019 km).
Role/Weapon systems: Primary anti-submarine role with secondary anti-surface and troop-carrying capabilities. Contract for 44 signed 9 October 1991. In service with 814, 820, 824 and 829 Squadrons. A contract for a Capability Sustainment Programme (CSP) was awarded to Lockheed Martin UK on 21 December 2005. There are to be 30 (with an option for a further eight) aircraft upgraded from 2010 with the first modernised aircraft to enter service in 2013. CSP features include: upgrades to the sonar, radar, aircraft and tactical management systems and other key avionics systems. Sensors: GEC-Merconi Blue Kestrel 5000 radar, Thales Flash AQS 950 dipping sonar, GEC-Merconi sonobuoy acoustic processor AQS-903A, Thales Orange Reaper ESM, ECM, Link 11. Weapons: ASW; four Stingray torpedoes or Mk 11 Mod 3 depth bombs. ASV; DTHT for ship-launched SSM.



MERLIN HM MK 1 1/2008*, Shaun Jones / 1305161

Numbers/Type: 22/6 Westland/Agusta Merlin HC Mk 3/Merlin HC Mk 3A.
Operational speed: 150 kt (277 km/h).
Service ceiling: 13,125 ft (4,000 m).
Range: 550 n miles (1,019 km).
Role/Weapon systems: Operated by RAF Roles include cargo and troop transport and combat SAR. Military lift is 24 troops and up to four tonnes underslung. Sensors: integrated defensive aids including Raytheon laser detection, BAE Systems Sky Guardian 2000 RWR, Doppler-based MAWS, Northrop Grumman AN/AAQ-24 Nemesis DIRCM and BAE Systems North America AN/ALE-47 chaff/flare dispensers. Weapons: machine guns.



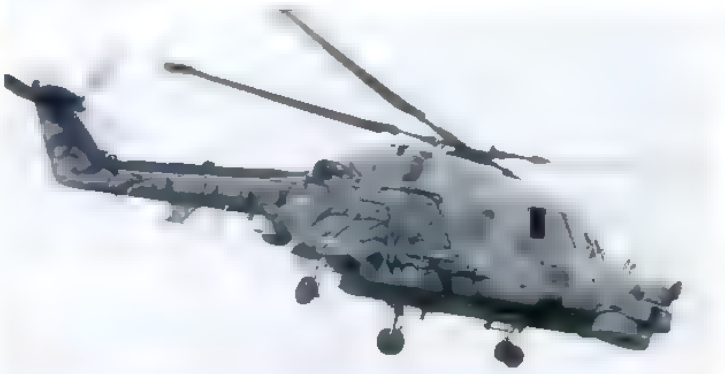
MERLIN Mk 3 8/2003, Paul Jackson / 05/2897

Numbers/Type: 15 Westland Sea King HU Mk 5.
Operational speed: 112 kt (207 km/h).
Service ceiling: 10,000 ft (3,050 m).
Range: 400 n miles (740 km).
Role/Weapon systems: Sea King HU Mk 5 is primary SAR platform and utilises night vision goggles for overland and overseas operations. Sensors: Sea Searcher radar, Orange Crop ESM (Mk 6 only). Weapons: The Mk 5 can be fitted with 7.62 mm MGs.



SEA KING HU MK 5 8/2007, B Sullivan / 1305160

Numbers/Type: 34/34 Westland Lynx HAS 3/Lynx HMA 8.
Operational speed: 120 kt (222 km/h).
Service ceiling: 10,000 ft (3,048 m).
Range: 320 n miles (593 km).
Role/Weapon systems: Primary role anti-surface warfare with capability to carry a variety of weapons. Embarked in a number of RN and RFA ships. All HMA Mk 8 variants to be upgraded with Saturn-capable radios by mid-2010. Sensors: Ferranti Sea Spray Radar, Orange Crop ESM, Sea Owl PID (Mk 8 only), Missile Approach Warner (Mk 8 only), IR Jemmer (Mk 8 only) and flare dispenser (Mk 8 only). Weapons: Up to four Sea Skua missiles, two Stingray torpedoes, Mk 11 depth charge, M3M 0.5 in Cl. Cabin mounted Heavy Machine Gun



LYNX HMA 8 7/2008*, B Sullivan / 1353540



LYNX HAS 3 4/2007, Maritime Photographic / 1305159

Numbers/Type: 13 Westland Sea King ASAC Mk 7.
Operational speed: 90 kt (167 km/h).
Service ceiling: 10,000 ft (3,050 m).
Range: 400 n miles (740 km).

Role/Weapon systems: Primary role Airborne Surveillance and Control (ASaC) for maritime strike, littoral manoeuvre and force protection operations. Conversion contract awarded in October 1996 to upgrade AEW Mk 2 Fleet to ASAC Mk 7. Programme completed mid-2004. Two aircraft lost in Iraq conflict have been replaced by conversion of two ex-Mk 6 aircraft. Sensors: Thales Searchwater 2000, Racal MIR-2 'Orange Crop' ESM, IFF Mk XII, Litton 100 g navigation system and JTIDS/Link 16. Weapons: None.



SEA KING ASAC MK 7 7/2008*, B Sullivan / 1353539

Numbers/Type: 37 Westland Sea King HC Mk 4.
Operational speed: 112 kt (208 km/h).
Service ceiling: 10,000 ft (3,050 m).
Range: 664 n miles (1,230 km).

Role/Weapon systems: Commando support helicopters capable of carrying most Commando Force equipment either internally or underslung. Current out of service date 2012. A Mk 4 Life Extension Programme, due for approval in 2009, would extend this date to 2018. Engines have been upgraded since 2003 to improve hot weather performance. In addition to Mk 4 aircraft, six HAS 6 ASW aircraft were converted to Mk 6C Commando configuration to provide temporary backfill during the HUMS modification programme. Sensors: AAR-47 ESM; IR jammer, chaff and IR flares ECM. Weapons: Can fit 7.62 mm GPMG or similar.



SEA KING HC MK 4 8/2004, B Sullivan / 1043561

Numbers/Type: 67 Westland/Boeing WAH-64D AH Mk 1.
Operational speed: 150 kt (278 km/h).
Service ceiling: 21,000 ft (6,400 m).
Range: 260 n miles (480 km).

Role/Weapon systems: Agusta Westland selected on 13 July 1995 to build UK AH Mk 1 based on AH-64D Longbow Boeing Apache. All-weather attack helicopter with day and night capability. One squadron of 6 earmarked for amphibious operations. Operable from surface ships (CVS/LPH/LPD/LSL). Initial operational capability achieved in late 2005. Sensors: Lockheed Martin/Northrop Grumman AN/APG-78 Longbow radar, Lockheed Martin Target Acquisition and Designation Sight (TV and direct view) and Pilot's Night Vision FLIR sensor (TADS/PNVIS) (being upgraded to M-TADS/MPNVIS 2008-10), Selex SAS HIDAS helicopter integrated defensive aids system, including Sky Guardian 2000 RWR Type 1223 Laser warning receiver, Thales (Vinten) Vicon 78 Srs 455 chaff/flare dispenser, BAE Systems AN/AAR-57(V) common missile warning system (CMWS) and Lockheed Martin AN/APR-48A radar frequency interferometer. Weapons: 16 Hellfire missiles or 78 CRV-7 70 mm rockets. 1—30 mm chain gun.



APACHE AH MK 1 3/2004, Royal Navy / 1153998

Numbers/Type: 6 Westland Lynx AH Mk 7.
Operational speed: 140 kt (259 km/h).
Service ceiling: 10,600 ft (3,230 m).
Range: 340 n miles (630 km).

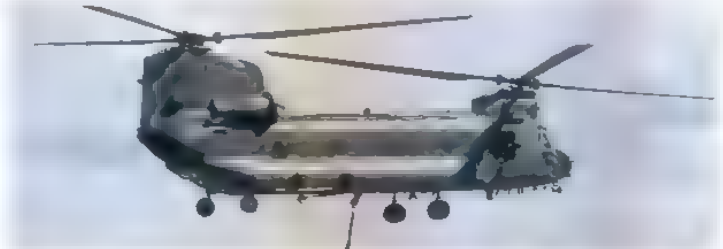
Role/Weapon systems: Military general purpose with 847 Squadron. Weapons: Heavy and light machine guns.



LYNX AH MK 7 7/2005, Maritime Photographic / 1153995

Numbers/Type: 34/8/8 Boeing Chinook HC Mk 2/Chinook HC Mk 2A/Chinook HC Mk 3.
Operational speed: 140 kt (259 km/h).
Service ceiling: 10,140 ft (3,090 m).
Range: 651 n miles (1,207 km).

Role/Weapon systems: All-weather heavy-lift helicopter equivalent to CH-47D and operated by RAF. Operable from surface ships (CVS/LPH/LPD/LSL). Mk 2/2A capable of carrying 44 fully equipped troops or 54 light fighting order troops and up to 10 tonnes cargo. The Mk 3 was to be a Special Forces version but is now to enter service in 2009 in a support helicopter role. Sensors: defensive aids suite including missile approach warning, IR jammers and chaff/flare dispensers. Weapons: machine guns.



CHINOOK 6/2004, Royal Navy / 1043609

LAND-BASED MARITIME AIRCRAFT (FRONT LINE)

Notes: Training and Liaison aircraft not listed include four Jetstream, Falcon 20 (under contract) and 16 Hawk (FRADU)



FALCON 20 6/2005, Paul Jackson / 1153997

Numbers/Type: 15 Hawker Siddeley Nimrod MR 2P/4.
Operational speed: 400 kt (741 km/h).
Service ceiling: 42,000 ft (12,800 m).
Range: 5,000 n miles (9,265 km).

Role/Weapon systems: Maritime patrol aircraft with focus on ASW, ASUW and SAR; Nimrod can also support OTH and C²I at long range from shore bases. Following years of development and the first flight of MR 4 prototype in 2004, the contract for production of 9 MR 4 (with option to complete three development aircraft to production standard) was awarded to BAE Systems on 18 July 2006. To enter service from 2010. MR 4 equipment includes Thales Searchwater 2000MR radar, Elta EL-8300 ESM, Ultra/GDC AQS 970 acoustics, CAE MAD, Ultra Sonobuoys and Northrop-Grumman Night Hunter EO turret. MR 2 equipment comprises Thales Searchwater radar, ECM, Yellowgate ESM, cameras, CAE MAD, Ultra sonobuoys, Ultra/GDC AQS 971 acoustics suite, WESCAM EO system, cameras, MR 2 weapons, ASW; 6.1 tons of Stingray torpedoes. Self-defence, four AIM-9L Sidewinder. MR 4 has additional wing hard-points and Mil-Std wiring to carry greater range of external stores.



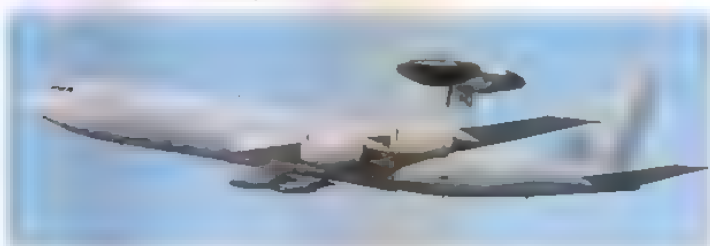
NIMROD MR 2 6/2005, Michael Winter / 1153949



NIMROD MRA 4 8/2004, BAE Systems / 0577851

Numbers/Type: 7 Boeing E-3D Sentry AEW Mk 1
Operational speed: 460 kt (853 km/h)
Service ceiling: 36,000 ft (10,973 m)
Range: 870 n miles (1,610 km)

Role/Weapon systems: Airborne warning and control system aircraft with secondary role to provide coastal AEW for the Fleet; 6 hours endurance at the range given above.
Sensors: Westinghouse APY-2 surveillance radar, Bendix weather radar, Mk XII IFF, Yellow Gate, ESM, ECM. Weapons: Unarmed



E-3D 10/2001, *Ships of the World* / 0131206

PATROL FORCES

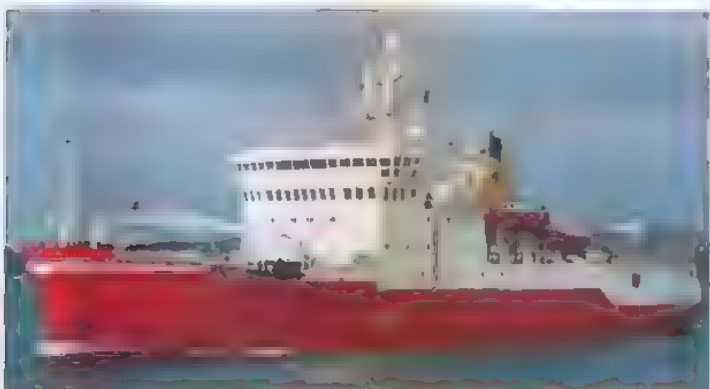
Notes: It is planned to replace the 16 Archer class training craft (two are based in Cyprus for patrol duties) and two Halmatic M 160 craft, based at Gibraltar, with a single class of patrol craft capable of undertaking patrol, force-protection and training roles.

1 ANTARCTIC PATROL SHIP (AGOBH)

Name	No	Builders	Commissioned
ENDURANCE (ex-Polar Circle)	A 171 (ex-A 176)	Ulstein Hatlo, Norway	21 Nov 1991

Displacement, tons: 6,500 full load
Dimensions, feet (metres): 298.6 × 57.4 × 27.9 (91 × 17.9 × 8.6)
Main machinery: 2 Bergen BRM8 diesels, 8,160 hp(m) (6 MW) sustained; 1 shaft; cp prop; bow and stern thrusters
Speed, knots: 16
Range, n miles: 6,500 at 12 kt
Complement: 112 (15 officers) plus 14 Royal Marines
Radars: Surface search: Raytheon R 84 and M 34 ARG, E/F- and I-bands
Navigation: Kelvin Hughes Type 1007; I-band
IFF-Type: 1011
Helicopters: 2 Westland Lynx HAS Mk 3.

Comment: Leased initially in late 1991 and then bought outright in early 1992 as support ship and guard vessel for the British Antarctic Survey. Hull is painted red. Inmarsat fitted. Main machinery is resiliently mounted. Ice-strengthened hull capable of breaking 1 m thick ice at 3 kt. Helicopter hangar is reached by lift from the flight deck. Equipped with Simrad EM 710 multibeam echo-sounder, Simrad EA 600 single-beam echo-sounder and Furuno CH 250 forward looking echo-sounder. Carries two Survey Motor Boats (*James Caird* and *Nimrod*). Based at Portsmouth.



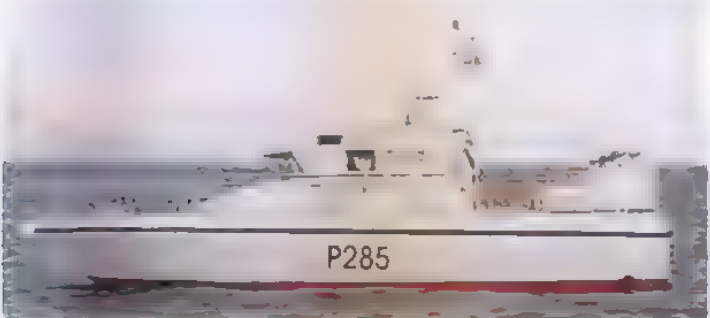
ENDURANCE 11/2007, *Ian Harris* / 117077

2 SCIMITAR CLASS (PATROL CRAFT) (PB)

Name	No	Builders	Commissioned
SCIMITAR (ex-Gray Fox) P 284	SABRE (ex-Gray Wolf) P 285	Vosper Thornycroft, Woolston	4 July 2003
SEVERN P 282		Vosper Thornycroft, Woolston	31 July 2003
MERSEY P 283		Vosper Thornycroft, Woolston	26 Mar 2004

Displacement, tons: 26 full load
Dimensions, feet (metres): 52.5 × 14.43 × 3.9 (16 × 4.4 × 1.2)
Main machinery: 2 MAN V10 diesels; 740 hp (603 kW); 2 shafts
Speed, knots: 32 **Range, n miles:** 260 at 19 kt
Complement: 5
Guns: 2 – 7.62 mm MGs.
Radars: Racal Decca Bridgemaster 360; I-band

Comment: Halmatic M160 craft operated in Northern Ireland from 1988 but transferred to Gibraltar in September 2002 to augment the Gibraltar squadron. Both vessels renamed and commissioned on 31 January 2003. After mid life refit and design modifications, the vessels replaced *Trumpeter* and *Ranger* as Gibraltar guard ships in 2004.



SABRE 2/2008, *Maritime Photographic* / 1353538

16 ARCHER CLASS (PATROL CRAFT) (PB/AXL)

Name	No	Builders	Commissioned
EXPRESS P 163 (ex-A 163)		Vosper Thornycroft, Woolston	4 July 2003
EXPLORER P 164 (ex-A 154)		Vosper Thornycroft, Woolston	31 July 2003
EXAMPLE P 165 (ex-A 153)		Vosper Thornycroft, Woolston	26 Mar 2004
EXPLOIT P 167 (ex-A 167)		Vosper Thornycroft, Woolston	26 Mar 2004
ARCHER P 264		Vosper Thornycroft, Woolston	26 Mar 2004
BITER P 270		Vosper Thornycroft, Woolston	26 Mar 2004
SMITER P 272		Vosper Thornycroft, Woolston	26 Mar 2004
PURSUER P 273		Vosper Thornycroft, Woolston	26 Mar 2004
TRACKER P 274		Vosper Thornycroft, Woolston	26 Mar 2004
RAIDER P 275		Vosper Thornycroft, Woolston	26 Mar 2004
BLAZER P 279		Vosper Thornycroft, Woolston	26 Mar 2004
DASHER P 280		Vosper Thornycroft, Woolston	26 Mar 2004
PUNCHER P 291		Vosper Thornycroft, Woolston	26 Mar 2004
CHARGER P 292		Vosper Thornycroft, Woolston	26 Mar 2004
RANGER P 293		Vosper Thornycroft, Woolston	26 Mar 2004
TRUMPETER P 294		Vosper Thornycroft, Woolston	26 Mar 2004

Displacement, tons: 54 full load
Dimensions, feet (metres): 68.2 × 19 × 5.9 (20.8 × 5.8 × 1.8)
Main machinery: 2 RR CV 12 M800T diesels; 1,590 hp (1.19 MW); or 2 MTU diesels; 2,000 hp(m) (1.47 MW) (P 274-275); 2 shafts
Speed, knots: 22 or 25 (P 274-275)
Range, n miles: 550 at 15 kt
Complement: 5 (1 officer) plus 12 trainees
Guns: 2 – 7.62 mm MGs.
Radars: Navigation: Racal Decca 1216, I-band.

Comment: First 14 ordered from Watercraft Ltd, Shoreham. Commissioning dates: *Archer*, August 1985; *Example*, September 1985; *Explorer*, January 1986; *Biter* and *Smiter*, February 1986. The remaining nine were incomplete when Watercraft went into liquidation in 1986 and were towed to Portsmouth for completion in 1988 by Vosper Thornycroft. Initially allocated for RNR training but underused in that role and now employed as part of First Patrol Boat Squadron as training vessels for the University Royal Naval Units (URNU). *Ranger* (Sussex), *Trumpeter* (Bristol), *Puncher* (London), *Blazer* (Southampton), *Smiter* (Glasgow), *Charger* (Liverpool), *Archer* (Aberdeen), *Biter* (Manchester and Salford), *Exploit* (Birmingham), *Express* (Wales), *Example* (Northumbria) and *Explorer* (Yorkshire) Two more ordered from BMT in early 1997 to a modified design and built at Ailsa, Troon. *Tracker* and *Raider* commissioned January 1998 for Oxford and Cambridge University respectively. *Dasher* and *Pursuer* are based at Cyprus.



RANGER 5/2008, *Maritime Photographic* / 1353523



EXAMPLE 6/2008, *J Marechal* / 1353522

3 RIVER CLASS (OFFSHORE PATROL VESSELS) (PSO)

Name	No	Builders	Commissioned
TYNE P 281		Vosper Thornycroft, Woolston	4 July 2003
SEVERN P 282		Vosper Thornycroft, Woolston	31 July 2003
MERSEY P 283		Vosper Thornycroft, Woolston	26 Mar 2004

Displacement, tons: 1,700 full load
Dimensions, feet (metres): 261.7 × 44.6 × 12.5 (79.75 × 13.6 × 3.8)
Main machinery: 2 MAN 12RK 270 diesels; 11,063 hp (8.25 MW); 2 shafts; bow thruster, 375 hp (280 kW)
Speed, knots: 20
Range, n miles: 5,500 at 15 kt
Complement: 30 (plus 18 boarding party)
Guns: 1 – 20 mm Oerlikon/BMARC. 2 – 7.62 mm MGs.
Radars: Surface search: Kelvin Hughes Nucleus; E/F-band.
Navigation: Kelvin Hughes Nucleus; I-band.
Helicopters: Vertrep only.

Programmes: In the first agreement of its kind, Vosper Thornycroft contracted on 8 May 2001 for the construction, lease and support of three vessels over initial five-year period to replace five ships of island class. The lease was extended by a further five years in December 2006.

Structure: Based on Vosper Thornycroft EEZ Management Vessel concept design. The ships are capable of operating two RIBs. Fitted with a 3 tonne crane.
Operational: Part of Fishery Protection Squadron based at Portsmouth.



MERSEY 2/2008, *Maritime Photographic* / 1353537

1 MODIFIED RIVER CLASS (OFFSHORE PATROL VESSEL) (PSOH)

Name	No	Builders	Launched	Commissioned
CLYDE	P 257	VT Shipbuilding, Portsmouth	12 June 2006	30 Jan 2007

Displacement, tons: 1,847 full load
Dimensions, feet (metres): 267.4 × 44.6 × 12.5 (81.5 × 13.6 × 3.8)
Main machinery: 2 MAN 12RK diesels; 11,063 hp (8.25 MW); 2 shafts; bow thruster; 375 hp (280 kW); stern thruster; 248 hp (185 kW)
Speed, knots: 20
Range, n miles: 7,800 at 12 kt
Complement: 38 (plus 18 boarding party). Accommodation for 59
Guns: 1 DES/MSI DS 30B 30 mm; 650 rds/min to 10 km (5.4 n miles); weight of shell 0.36 kg
 2 M323 Mk 44 7.62 mm Miniguns.
 4—12.7 mm MGs.
Combat data systems: BAE Insyte CMS-1.
Radars: Surface search and navigation Terma Scantec 4100; E/F/I-bands.
Helicopters: Platform for one Merlin-sized

Comment: Contract let with VT Shipbuilding on the 28 February 2005 to build a modified River class to undertake Falkland Islands patrol duties. The ship is leased to the MoD with a Contractor Logistic Support (CLS) arrangement until 2012. The ship has been built to commercial standards with some military features. Following acceptance in January 2007, the ship assumed its role as Falkland Islands Guardship on 20 September 2007.



CLYDE

9/2007, Mario R V Carneiro / 1353502

AMPHIBIOUS FORCES

Notes: (1) Further amphibious ships and craft covered in Auxiliaries and Army sections. These include a Helicopter Support Ship, four LSD, and six LCLs.
 (2) QinetiQ awarded a contract in November 2006 to design, build, test and evaluate the Partial Air Cushion Supported Catamaran (PACSCAT) for littoral manoeuvre operations. The craft is a contender to fulfil the requirement for a Fast Landing Craft to enter service from about 2014. Such a craft, interoperable with amphibious ships, would be capable of carrying a payload of 55 tonnes at 25 kt. A class of up to six vessels is required

1 HELICOPTER CARRIER (LPH)

Name	No	Builders	Laid down	Launched	Commissioned
OCEAN	L 12	Vickers Shipbuilding/Kvaerner Govan	30 May 1994	11 Oct 1995	30 Sep 1998

Displacement, tons: 21,758 full load
Dimensions, feet (metres): 667.3 oa; 652.2 pp × 112.9 × 21.3 (203.4; 198.8 × 34.4 × 6.6)
Flight deck, feet (metres): 557.7 × 104 (170 × 31.7)
Main machinery: 2 Crossley Pielstick 12 PC2.6 V 400 diesels, 18,360 hp(m) (13.5 MW) sustained; 2 shafts; Kamewa fp props; bow thruster; 612 hp (450 kW)
Speed, knots: 19
Range, n miles: 8,000 at 15 kt
Complement: 285 plus 206 aircrew plus up to 830 Marines
Military lift: 4 LCVP Mk 5 (on davits); 2 Griffon hovercraft; 40 vehicles and equipment for most of a marine commando unit

Guns: 8 BMARC 20 mm GAM-B03 (4 twin) ①, 650 rds/min to 10 km (5.4 n miles); anti-surface; 3 km (1.6 n miles) anti-aircraft; weight of shell 0.36 kg.
 3 General Dynamics 20 mm Phalanx Mk 15 ②, 6 barrels per launcher; 4,500 rds/min combined to 1.5 km. 4 M323 Mk 44 7.62 mm Miniguns. 4—7.62 mm MGs.
Countermeasures: Decoys: Outfit DLH; 8 Sea Gnat 130 mm/102 mm launchers ③
ESM: Recal UAT Mod 1; intercept.
Torpedo defence: Type 2170 (SLQ-25A).
Combat data systems: Ferranti ADAWS 20 Ed 3.1; Link 11, Link 16, Marconi Matra SCOT 5 SATCOM ④ BOWMAN.
Radars: Air/surface search: AMSType 996 ⑤, E/F-band.
 Surface search: Recal Decca 1008 ⑥, E/F-band.
 Surface search/aircraft control: 2 Kelvin Hughes Type 1007 ⑦, I-band.
IFF: Type 1016/1017.

Helicopters: 12 Sea King HC.Mk 4/Merlin plus 6 Lynx (or WAH-64 Apache by 2005).

Programmes: Initial invitations to tender were issued in 1987. Tenders submitted in July 1989 were allowed to lapse and it was not until 11 May 1993 that a contract was placed. The hull was built on the Clyde by Kvaerner Govan and sailed under its own power to Vickers at Barrow in November 1996 for the installation of military equipment.

Modernisation: Command and control facilities upgraded in 2002 to facilitate UKMCC role. Attack helicopter infrastructure fitted 2004–05. The davits had been replaced by 2007 and BOWMAN installed to support amphibious warfare staffs. Replacement of the combat data system is expected in 2015 and MIDAS EW system in due course. BAE Insyte ARTISAN radar is to replace 996 radar. Further improvements to attack helicopter facilities, troop accommodation and storage areas made in refit 2007–08. Larger sponsons for Phalanx also installed. Phalanx 1B to be fitted in due course.

Structure: The hull form is based on the Invincible class with a modified superstructure. The deck is strong enough to take Chinook helicopters. Six landing and six parking spots for the aircraft. Accommodation for 972 plus 303 bunk overload. A garage is situated at the after end of the hangar. This is accessible from the after aircraft lift and via ramps through the ship's stern. Hull 'blisters' were fitted at waterline level port and starboard during 2002 to improve deployment and recovery of LCVPs

Operational: The LPH provides a helicopter lift and assault capability. The prime role of the vessel is embarking, supporting and operating a squadron of helicopters and carrying a Royal Marine Commando including vehicles, arms and ammunition. Up to 20 Sea Harriers can be carried but not supported. Operational sea trials started in June 1998 and completed in February 1999. Twin 20 mm guns are not always carried and may be replaced by single 20 mm. Based at Devonport.



OCEAN

(Scale 1 : 1,800), Ian Sturton / 1043485



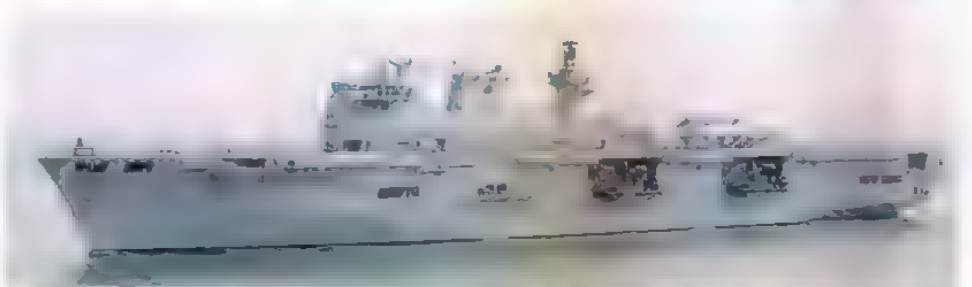
OCEAN

11/2008, B Sullivan / 1353536



OCEAN

6/2005, Michael Nitz / 1153993



OCEAN

6/2005, Maritime Photographics / 1153992

2 ALBION CLASS (ASSAULT SHIPS) (LPD)

Name	No	Builders	Laid down	Launched	Commissioned
ALBION	L 14	BAE Systems, Barrow	22 May 1998	9 Mar 2001	19 June 2003
BULWARK	L 15	BAE Systems, Barrow	27 Jan 2000	15 Nov 2001	28 Apr 2005

Displacement, tons: 14,600 standard; 18,500 full load

Dimensions, feet (metres): 577.4 × 94.8 × 23.3
(176 × 28.9 × 7.1)

Main machinery: Diesel-electric; 2 Wärtsilä Vasa 16V 32E diesel generators; 17,000 hp (m) (12.5 MW); 2 Wärtsilä Vasa 4R 32LNE diesel generators; 4,216 hp (m) (3.1 MW); 2 motors; 2 shafts; LIPS props; 1 bow thruster; 1,176 hp (m) (865 kW)

Speed, knots: 18

Range, n miles: 8,000 at 15 kt

Complement: 325

Military lift: 305 troops; 710 troops (including overload); 67 support vehicles; 4 LCU Mk 10 or 2 LCAC (dock); 4 LCVF Mk 5 (davits)

Guns: 2—20 mm ● 2 Signaal/General Dynamics 30 mm 7-barrelled Goalkeeper; 4,200 rds/min to 1.5 km ● 4 M323 Mk 44 7.62 mm Miniguns. 4—7.62 mm MGs.

Countermeasures: Decoys: Outfit DLJ; 8 Sea Gnat launchers ● and DLH offboard decoys.

ESM/ECM: Racal Thorn UAT 1/4

Torpedo defence: Type 2170 (SLO-25A).

Combat data systems: ADAWS 20 Ed 3.1 Thomson-CSF/Redifon/BAeSEMA/CS comms system. Marconi Matra SCOT 5 SATCOM ● BOWMAN.

Weapons control: 2 Ultra UECCS EOSS optronic directors (L 15).

Radars: Air/surface search: Siemens Plessey Type 996 ●; E/F-band.

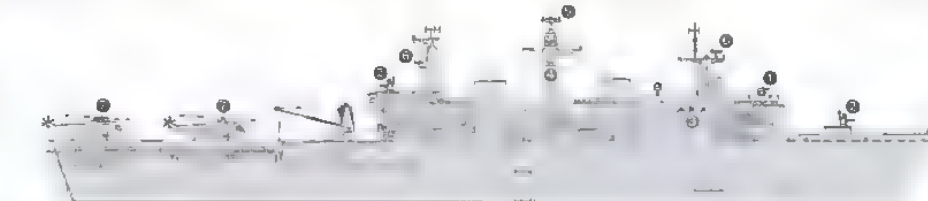
Surface search: Racal Decca 1008, E/F-band.

Navigation/aircraft control: 2 Racal Marine Type 1007 ●; I-band

IFF: Type 1016/1017

Helicopters: Platform for 3 Sea King Mk 4 ●. Chinook capable.

Programmes: A decision was taken in mid-1991 to replace the then existing LPDs. Project definition studies by YARD completed in February 1994. Invitations to tender for design and build of two ships were issued to VSEL



ALBION

(Scale 1 : 1,500), Ian Sturton / 0572733



ALBION

6/2007, Michael Nitz / 11/0773

and Yarrow on 18 August 1994 with an additional tender package to Vosper Thornycroft in November 1994. In March 1995 it was announced that only VSEL would bid, conforming to the rules governing non-competitive tenders. The contract to build the ships was awarded on 18 July 1996. First steel cut 17 November 1997

Modernisation: Davits have been replaced in both ships. BOWMAN installed to support amphibious warfare staffs. Replacement of the combat data system is expected in

2015 and MIDAS EW System in due course. BAE Insite ARTISAN radar is to replace 996 radar.

Structure: The design includes a floodable well deck, garage (with capacity for six Challenger tanks), stern gate and side ramp access. The Flight Deck has two helicopter landing spots. A large joint operations room contains substantial command and control facilities. The ships are built to military damage control standards.

Operational: Based at Devonport.



BULWARK

3/2008, Michael Nitz / 1353535



BULWARK

10/2007, John Brodie / 1305231

10 LCU MK 10

L 1001-1010

Displacement, tons: 170 light; 240 full load
Dimensions, feet (metres): 97.8 × 24.3 × 5.6 (29.8 × 7.4 × 1.7)
Main machinery: 2 MAN diesels; 2 Schottel propulsors; bow thruster
Speed, knots: 10. **Range, n miles:** 600 at 12 kt
Complement: 7
Military lift: 1 MBT or 4 vehicles or 120 troops
Radars: Navigation: I-band.

Comment: Ordered in 1998 from Ailsa Troon Yard. First pair delivered in November 1999 and, following extensive trials, modifications made to ballast tanks to improve beach landing capabilities. This work came out by BAE Systems Marine, Govan, from whom a further eight craft were ordered for delivery by mid-2003. Fitted with interlocking bow and stern ramps, they operate from the Albion class LPDs.



LCU MK 10

6/2008*, Michael Nitz / 1353534

3 LCU MK 9S

L 705 L 709 L 711

Displacement, tons: 115 light; 175 full load
Dimensions, feet (metres): 90.2 × 21.5 × 5 (27.6 × 6.8 × 1.6)
Main machinery: 2 Paxman or Dorman diesels, 474 hp (354 kW) sustained; Kort nozzles or Schottel propulsors
Speed, knots: 10. **Range, n miles:** 300 at 9 kt
Complement: 7
Military lift: 1 MBT or 60 tons of vehicles/stores or 90 troops
Radars: Navigation: Raytheon; I-band.

Comment: Last remaining craft of class of 14. Built in the mid-1960s and originally designated Mk 9M. Upgraded with Schottel propulsors in the 1990s and redesignated Mk 9S.



LCU Mk 9

3/2003, A Sharma / 05/26/1

4 GRIFFON 2000TDX(M) (LCAC(L))

C 21-24

Displacement, tons: 6.8 full load
Dimensions, feet (metres): 36.1 × 15.1 (11 × 4.6)
Main machinery: 1 Deutz BF8L513 diesel; 320 hp (239 kW) sustained
Speed, knots: 33. **Range, n miles:** 300 at 25 kt
Complement: 2
Military lift: 16 troops plus equipment or 2 tons
Guns: 1—7.62 mm MG.
Radars: Navigation: Raytheon; I-band.

Comment: Ordered 26 April 1993. Design based on 2000TDX(M) hovercraft. Aluminium hulls. Speed indicated is at Sea State 3 with a full load.



C 23

6/2005, Maritime Photographic / 1153990

11 LCVP MK 4

8401-8402

8407

8409

8411-8413

8619-8622

Displacement, tons: 10.5 light; 16 full load
Dimensions, feet (metres): 43.8 × 10.9 × 2.8 (13.4 × 3.3 × 0.8)
Main machinery: 2 Perkins T6.3544 diesels; 290 hp (216 kW); 2 shafts
Speed, knots: 15
Range, n miles: 150 at 14 kt
Complement: 3
Military lift: 20 Arctic equipped troops or 5.5 tons

Comment: Built by Souters and McTays. Introduced into service in 1986. Fitted with removable arctic canopies across well-deck. Some Royal Marines' craft replaced by LCVP Mk 5. Six craft operated by Royal Logistics Corps. These serve in rotation between the Falklands and UK.



LCVP MK 4

7/2008*, A A de Kruijf / 1353537

23 LCVP MK 5

LCVP 9473

9673-9692

9707-9708

Displacement, tons: 25 full load
Dimensions, feet (metres): 50.9 × 13.8 × 3 (15.5 × 4.2 × 0.9)
Main machinery: 2 Volvo Penta TAMD 72 WJ diesels; 2 PP 170 water-jets
Speed, knots: 25
Range, n miles: 210 at 18 kt
Complement: 3
Military lift: 35 troops plus 2 tons equipment or 8 tons vehicles and stores
Radars: Navigation: Raytheon 40; I-band.

Comment: Contract placed with Vosper Thornycroft on 31 January 1995 for one craft which was handed over on 17 January 1996. Four more ordered on 23 October 1996 for Ocean were delivered 6 December 1997; and two more for RM Poole in October 1998. Sixteen more ordered from FBM Babcock Marine in August 2001. Can beach fully laden on a 1 : 120 gradient. Speed 18 kt at full load.

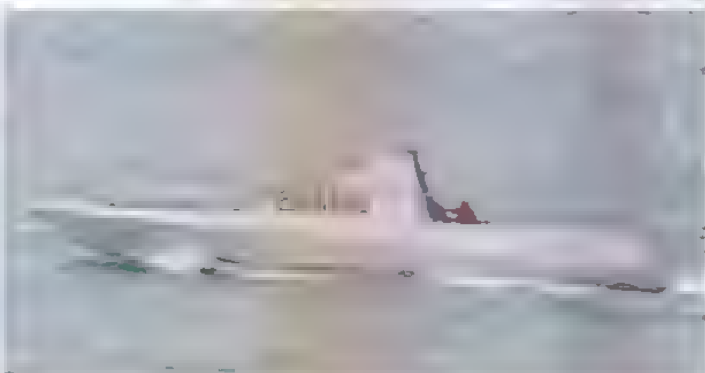


LCVP MK 5

10/2008*, Maritime Photographic / 1353533

FAST INTERCEPT CRAFT (HSIC)

Comment: A new class of up to four 18 m high-speed insertion craft, reported to have been built by VT Halmatic, began to enter service in 2006. They are to replace the 16 m Very Slender Vessel craft which have been in service since the 1990s and also the two 15 m FB design FB 50 which entered service in 1996. The new craft feature a stepped planing hull and are powered by two MAN diesels driving twin Arneson drives. Top speed is likely to be in the region of 60 kt. Capable of operating in extreme climatic conditions, they are transportable by C 130.

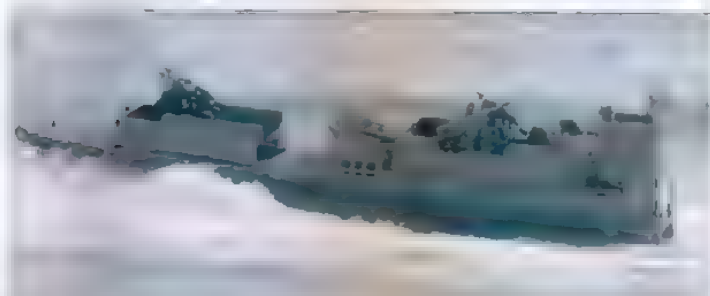


FAST INTERCEPT CRAFT

7/2008*, A A de Kruijf / 1353531

RRC AND RIB

Comment: (1) 36 RRC Mk 3: 2.6 tons and 7.4 m (24.2 ft) powered by single Yamaha 220 hp (162 kW) diesel; 36 kt fully laden (40 light); carry 8 troops. Some used by the Army. In service 1996-98
 (2) RIBs: Halmatic Arctic 22/Pacific 22/Arctic 28/Pacific 28. Rolling contract for all four types. Capable of carrying 10 to 15 fully laden troops at speeds of 26 to 35 kt.
 (3) Offshore Raiding Craft: 9 m aluminium RIB hull with removable armour plating. Diesel powered and capable of up to 40 kt. Up to 46 craft to replace the RRC Mk 3.



ORC 7/2008*, A A de Kruif / 1353530



RRC 4/2005, Per Körnefeldt / 1153943

MINE WARFARE FORCES

Notes: (1) The long-term future of the current mine-countermeasures (MCM) force is under consideration. The future capability is likely to be based on the requirement to conduct MCM in support of joint expeditionary operations in littoral waters. Speed of deployment is an important consideration. Future capability is likely to be delivered by a combination of:

- (a) a portable, modular, self-contained system that could be delivered rapidly into theatre
 - (b) an organic mine reconnaissance capability, deployed from future classes of surface combatants
 - (c) a dedicated capability involving unmanned underwater vehicles deployed from auxiliary surface craft
- (2) Replacement of the Combined Influence Sweep (CIS), removed from the Hunt class, is under consideration. Plans

to replace CIS with a new Remote Influence Minesweeping System (RIMS) were cancelled in 2002. The Shallow Water Influence Minesweeping System (SWIMS), brought into service during operations in Iraq during 2003, has not been maintained. Future options under examination include an influence sweep system deployable from an Unmanned Surface Vehicle (USV). A two-year technology readiness programme, known as FAST, was initiated in 2007
 (3) The Remote Control Mine Disposal Systems Mk 1 (PAP Mk 3) and 2 (PAP Mk 5) are to be replaced by the Atlas Elektronik Seafox C expendable mine destructor. Stowage for 24 warshots and four surveillance vehicles is to be provided on each MCM platform.
 (4) Mine reconnaissance in very shallow waters (less than 30 m) is to be met by the Hydroid Remus 100 Unmanned

Underwater Vehicle (UUV). GPS-enabled, it is equipped with a high-frequency (900/1,800 kHz) side-scan sonar. Ten systems entered service in 2006
 (5) Mine reconnaissance in waters of 30-200 m is to be undertaken by the Hydroid Remus 600 UUV. Two vehicles are to be delivered by 2009. The vehicles are also capable of undertaking hydrographic survey and environmental monitoring. Secondary roles include support of search and salvage operations.
 (6) The capability to conduct Rapid Environmental Assessment (REA) using a UUV in water depths up to 200 m is under investigation. This may be filled by commercially available vehicles. Introduction into service is planned during 2009.

8 HUNT CLASS (MINESWEEPERS/MINEHUNTERS—COASTAL) (MHSC/PP)

Name	No	Builders	Launched	Commissioned
LEDBURY	M 30	Vosper Thornycroft, Woolston	5 Dec 1979	11 June 1981
CATTISTOCK	M 31	Vosper Thornycroft, Woolston	22 Jan 1981	16 June 1982
BROCKLESBY	M 33	Vosper Thornycroft, Woolston	12 Jan 1982	3 Feb 1983
MIDDLETON	M 34	Yarrow Shipbuilders, Glasgow	27 Apr 1983	16 Aug 1984
CHIDDINGFOLD	M 37	Vosper Thornycroft, Woolston	6 Oct 1983	10 Aug 1984
ATHERSTONE	M 38	Vosper Thornycroft, Woolston	1 Mar 1986	30 Jan 1987
HURWORTH	M 39	Vosper Thornycroft, Woolston	25 Sep 1984	2 July 1986
QUORN	M 41	Vosper Thornycroft, Woolston	23 Jan 1988	21 Apr 1989

Displacement, tons: 633 light; 740 full load
Dimensions, feet (metres): 187 wl; 197 oa x 32.8 x 9.5 (koel), 11.2 (screws)
 (57, 60 x 10 x 2.9; 3.4)

Main machinery: 2 Ruston-Paxman 9-59K Deltic diesels; 1,900 hp (1,422 MW); 1 Deltic Type 9-55B diesel for pulse generator and auxiliary drive; 780 hp (582 kW); 2 shafts; bow thruster

Speed, knots: 15 diesels; 8 hydraulic drive
Range, n miles: 1,500 at 12 kt
Complement: 45 (5 officers)

Guns: 1 DES/MSI DS 30B 30 mm/75; 650 rds/min to 10 km (5.4 n miles) anti-surface; 3 km (1.6 n miles) anti-aircraft; weight of shell 0.36 kg
 Dillon Aero M 134 7.62 mm Minigun, 6 barrels, 3,000 rds/min

Countermeasures: MCM: 2 PAP 104 Mk 3/105 (RCMDS 1) remotely controlled submersibles, (being replaced by Seafox C expendable mine-disposal system).

Combat data systems: BAE Insyte Nautis 3.

Radars: Navigation: Kelvin Hughes Type 1007; I-band.
Sonars: Thales 2193; hull-mounted, minehunting, 100/300 kHz. Hull-mounted; active; high frequency.

Programmes: A class of MCM Vessels combining both hunting and sweeping (at 30 days notice) capabilities.

Modernisation: RCMDS is being replaced by Seafox C. 30 mm gun has replaced the Bofors 40 mm. Drungrange Precise Fixing System fitted 2003-04. A new minehunting sonar (Sonar 2193) and NAUTIS III command system have been fitted in all eight ships 2004-05.



MIDDLETON 4/2008*, B Sullivan / 1353529

M 134 Minigun CIWS fitted in 2007. The influence sweeping system has been removed and is at 30 days notice

Structure: GRP hull. Combines conventional propellers with bow thrusters. Fitted with an improved two-man decompression chamber by 2005.

Operational: For operational deployments fitted with enhanced weapons systems. *Brecon*, *Cottesmore* and *Dulvertan* were decommissioned in 2005. All eight ships based at Portsmouth.
Sales: *Bicester* and *Berkeley* to Greece in July 2000 and February 2001 respectively.



HURWORTH 5/2008*, Michael Nitz / 1353528



CHIDDINGFORD 2/2008*, Maritime Photographic / 1353527

8 SANDOWN CLASS (MINEHUNTERS) (MHC/SRMH)

Name	No	Builders	Launched	Commissioned
WALNEY	M 104	Vosper Thornycroft, Woolston	25 Nov 1991	20 Feb 1993
PENZANCE	M 106	Vosper Thornycroft, Woolston	11 Mar 1997	14 May 1998
PEMBROKE	M 107	Vosper Thornycroft, Woolston	15 Dec 1997	6 Oct 1998
GRIMSBY	M 108	Vosper Thornycroft, Woolston	10 Aug 1998	25 Sep 1999
BANGOR	M 109	Vosper Thornycroft, Woolston	16 Apr 1999	26 July 2000
RAMSEY	M 110	Vosper Thornycroft, Woolston	25 Nov 1999	22 June 2001
BLYTH	M 111	Vosper Thornycroft, Woolston	4 July 2000	20 July 2001
SHOREHAM	M 112	Vosper Thornycroft, Woolston	9 Apr 2001	2 Sep 2002

Displacement, tons: 537 standard; 409 full load
 Dimensions, feet (metres): 172.2 x 34.4 x 7.5 (52.5 x 10.5 x 2.3)
 Main machinery: 2 Paxman Valenta 6RP200E/M diesels; 1,523 hp (1.14 MW) sustained;
 Voith-Schneider propulsion; 2 Schottel bow thrusters
 Speed, knots: 13 diesels; 6.5 electric drive Range, n miles: 2,500 at 12 kt
 Complement: 34 (5 officers) plus 6 spare berths

Guns: 1 DES/MSI DS 308 30 mm/75; 650 rds/min to 10 km (5.4 n miles) anti-surface; 3 km (1.6 n miles) anti-aircraft; weight of shell 0.36 kg
 Dillon Aero M 134 7.62 mm Minigun; 6 barrels; 3,000 rds/min.

Countermeasures: MCM: ECA mine disposal system, 2 PAP 104 Mk 5 (RCMDS 2) (being replaced by Seafox C) These craft can carry 2 mine wire cutters, a charge of 100 kg and a manipulator with TV/projector. Control cables are 2,000 m. To be replaced by Seafox C expendable mine-disposal system.

Combat data systems: BAE Insite Nautis 3.

Radars: Navigation: Kelvin Hughes Type 1007; I-band.

Sonars: Marconi Type 2093; VDS, VLF-VHF multifunction with 5 arrays; mine search and classification.

Programmes: A class designed for hunting and destroying mines and for operating in deep and exposed waters. Single role minehunter (SRMH) complements the Hunt class. On 9 January 1984 the Vosper Thornycroft design for this class was approved. First one ordered August 1985, four more on 23 July 1987. A contract was to have been placed for a second batch in 1990 but this was deferred twice, until an order for seven more (M 105-112) was placed in July 1994

Modernisation: RCMDS 2 being replaced by Seafox C. Drumgrange Precise Fixing System fitted in 2004. Nautis M combat system replaced by Nautis 3. M 134 Minigun CIWS fitted in 2006.

Structure: GRP hull. Combines vectored thrust units with bow thrusters and Remote-Control Mine Disposal System (RCMDS) The sonar is deployed from a well in the hull. Batch 2 have larger diameter (1.8 m) Voith-Schneider props and an improved two-men decompression chamber.

Operational: All based at Faslane from mid-2006.

Sales: Three to Saudi Arabia. *Bridport, Sandown and Inverness* to Estonia 2007-08



SHOREHAM 6/2007, Maritime Photographic / 1170269



WALNEY 8/2007, B Sullivan / 1170268

SURVEY SHIPS

1 GLEANER CLASS (YGS)

Name	No	Builders	Launched	Commissioned
GLEANER	H 86	Emsworth Shipyard	18 Oct 1983	6 Dec 1983

Displacement, tons: 26 full load
 Dimensions, feet (metres): 51.2 x 15.4 x 5.2 (15.6 x 4.7 x 1.6)
 Main machinery: 2 Volvo Penta TMD 112; 524 hp(m) (391 kW); 2 shafts
 Speed, knots: 19.5
 Complement: 8 (2 officers)
 Radars: Navigation: Raymarine Pathfinder; I-band.

Comment: This craft is prefixed HMSMLHM Survey Motor Launch. Primary task is conduct of high-resolution survey operations around UK ports and harbours. Fitted with integrated survey suite with C-Nav WADGPS positioning and Simrad EM 3002 MBES, EA 400 SBES, 2094 SSS and magnetometer towed sensors.



GLEANER 6/2005, Camil Busquets i Vilanova / 1153981

1 SCOTT CLASS (AGSH)

Name	No	Builders	Launched	Commissioned
SCOTT	H 131	Appledore Shipbuilders, Bideford	13 Oct 1996	30 June 1997

Displacement, tons: 13,500 full load
 Dimensions, feet (metres): 430.1 x 70.5 x 29.5 (131.1 x 21.5 x 9)
 Main machinery: 2 Krupp MaK 9M32 9-cyl diesels; 10,800 hp(m) (794 MW); 1 shaft; LIPS cp prop; retractable bow thruster
 Speed, knots: 17.5
 Complement: 62 (12 officers) (see Comment)
 Radars: Navigation, Kelvin Hughes ARPA 1626; I-band.
 Helicopters: Platform for 1 light.

Comment: Designed by BAeSEMA/YARD and ordered 20 January 1995 to replace *Hecla*. Ice-strengthened bow. Foredeck strengthened for helicopter operations. The centre of the OSV surveying operations consists of an Integrated navigation suite, the Sonar Array Sounding System (SASS) and data processing equipment. Additional sensors include gravimeters, a towed proton magnetometer a Moving Vessel Profiler (MVP) 800 and the Sonar 2090 ocean environment sensor. The SASS IV multibeam depth-sounder is capable of gathering 121 individual depth samples concurrently over a 120° swathe, producing a three-dimensional image of the seabed. 8,000 tons of seawater ballast can be used to achieve a sonar trim. The ship is at sea for 300 days a year with a crew of 42 embarked, rotating with the other 20 ashore. *Scott* undertook a survey of the Indian Ocean tsunami epicentre in early 2005. Based at Devonport.



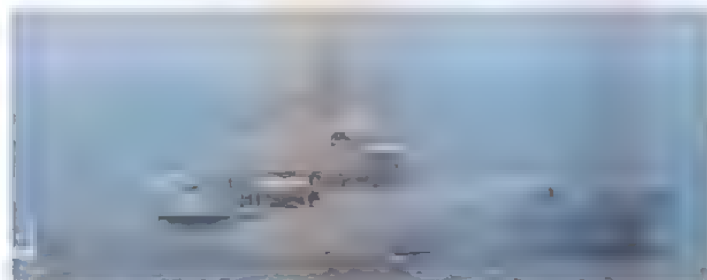
SCOTT 8/2008*, Maritime Photographic / 1353526

2 ECHO CLASS (AGSH)

Name	No	Builders	Launched	Commissioned
ECHO	H 87	Appledore, Bideford	4 Mar 2002	7 Mar 2003
ENTERPRISE	H 88	Appledore, Bideford	2 May 2002	17 Oct 2003

Displacement, tons: 3,470 full load
 Dimensions, feet (metres): 295.3 x 55.1 x 18 (90 x 16.8 x 5.5)
 Main machinery: Diesel electric, 4.8 MW; 2 azimuth thrusters; 1 bow thruster
 Speed, knots: 15
 Range, n miles: 9,000 at 12 kt
 Complement: 72
 Guns: 2—20 mm. 4—7.62 mm MGs
 Radars: Navigation: 2 sets; I-band.
 Helicopters: Platform for VERTREP only.

Comment: The order for two multirole Hydrographic and Oceanographic Survey Vessels was placed with the prime contractor, Vosper Thornycroft Ltd, on 19 June 2000. The ships were built by Appledore Shipbuilders in Devon. The contract covers the design, build and through-life support of the ships over their 25 year service. In addition to specialist surveying tasks, the ships' operational roles include Rapid Environmental Assessment, Amphibious Warfare surveys and Mine Countermeasures Tasking Support. The survey suite consists of EM 1002 hull mounted multibeam sonar, EA 600 single beam echo-sounder, towed side scan sonar, towed undulating sensors, an adaptive survey planning system. Survey Motor Launches *Pathfinder* and *Pioneer* are embarked in *Echo* and *Enterprise* respectively. Both based at Devonport.



ENTERPRISE 7/2007, Guy Toremans / 1170266

1 ROEBUCK CLASS (AGS)

Name	No	Builders	Launched	Commissioned
ROEBUCK	H 130	Brooke Marine, Lowestoft	14 Nov 1985	3 Oct 1986

Displacement, tons: 1,477 full load
Dimensions, feet (metres): 210 × 42.6 × 13 (63.9 × 13 × 4)
Main machinery: 4 Mirreles Blackstone ESL8 Mk 1 diesels; 3,040 hp (2.27 MW); 2 shafts; cp props
Speed, knots: 14
Range, n miles: 4,000 at 10 kt
Complement: 46 (6 officers)
Guns: 1—20 mm
 2 M323 Mk 44 7.62 mm Min.guns (fitted for).

Radars: Navigation: Kelvin Hughes Nucleus 2-8000; I-band.

Comment: Designed for hydrographic surveys to full modern standards on UK continental shelf. Air conditioned. Carries Survey Motor Launch *Nesbitt* (fitted with EM 3002 MBES, EA 400 SBES and 2094 SSS) and one 4.5 m RIB. The decision to decommission in 2003 was cancelled and a Ship Life Extension Programme started in September 2004 and was completed in mid-2005. The upgrade included refurbishment and renewal of engineering systems and habitability improvements. A 20 mm gun system has been installed. Roles include Rapid Environmental Assessment and Amphibious Warfare survey. The new survey suite consists of EM 1002 hull-mounted multibeam sonar, EA 800 SBES and 2094 towed side-scan sonar and adaptive planning system, Moving Vessel Profiler (MVP) 200 and WECDIS.



ROEBUCK

5/2008*, Michael Nitz / 1353525

6 NESBITT CLASS (YGS)

NESBITT 9423	COOK 9425	PIONEER
PAT BARTON 9424	OWEN 9426	PATHFINDER

Displacement, tons: 11 full load
Dimensions, feet (metres): 34.8 × 9.4 × 3.3 (10.6 × 2.9 × 1)
Main machinery: 2 Perkins Sebre 185C diesels; 430 hp(m) (316 kW) sustained; 2 shafts
Speed, knots: 15
Range, n miles: 300 at 8 kt
Complement: 2 plus 10 spare

Comment: *Nesbitt, Pat Barton, Cook and Owen* delivered by Halmatic, Southampton by September 1996. *Pioneer* and *Pathfinder* built by Halmatic and delivered in 2003 as part of the contract to build *Echo* and *Enterprise*. *Nesbitt* embarked in *Roebuck*, *Pathfinder* in *Echo*, *Pioneer* in *Enterprise* and the other three based at the Hydrographic School, Devonport. Fitted with C-Nav WADGPS positioning system, EM 3000 MBES (*Pathfinder, Pioneer, Pat Barton*), EM 3002 MBES (*Nesbitt, Cook, Owen*), EA 400 SBES and 2094 SSS.



NESBITT

11/1998, John Brodie / 0053744

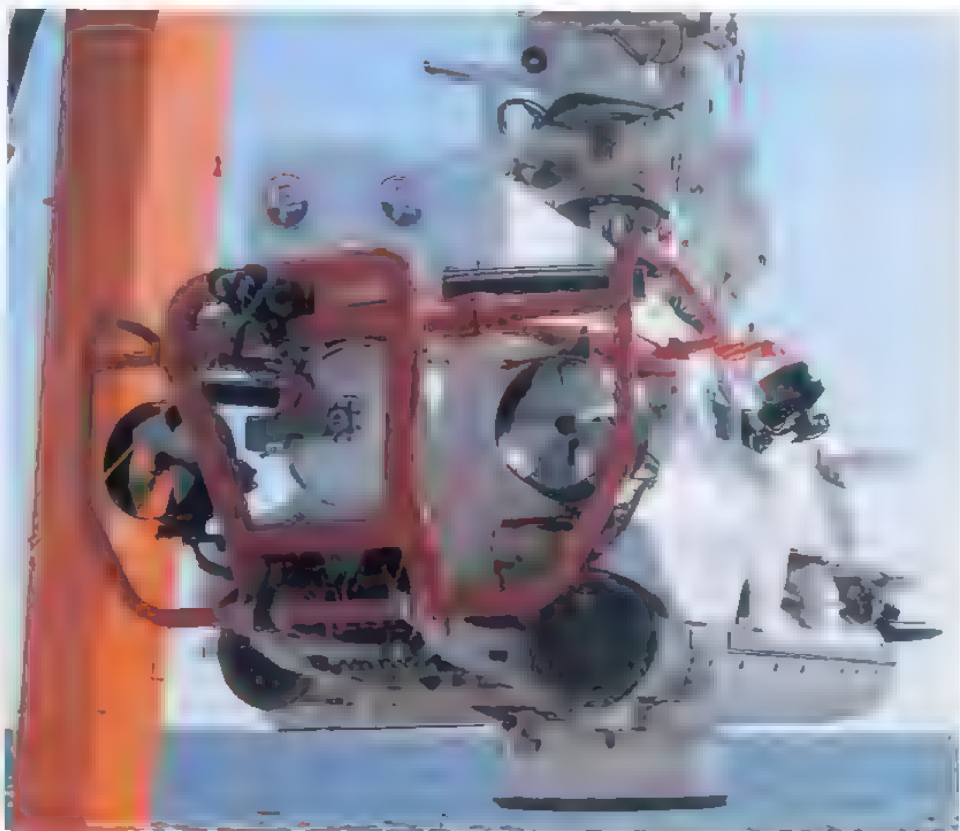
RESCUE VEHICLES

0 + 1 NATO SUBMARINE RESCUE SYSTEM (DSRV)

Displacement, tons: 30 full load
Dimensions, feet (metres): 28.5 × 11.1 × 11.5 (8.7 × 3.4 × 3.5)
Main machinery: 2 external ZEBRA rechargeable sodium nickel chloride battery pods
Speed, knots: 3.8
Complement: 3

Comment: The three participant nations for NSRS are UK, Norway and France with the UK Defence Procurement Agency acting as contracting authority and host nation for project management and in-service phases. Following invitations to Tender, a 10-year contract for the design and manufacture phase was awarded in June 2004 to a team led by Rolls-Royce Naval Marine. The core of the service is a new free-swimming Submarine Rescue Vehicle (SRV), built by Perry Slingsby, capable of accommodating 15 rescued personnel from a submarine at depths down to 600 m and at an angle of up to 60°. The SRV may be launched and recovered from suitable commercial or from military 'motherships', primarily offshore support vessels, capable of fitting the NSRS Portable Launch-And-Recovery (PLARS) installation. Battery endurance allows up to five rescue cycles without recharge but trickle charging during rescue transfer will enable almost continuous operation. The NSRS includes an unmanned Intervention Remotely-Operated Vehicle (IROV), the Perry Slingsby Super Spartan, which can operate down to depths of 1,000 m and may be used to locate a stricken submarine, to conduct survey and rescue preparations and to resupply Emergency Life Support Stores in pressure tight pods whilst awaiting rescue. Other assets include a Transfer under Pressure system with decompression chambers for up to 72 personnel; medical treatment facilities and support equipment. The system entered service in November 2008 and is expected to remain in service until 2033. It is permanently maintained at HM Naval Base Clyde, Scotland, at 12 hours notice to move worldwide.

NSRS SRV
 6/2008*, Richard Scott
 1353724



AUXILIARIES

General

The Royal Fleet Auxiliary Service is a civilian-manned fleet under the command of the Commander in Chief Fleet from 1 April 1993. Its main task is to supply warships at sea with fuel, food, stores and ammunition. It also provides aviation platforms, amphibious support for the Navy and Marines and sea transport for Army units. All ships take part in operational sea training. An order in council on 30 November 1989 changed the status of the RFA service to government-owned vessels on non-commercial service.

New Construction

(1) The Maritime Role 3 Medical Capability was formerly known as the Joint Casualty Treatment Ship (JCTS).

The requirement for such a vessel was identified in the 1998 Strategic Defence Review. The aviation support ship *Argus* was configured as a PCRFS during the 1990-91 Gulf War and the 2003 Iraq War. The contract for the Assessment Phase was awarded to BMT Ltd in February 2002 since when the key drivers have been identified as a need for eight operating tables and a 150-200 bed hospital. A two-spot flight deck and the ability to embark personnel by sea or land are also required. Development of the Systems Requirement Document (SRD) by Atkins Aviation and Defence Systems has been completed and potential solutions range from a bespoke vessel to conversion/modification of an existing military or merchant hull. The ship will be manned by RFA personnel but is unlikely to enter service before 2020. The requirement for a second ship at 12 months notice is to be met by chartering a commercial hull.

(2) The future afloat support capability is being taken forward through the Military Afloat Reach and Sustainability programme (MARS). The Concept Phase formally ended at Initial Gate in mid-2005 when the Assessment phase began. The competition to select a lead project integrator was abandoned in 2007. Under a revised procurement strategy, BVT, Fincantieri, Hyundai and Navantis were shortlisted in 2008 to build up to six tankers but a contract, expected to be in 2009, has been delayed by up to three years funding difficulties. Overall the requirement for six fleet tankers; two fleet support ships and three joint sea-based logistic vessels remains.

Personnel

1 January 2009: 2,295 (825 officers)

2 WAVE CLASS (LARGE FLEET TANKERS) (AORH)

Name	No	Builders	Laid down	Launched	Commissioned
WAVE KNIGHT	A 389	BAE Systems, Barrow	22 Oct 1998	29 Sep 2000	8 Apr 2003
WAVE RULER	A 390	BAE Systems, Govan	10 Feb 2000	9 Feb 2001	27 Apr 2003

Displacement, tons: 31,500 full load
Measurement, tons: 23,294 grt
Dimensions, feet (metres): 644.0 x 90.9 x 43.0
(196.3 x 27.7 x 13.1)

Main machinery: Diesel-electric; 4 Wärtsilä 12V 32E/GECLM diesel generators; 25,514 hp(m) (18.76 MW); 2 GECLM motors; 19,040 hp(m) (14 MW); 1 shaft, Kamowa bow and stern thrusters

Speed, knots: 18

Range, n miles: 10,000 at 15 kt

Complement: 80 plus 22 aircrew
Cargo capacity: 16,000 m³ total liquids including 3,000 m³ aviation fuel; 8-20 ft refrigerated containers plus 500 m³ solids

Guns: 2 Vulcan Phalanx CIWS, fitted for but not with 2-30 mm. 5-7.62 mm MGs. 2 Mk 44 7.62 mm Miniguns.
Countermeasures: Decoys: Outfit DLJ(2).
Radars: Navigation: KH 1007; E/F1-band.
IFF: Type 1017.

Helicopters: 1 Merlin HM Mk 1

Comment: Feasibility studies by BAeSEMA/YARD completed in early 1995. Draft invitation to tender issued 10 October 1995 followed by full tender on 26 June 1996. Contracts to build placed with VSEL (BAE Systems) on 12 March 1997. One spot flight deck with full hangar facilities for one Merlin. Enclosed bridge including bridge wings. Double hull construction. Inclined RAS gear with three rigs and two cranes.



WAVE KNIGHT

9/2008*, Shaun Jones / 1353521

2 APPLELEAF CLASS (SUPPORT TANKERS) (AOT)

Name	No	Builders	Launched	Commissioned
BAYLEAF	A 109	Cammell Laird, Birkenhead	27 Oct 1974	26 Mar 1982
ORANGELEAF (ex-Balder London, ex-Hudson Progress)	A 110	Cammell Laird, Birkenhead	1975	2 May 1984

Displacement, tons: 37,747 full load
Measurement, tons: 18,854 gross, 9,043 net
Dimensions, feet (metres): 560 x 85 x 36.1
(170.7 x 25.9 x 11)

Main machinery: 2 Pielstick 14 PC2.2 V 400 diesels, 14,000 hp(m) (10.29 MW) sustained; 1 shaft

Speed, knots: 15.5, 16.3 (A 109)
Complement: 56 (19 officers)
Cargo capacity: 22,000 m³ diesel; 3,800 m³ Avcat
Guns: 2 BMARC GAM 801 20 mm. 6-7.62 mm MGs.
2 Mk 44 7.62 mm Miniguns.
Radars: Navigation: Racal Decca 1226 and 1229, 1 band.

Comment: Part of a four-ship order cancelled by Hudson Fuel and Shipping Co, but completed by the shipbuilders, being the only mercantile order then in hand. *Bayleaf* built under commercial contract to be chartered by MoD and purchased in 2006. *Orangeleaf* major refit September 1985 to fit full RAS capability and extra accommodation. Single-hull construction. To be replaced from about 2015.



BAYLEAF

1/2008*, Shaun Jones / 1170762

2 ROVER CLASS (SMALL FLEETTANKERS) (AORLH)

Name	No	Builders	Launched	Commissioned
GOLD ROVER	A 271	Swan Hunter Shipbuilders, Wallsend-on-Tyne	7 Mar 1973	22 Mar 1974
BLACK ROVER	A 273	Swan Hunter Shipbuilders, Wallsend-on-Tyne	30 Oct 1973	23 Aug 1974

Displacement, tons: 4,700 light; 11,522 full load
Measurement, tons: 7,892 gross; 2,367 net
Dimensions, feet (metres): 461 × 63.3 × 24
 (140.6 × 19.3 × 7.3)
Main machinery: 2 SEMT-Pielstick 16 PA4 185 diesels, 15,360 hp(m) (11.46 MW); 1 shaft; Kamewa cp prop; bow thruster
Speed, knots: 19
Range, n miles: 15,000 at 15 kt
Complement: 48 (17 officers) (A 269); 55 (18 officers) (A 271, 273)
Cargo capacity: 3,000 m³ fuel
Guns: 2 BMARC GAM-BO1 20 mm. 4—7.62 mm MGs 2 Mk 44 7.62 mm Miniguns.
Radars: Navigation, Racal Decca 52690 ARPA, Racal Decca 1690; I-band
Helicopters: Platform for Westland Sea King HAS. Mk 5 or HC Mk 4.

Comment: Single-hull construction. Small fleet tankers designed to replenish HM ships at sea with fuel, fresh water, limited dry cargo and refrigerated stores under all conditions while under way. No hangar but helicopter landing platform is served by a stores lift, to enable stores to be transferred at sea by 'vertical lift'. Capable of HIFR. Siting of SATCOM aerial varies. *Green Rover* sold in September 1992 to Indonesia. *Blue Rover* to Portugal in March 1993. *Grey Rover* decommissioned in 2006. To be replaced from about 2015.



GOLD ROVER

5/2008, B Sullivan / 1353570

2 FORT VICTORIA CLASS (FLEET REPLENISHMENT SHIPS) (AORH)

Name	No	Builders	Laid down	Launched	Commissioned
FORT VICTORIA	A 387	Harland & Wolff/Cammell Laird	4 Apr 1988	12 June 1990	24 June 1994
FORT GEORGE	A 388	Swan Hunter Shipbuilders, Wallsend-on-Tyne	9 Mar 1989	1 Mar 1991	16 July 1993

Displacement, tons: 36,580 full load
Measurements, tons: 28,821 grt, 8,646 net
Dimensions, feet (metres): 667.7 oa, 607 wl × 99.7 × 32
 (203.5; 185 × 30.4 × 9.8)
Main machinery: 2 Crossley SEMT-Pielstick 16 PC2 6 V 400 diesels, 23,904 hp(m) (17.57 MW) sustained, 2 shafts
Speed, knots: 20
Complement: 134 (95 RFA plus 15 RN plus 24 civilian stores staff) plus 154 (28 officers) aircrew
Cargo capacity: 12,505 m³ liquids; 3,000 m³ solids
Guns: 2—20 mm GAM-BO
 2 Vulcan Phalanx 20 mm Mk 15. 2 Mk 44 7.62 mm Miniguns.
Countermeasures: Decoys DLH.
ESM: Marconi Racal Thorn UAT; intercept.
Combat data systems: SCOT 5 SATCOM
Radars: Navigation: Kelvin Hughes Type 1007; I-band
 Aircraft control: Kelvin Hughes NUCLEUS, E/F-band

Helicopters: 5 Westland Sea King/Merlin helicopters

Programmes: The requirement for these ships is to provide fuel and stores support to the Fleet at sea. *Fort Victoria* ordered 23 April 1986 and *Fort George* on 18 December 1987. *Fort Victoria* delayed by damage during building and entered Cammell Laird Shipyard for post sea trials completion in July 1992. The original plan for six of this class was progressively eroded and no more of this type will be built.

Structure: Single-hull construction. Four dual-purpose abeam replenishment rigs for simultaneous transfer of liquids and solids. Stern refuelling. Repair facilities



FORT VICTORIA

10/2006, B Sullivan / 1167588

for Merlin helicopters. The plan to fit Seewolf GWS 26 VLS was abandoned in favour of Phalanx CIWS fitted in 1998/99 to both ships.

Operational: Two helicopter spots. There is a requirement to provide an emergency landing facility for Harriers. To remain in service until 2019.

2 FORT GRANGE CLASS (FLEET REPLENISHMENT SHIPS) (AFSH)

Name	No	Builders	Laid down	Launched	Commissioned
FORT ROSALIE (ex-Fort Grange)	A 385	Scott-Lithgow, Greenock	9 Nov 1973	9 Dec 1976	6 Apr 1978
FORT AUSTIN	A 386	Scott-Lithgow, Greenock	9 Dec 1975	9 Mar 1978	11 May 1979

Displacement, tons: 23,384 full load
Measurement, tons: 20,043 grt
Dimensions, feet (metres): 607.4 × 78 × 28.2
 (185.1 × 24.1 × 8.6)
Main machinery: 1 Sulzer RND90 diesel; 23,200 hp(m) (17.05 MW); 1 shaft, 2 bow thrusters
Speed, knots: 22
Range, n miles: 10,000 at 20 kt

Complement: 114 (31 officers) plus 36 RNSTS (civilian supply staff) plus 45 RN aircrew
Cargo capacity: 3,500 tons armament, naval and victualling stores in 4 holds of 12,800 m³
Guns: 2 BMARC GAM-BO1 20 mm. 4 7.62 mm MGs 2 Mk 44 7.62 mm Miniguns.
Radars: Navigation: Kelvin Hughes Type 1007; I-band.
Helicopters: 4 Westland Sea King

Comment: Ordered in November 1971. Fitted for SCOT SATCOMs but carry Marisat. Normally only one helicopter is embarked. ASW stores for helicopters carried on board. Emergency flight deck on the hangar roof. There are six cranes, three of 10 tons lift and three of 5 tons. Decommissioning dates: *Fort Rosalie* 2016, *Fort Austin* 2017.



FORT ROSALIE

9/2007, Shaun Jones / 1170758

1 STENA TYPE (FORWARD REPAIR SHIP) (ARH)

Name	No	Builders	Commissioned	Recommissioned
DILIGENCE (ex-Stena Inspector)	A 132	Oresundsvarvet AB, Landskrona, Sweden	1981	12 Mar 1984

Displacement, tons: 10,765 full load
Measurement, tons: 6,048 grt
Dimensions, feet (metres): 367.5 x 67.3 x 22.3
 (112 x 20.5 x 6.8)
Flight deck, feet (metres): 83 x 83 (25.4 x 25.4)
Main machinery: Diesel electric; 5 V16 Nohab-Polar diesel generators, 2,650 kW; 4 NEBB motors; 6,000 hp(m) (4.41 MW); 1 shaft; Kamewa cp prop; 2 Kamewa bow tunnel thrusters; 3,000 hp(m) (2.2 MW); 2 azimuth thrusters (aft); 3,000 hp(m) (2.2 MW)
Speed, knots: 12
Range, n miles: 5,000 at 12 kt
Complement: 38 (15 officers) plus accommodation for 147 plus 55 temporary
Cargo capacity: Long-jib crane SWL 5 tons, maximum lift, 40 tons
Guns: 2 BMARC GAM-BO1 20 mm. 4—7.62 mm MGs. 2 Mk 44 7.62 mm Miniguns



DILIGENCE 11/2007, Shaun Jones / 1170757

Helicopters: Facilities for up to Boeing Chinook HC. Mk 1 (medium lift) size.

Programmes: Stena Inspector was designed originally as a Multipurpose Support Vessel for North Sea oil operations, and completed in January 1981. Chartered on 25 May 1982 for use as a fleet repair ship during the Falklands War. Purchased from Stena (UK) Line in October 1983, and converted for use as Forward Repair Ship in the South Atlantic (Falkland Islands) Conversion by Clyde Dock Engineering Ltd, Govan from 12 November 1983 to 29 February 1984.

Modernisation: Following items added during conversion: large workshop for hull and machinery repairs (in well-deck); accommodation for naval Junior Rates (new accommodation block); accommodation for crew of conventional submarine (in place of Saturation Diving System); extensive craneage facilities; overside supply of electrical power, water, fuel, steam, air, to ships alongside; large naval store (in place of cement tanks), armament and magazines; Naval Communications System; decompression chamber. Major refit conducted in Singapore 2005. Work included replacement/update of dynamic positioning system.

Structure: Four 5 ton anchors for four-point mooring system. Strengthened for operations in ice (Ice Class 1A). Kongsberg Albatross Positioning System has been retained in full. Uses bow and stern thrusters and main propeller to maintain a selected position to within a few metres, up to Beaufort Force 9. Controlled by Kongsberg KS 500 computers.
Operational: Principal role is operational maintenance and repair with Engineering Support Naval Party embarked. Has also been used as MCMV support ship in the Gulf and is capable of SSN support. To remain in service until 2014.

1 PRIMARY CASUALTY RECEIVING SHIP (APCR)

Name	No	Builders	Commissioned	Recommissioned
ARGUS (ex-Contender Bazant)	A 135	CNR Breda, Venice	1981	1 June 1988

Displacement, tons: 18,280 standard; 26,421 full load
Measurement, tons: 9,965 dwt
Dimensions, feet (metres): 574.5 x 99.7 x 27
 (175.1 x 30.4 x 8.2)
Main machinery: 2 Lindholm SEMT-Pielstick 18 PC2.5 V 400 diesels, 23,400 hp(m) (17.2 MW) sustained; 2 shafts
Speed, knots: 18
Range, n miles: 20,000 at 19 kt
Complement: 80 (22 officers) plus 35 permanent RN plus 137 RN aircrew
Military lift: 3,300 tons diesel, 1,100 tons aviation fuel, 138 4 ton vehicles in lieu of aircraft
Guns: 2—20 mm GAM-BO 6—7.62 mm MGs. 2 Mk 44 7.62 mm Miniguns.
Countermeasures: Decoys: DLJ. ESM THORN EMI Guardian; radar warning.
Combat data systems: Recal CANE DEB-1 data automation. Inmarsat SATCOM communications. Marisat.
Radars: Air search: Type 994 MTI; E/F-band. Air/surface search: Kelvin Hughes Type 1006; I-band
Navigation: Recal Decca Type 994; I-band.



ARGUS 11/2007, B Sullivan / 1170759

Fixed-wing aircraft: Provision to transport 12 Harriers.
Helicopters: 6 Westland Sea King HAS Mk 5/6 or similar.

Programmes: Ro-Ro container ship whose conversion to aviation training ship was begun by Harland and Wolff in March 1984 and completed on 3 March 1988. Work to convert her to PCRFS role completed in 2001 and upgraded in 2007.

Structure: Uses former Ro-Ro deck as hangar with four sliding WT doors able to operate at a speed of 10 m/min. Can replenish other ships underway. One lift abaft funnel. Domestic facilities are very limited if she is to be used in the Command support role. Flight deck is 372.4 ft (113.5 m) long and has a 5 ft thick concrete layer on its lower side. First RFA to be fitted with a command system PCRFS conversion work included modification

of three decks into permanent 100-bed hospital with three operating theatres. Improvements to safety and evacuation facilities for casualties and staff, along with upgraded medical equipment, are to be installed in 2009. The forward lift is to be adapted for evacuation and only the aft lift remains available for aircraft.
Operational: Based at Falmouth. Operational life extended to 2020. Can conduct subsidiary role as aviation training ship.

6 TRANSPORT SHIPS (AKR)

Name	No	Builders	Commissioned
HURST POINT	-	Flensburger Schiffbau	16 Aug 2002
HARTLAND POINT	-	Harland & Wolff, Belfast	11 Dec 2002
EDDYSTONE	-	Flensburger Schiffbau	28 Nov 2002
ANVIL POINT	-	Harland & Wolff, Belfast	17 Jan 2003
LONGSTONE	-	Flensburger Schiffbau	24 Apr 2003
BEACHY HEAD	-	Flensburger Schiffbau	17 Apr 2003

Displacement, tons: 20,000 full load
Measurement, tons: 14,200 dwt
Dimensions, feet (metres): 633.4 x 85.3 x 24.3
 (193.0 x 26.0 x 7.4)
Main machinery: 2 MaK 9M43 diesels; 21,700 hp (16.2 MW); 2 cp props; bow thruster
Speed, knots: 21.5
Range, n miles: 9,200 at 21.5 kt

Complement: 18
Military lift: 2,650 linear metres of space for vehicles equating to 130 armoured vehicles plus 60 trucks and ammunition
Radars: Navigation; I-band.

Comment: On 26 October 2000, it was announced that AWSR Ltd had been awarded the contract to provide

a strategic sealift service in support of the Joint Rapid Reaction Force (JRRF) until late 2024. A key feature of the contract is that four Ro-Ro are in constant MoD use while the remaining ships are available for use by AWSR for the generation of commercial revenue. These can be called upon to support major operations and exercises.



HURST POINT 4/2008, Maritime Photographic / 1353519

4 BAY CLASS LANDING SHIPS DOCK (AUXILIARY) (LSD)

Name	No	Builders	Laid down	Launched	Commissioned
LARGS BAY	L 3006	Swan Hunter (Tyneside) Ltd	28 Jan 2002	18 July 2003	28 Nov 2006
LYME BAY	L 3007	Swan Hunter (Tyneside) Ltd	22 Nov 2002	3 Sep 2005	26 Nov 2007
MOUNTS BAY	L 3008	BAE Systems Govan	25 Aug 2002	9 Apr 2004	13 July 2006
CARDIGAN BAY	L 3009	BAE Systems Govan	13 Oct 2003	8 Apr 2005	18 Dec 2006

Displacement, tons: 16,160 full load
 Dimensions, feet (metres): 579.4 × 86.6 × 19
 (176.6 × 26.4 × 5.8)

Main machinery: Diesel-electric, 2 Wärtsilä 8L26 generators; 6,000 hp (4.5 MW); 2 Wärtsilä 12V26 generators; 9,000 hp (6.7 MW); 2 steerable propulsors; bow thruster

Speed, knots: 18. Range, n miles: 10,000 at 15 kt

Complement: 69 plus up to 52 military augmentees (plus 356 troops or 600 in overload conditions)

Military lift: 1,130 linear metres of space for vehicles equating to 24 Challenger MBTs or 150 light trucks plus 200 tons ammunition or 24 × 24 TEU containers

Guns: 2–30 mm. 2 Mk 44 7.62 Miniguns. 6–7.62 mm MGs

Radars: Navigation: E/F/I-bands.

Helicopters: Platform capable of operating Chinook.

Programmes. Two ships ordered from Swan Hunter on 18 December 2000. Contract for two further ships of the class, placed on 19 November 2001 with BAE Systems (Marine) at Govan. The programme was badly affected by escalating costs and delays and the whole project was passed to BAE Systems on 13 July 2006.

Structure: Based on the Royal Scheide Enforcer design, the LSD(A)s are designed to transport troops, vehicles, ammunition and stores in support of amphibious operations. Offload is enabled by a flight deck capable of operating heavy helicopters, an amphibious dock capable of operating one LCU Mk 10 and mekaflores which can be hung on the ships' sides. There is no beaching capability. Davit-launched infantry landing craft (LCVPs) are not fitted but two can be carried in the dock or on deck. There are two 30 t cranes.



LARGS BAY

9/2007, Shaun Jones / 1170251



CARDIGAN BAY

6/2007, Selim San / 1170260

MARINE SERVICES AND GOVERNMENT AGENCY SERVICES

Notes: (1) A contract was awarded to SERCo. Denholm Marine Services Ltd in January 2008 for the provision of support to naval bases, mooring maintenance and support to military training and exercises. The contract expires in 2022
 (2) Longbow is a 12,000 ton trials barge whose conversion 2003–04 by FSL Portsmouth includes a mast, missile silo and firing system to facilitate PAAMS development trials.

1 SUPPORT SHIP (AG)

Name	No	Builders	Commissioned
SD NEWTON	-	Scott-Lithgow, Greenock	17 June 1976

Displacement, tons: 3,140 light; 4,652 full load
 Dimensions, feet (metres): 323.5 × 53 × 27.9 (98.6 × 16 × 8.5)
 Main machinery: Diesel-electric; 3 Ruston 8 RK-215 diesels; 5,520 hp (4.06 MW); 1 GEC motor; 2,650 hp (1.97 MW); Kort nozzle; bow thruster
 Speed, knots: 14. Range, n miles: 5,000 at 14 kt
 Complement: 14
 Radars: Navigation: Kelvin Hughes 1006; I-band.

Comment: Primarily used in support of RN training exercises. Limited support provided to trials. Mid-life refit and re-engining in 2001. To be decommissioned in August 2010 when she is replaced by *Victoria*.



LONGBOW

7/2007, Derek Fox / 1305724



NEWTON

3/2007, Maritime Photographic / 1170255

894 UK (MS/GAS)

1 SAL CLASS (MOORING SHIP) (ARSD)

Name	No	Builders	Commissioned
SD SALMAID	-	Hall Russell, Aberdeen	28 Oct 1986

Displacement, tons: 1,605 light; 2,225 full load
 Dimensions, feet (metres): 253 x 48.9 x 21.6 (77 x 14.9 x 6.6)
 Main machinery: 2 Ruston 8RKCZ diesels; 4,000 hp (2.98 MW); 1 shaft; cp prop
 Speed, knots: 15
 Range, n miles: 5,000 at 14 kt
 Complement: 15 (6 officers) plus 27 spare billets
 Radars: Navigation: Racal Decca, I-band.

Comment: Ordered on 23 January 1984. *Salmoid* based at Devonport. Lift, 400 tons; 200 tons on horns. Can carry submarines including NSRS. To be decommissioned in March 2011.



SAL CLASS 3/2005, Derek Fox / 1153936

2 MOORHEN CLASS (MOORING SHIPS) (ARS)

Name	No	Builders	Commissioned
SD MOORHEN	-	McTay, Bromborough	26 Apr 1989
SD MOORFOWL	-	McTay, Bromborough	30 June 1989

Displacement, tons: 530 full load
 Dimensions, feet (metres): 106 x 37.7 x 12.5 (32.3 x 11.5 x 3.8)
 Main machinery: 2 Cummins KT19-M diesels; 786 hp (594 kW); 2 Aquamasters; bow thruster
 Speed, knots: 8
 Complement: 12 (2 officers)

Comment: Classified as powered mooring lighters. The whole ship can be worked from a 'flying bridge' which is constructed over a through deck. Day mess for five divers. *Moorhen* at Portsmouth, *Moorfowl* at Devonport. To remain in service until 2022.



MOORHEN 7/2008*, A A de Kruijf / 1335720

1 RESEARCH SHIP (AGOR)

Name	No	Builders	Commissioned
SD COLONEL TEMPLER (ex-Cristilla)	-	Hall Russell, Aberdeen	1966

Displacement, tons: 1,300 full load
 Dimensions, feet (metres): 185.4 x 36 x 23.0 (56.5 x 11 x 7.0)
 Main machinery: Diesel-electric; 2 Cummins KTA-38G3M diesels; 2,557 hp(m) (1.88 MW); 2 Newage HC M734E1 generators; 1 Ansaldo DH 560S motor; 1,775 hp(m) (1.3 MW); 1 Aquamaster azimuth thruster with contra rotating props
 Speed, knots: 13.5
 Range, n miles: 9,000 at 10 kt
 Complement: 12 plus 12 scientists
 Radars: Navigation: Racal Decca 2690 ARPA; I-band.

Comment: Built as a stern trawler. Converted in 1980 for use at RAE Farnborough as an acoustic research ship. Major rebuild in 1992. Re-engined in early 1997 with a raft mounted diesel-electric plant to reduce noise and vibration. Carries a 9 m workboat *Quest Q 26*. Well equipped laboratories. Capable of deploying and recovering up to 5 tons of equipment from deck winches and a 5 ton hydraulic A frame. The ship is also used to support diving operations. Based on the Clyde. To be decommissioned in June 2009.



COLONEL TEMPLER 7/2008*, Ian Harris / 1335722

2 TORNADO CLASS (TORPEDO RECOVERY VESSELS) (YDT/YPT)

Name	No	Builders	Commissioned
SD TORNADO	-	Hall Russell, Aberdeen	15 Nov 1979
SD TORMENTOR	-	Hall Russell, Aberdeen	29 Apr 1980

Displacement, tons: 698 full load
 Dimensions, feet (metres): 154.5 x 29.8 x 16.1 (47.1 x 9.1 x 4.9)
 Main machinery: 2 Mirreles-Blackstone ESLB MGR diesels; 2,170 hp (1.62 MW); 2 shafts
 Speed, knots: 14. Range, n miles: 3,000 at 14 kt
 Complement: 10
 Radars: Navigation: Kelvin Hughes 1006; I-band.

Comment: Ordered on 1 July 1977. Both ships converted to support diving operations and mine laying/recovery trials. Based on the Clyde. *Tormentor* to be replaced by *Tremendous* and decommissioned in December 2009 and *Tornado* to be replaced by *Triumphant* and decommissioned in February 2010.



TORNADO 12/1999, W Sartori / 0075841

1 WATERMAN CLASS (COASTAL TANKER) (AWT)

Name	No	Builders	Launched
SD WATERMAN	-	Dunston, Hesse	1978

Displacement, tons: 220 standard; 470 full load
 Dimensions, feet (metres): 131.2 x 23.9 x 11.1 (40.0 x 7.3 x 3.4)
 Main machinery: 1 Mirreles Blackstone ERS8 diesel; 650 hp (485 kW); 1 shaft
 Speed, knots: 11. Range, n miles: 1,500 at 10 kt
 Complement: 4
 Cargo capacity: 250 tons fresh water

Comment: Based on the Clyde. To be decommissioned in 2011.



WATERMAN 6/2005, John Mortimer / 1153976

1 RANGE SAFETY CRAFT (YFRT)

SIR WILLIAM ROE 8127

Displacement, tons: 20.2 full load
 Dimensions, feet (metres): 48.2 x 11.5 x 4.3 (14.7 x 3.5 x 1.3)
 Main machinery: 2 Volvo Penta TAMD 122D diesels; 820 hp (612 kW); 2 shafts
 Speed, knots: 22. Range, n miles: 300 at 20 kt
 Complement: 3
 Radars: Navigation: Furuno; I-band.

Comment: Built in the 1980s. Based in Cyprus and operated by the Royal Logistic Corps. New engines fitted since 1993.



RSC craft 10/2003, Maritime Photographic / 057713

9 ADEPT CLASS (COASTAL TUGS) (YTB)

SD FORCEFUL SD POWERFUL SD BUSTLER SD CAREFUL SD DEXTEROUS
SD NIMBLE SD ADEPT SD CAPABLE SD FAITHFUL

Displacement, tons: 441 standard, 540 full load
Dimensions, feet (metres): 127.3 x 29.9 x 13.1 (38.8 x 9.1 x 4.0)
Main machinery: 2 Ruston 6RKC diesels; 2,575 hp (1.92 MW); 2 Voith-Schneider props
Speed, knots: 12. Range, n miles: 1,500 at 10 kt
Complement: 5

Comment: 'Twin unit tractor tugs' (TUTT) First four ordered from Richard Dunston (Hessle) on 22 February 1979 and next five on 8 February 1984. Primarily for harbour work with coastal towing capability. Nominal bollard pull, 275 tons. *Adept* accepted 28 October 1980, *Bustler* 15 April 1981, *Capable* 11 September 1981, *Careful* 12 March 1982, *Forceful* 18 March 1985, *Nimble* 25 June 1985, *Powerful* 30 October 1985, *Faithful* 21 December 1985, *Dexterous* 23 April 1986. *Powerful* and *Bustler* at Portsmouth, *Forceful*, *Faithful*, *Adept* and *Careful* at Devonport, *Nimble* and *Dexterous* on the Clyde. *Capable* is operated by Commander British Forces Gibraltar. *Nimble*, *Bustler*, *Dexterous* and *Powerful* to be decommissioned in 2010 when replaced by *Dependable*, *Bountiful*, *Rosarioful* and *Reliable* respectively.



BUSTLER 8/2006*, Maritime Photographic / 1298812

1 ATLAS CLASS (YTM)

SD ATLAS

Measurement, tons: 88 grt
Dimensions, feet (metres): 72.2 x 26.7 x 10.8 (22.0 x 7.82 x 3.3)
Main machinery: 2 Caterpillar diesels; 2,100 hp (1.6 MW); 2 shafts
Speed, knots: To be announced
Complement: 3 plus 12 passengers

Comment: Brought into service by SERCo in 2005. Built in Istanbul in 1999 and on charter from a Turkish company. It is British registered. Based at Portsmouth. To remain in service until 2022.



ATLAS 6/2007*, Derek Fox / 1305225

3 DOG CLASS (YTM)

SD HUSKY SD SPANIEL SD SHEEPDOG

Displacement, tons: 248 full load
Dimensions, feet (metres): 94 x 23.9 x 12 (28.7 x 7.3 x 3.7)
Main machinery: 2 Lister-Blackstone ERSB MGR diesels; 1,320 hp (985 kW); 2 shafts
Speed, knots: 10. Range, n miles: 2,236 at 10 kt
Complement: 5

Comment: Harbour berthing tugs. Nominal bollard pull, 175 tons. Completed 1962-72. Serving at Portsmouth, Devonport and on the Clyde. Appearance varies considerably, some with mast, some with curved upper-bridge work, some with flat monkey-island. Decommissioning dates: *Spaniel* and *Husky* 2009; *Sheepdog* 2010. To be replaced by *Mars*, *Jupiter* and *Independent* respectively.



SHEEPDOG 8/2008*, Maritime Photographic / 1798803

2 TRITON CLASS (YTL)

SD KITTY SD LESLEY

Displacement, tons: 1075 standard
Dimensions, feet (metres): 67.7 x 18 x 9.2 (17.6 x 5.5 x 2.8)
Main machinery: 1 Lister Blackstone ARS4M diesel; 330 hp (264 kW); 1 shaft
Speed, knots: 7.5
Complement: 2

Comment: Both completed by August 1974 by Dunston. 'Water-tractors' with small wheelhouse and adjoining funnel. Voith-Schneider vertical axis propellers. Nominal bollard pull, 3 tons. Both to be decommissioned in 2009.



TRITON CLASS 6/2001*, A Sharma / 0131181

4 FELICITY CLASS (YTL)

SD FRANCES SD FLORENCE SD GENEVIEVE SD HELEN

Displacement, tons: 144 full load
Dimensions, feet (metres): 70 x 21 x 8.5 (21.5 x 6.4 x 2.6)
Main machinery: 1 Mirreles-Blackstone ESM8 diesel; 615 hp (459 kW); 1 Voith-Schneider cp prop
Speed, knots: 10
Range, n miles: 925 at 9 kt
Complement: 4
Raders: Navigation Raytheon; I-band.

Comment: *Frances*, *Florence* and *Genevieve* ordered early 1979 from Richard Dunston (Thorne) and completed by end 1980. Nominal bollard pull, 5.7 tons. Based at Devonport and Portsmouth. Decommissioning dates: *Florence* and *Helen* 2010, *Genevieve* and *Frances* 2011. To be replaced by *Eileen*, *Suzanne*, *Christina* and *Deborah* respectively.



GENEVIEVE 11/2008*, Maritime Photographic / 1353518

1 RANGE SUPPORT VESSEL (YFRT)

SD WARDEN

Displacement, tons: 900 full load
Dimensions, feet (metres): 159.4 x 34.4 x 16.4 (48.6 x 10.5 x 5.0)
Main machinery: 2 Ruston 8RKCZ diesels; 4,000 hp (2.98 MW); 2 shafts; cp props
Speed, knots: 15
Range, n miles: 2,000 at 10 kt
Complement: 7
Raders: Navigation: Racal Decca RM 1250; I-band.
Sonars: Dowty 2053; high frequency

Comment: Built by Richards, Lowestoft and completed 20 November 1989. Reverted in 1998 to being an RMAS ship at Kyle of Lochalsh in support of BUTEC. Modified in 1998 to act, at BUTEC, as a ROV host ship and weapons launch and recovery platform. To remain in service until 2022.



WARDEN 5/2008*, Alistair MacDonald / 1335771

2 SUBMARINE BERTHING TUGS (YTL)

Name	No	Builders	Commissioned
SD IMPULSE	-	Dunston, Hesse	11 Mar 1993
SD IMPETUS	-	Dunston, Hesse	28 May 1993

Displacement, tons: 530 full load
 Dimensions, feet (metres): 106.7 x 32.8 x 17.1 (32.5 x 10.0 x 5.2)
 Main machinery: 2 WH Allen 8S12 diesels; 3,400 hp (2.54 MW) sustained; 2 Aquamaster Azimuth thrusters; 1 Jaström bow thruster
 Speed, knots: 12
 Complement: 5

Comment: Ordered 28 January 1992 for submarine berthing duties. There are two 10 ton hydraulic winches forward and aft with break capacities of 110 tons. Boilard pull 38.6 tons ahead, 36 tons astern. Fitted with firefighting and oil pollution equipment. Designed for one-man control from the bridge with all round vision and a comprehensive Navaid's fit. *Impulse* launched 10 December 1992; *Impetus* 9 February 1993. Based on the Clyde. To remain in service until 2022



IMPETUS 10/2004, Maritime Photographic / 1043618

9 RANGE SAFETY CRAFT (YFRT)

Smit Stour	Smit Rother	Smit Romney	Smit Cerne	Smit Wey
Smit Frome	Smit Merrion	Smit Penally	Smit Neyland	

Displacement, tons: 6.1 full load
 Dimensions, feet (metres): 37.1 x 11.2 x 3.9 (11.3 x 3.4 x 1.2)
 Main machinery: 2 Volvo Penta KAD 42P diesels; 680 hp (507 kW); 2 x Hamilton waterjets
 Speed, knots: 35
 Range, n miles: 160 at 21 kt
 Complement: 2

Comment: MP-1111 class of vessels designed (based on a fast rescue boat) and built at Maritime Partners Ltd (Norway). Aluminium alloy hull and GRP superstructure. The order for the craft followed a contract awarded to Smit International (Scotland) Ltd for the provision of Range Clearance and Safety duties in and around the various sea danger areas of UK military ranges. Three based at Dover, Portland and Pembroke Dock.



SMIT STOUR 6/2004, Smit International / 1043617

8 AIRCREW TRAINING CRAFT (YXT)

Smit Dee	Smit Yare	Smit Spey	Smit Tamar
Smit Don	Smit Towy	Smit Dart	Smit Cymylan

Displacement, tons: 55 full load
 Dimensions, feet (metres): 90.5 x 21.6 x 4.9 (27.6 x 6.6 x 1.5)
 Main machinery: 2 Cummins KTA 19M4 diesels; 1,400 hp (1.04 MW); 2 shafts
 1 Ultrajet 305 centreline waterjet; 305 hp (227 kW)
 Speed, knots: 21
 Range, n miles: 650 at 21 kt
 Complement: 6
 Radars: Furuno FR-2115 EPA; I-band.

Comment: Vessels built at Babcock Engineering Services, Rosyth, and FBMA Babcock Marine, Cebu, Philippines (*Yare*, *Towy* and *Spey*). All delivered by 11 July 2003. Of aluminium alloy construction, the design is an adaptation of FBM Babcock Marine's Protector class patrol vessel. The order for the craft followed a contract awarded to MoD and to Smit International for provision of marine support to aircrew training, high speed marine target towing and recovery of air-sea rescue apparatus. The craft have an aft docking well for a daughter craft. Based at Buckie (*Dee*), Blyth (*Don*), Great Yarmouth (*Yare*), Pembroke Dock (*Towy*) and Plymouth (*Spey* and *Dart*). *Smit Dart* is employed as a passenger craft. *Tamar* (Plymouth) and *Cymylan* (Holyhead) are similar second-hand craft used for passengers.



SMIT DART 6/2005, Per Körnefeldt / 1153937

1 SUBMARINE TENDER (YFB)

Name	No	Builders	Commissioned
SD ADAMANT	-	FBM, Cowes	18 Jan 1993

Displacement, tons: 170 full load
 Dimensions, feet (metres): 101 x 25.6 x 9.8 (30.8 x 7.8 x 3.0)
 Main machinery: 2 Cummins KTA-19M2 diesels, 1,380 hp (1 MW); 2 water-jets
 Speed, knots: 23
 Range, n miles: 250 at 22 kt
 Complement: 4 plus 36 passengers plus 1 ton stores

Comment: Twin-hulled support ship ordered in 1991 and launched 8 October 1992. Used for personnel and stores transfers in the Firth of Clyde. In addition to the passengers, half a ton of cargo can be carried. Capable of top speed up to Sea State 3 and able to transit safely up to Sea State 6. To be withdrawn from service in late 2009 when replaced by *Eva*.



ADAMANT 10/1998, M Verschaevé / 0053268

2 STORM CLASS (YFB)

Name	No	Builders	Commissioned
SD CAWSAND	-	FBM Marine, Cowes	July 1997
SD BOVISAND	-	FBM Marine, Cowes	Sep 1997

Displacement, tons: 97
 Dimensions, feet (metres): 78.4 x 36.4 x 16.2 (23.9 x 11.1 x 4.95)
 Main machinery: 2 Caterpillar 3408TA diesels; 1,224 hp (m) (900 kW); 2 shafts
 Speed, knots: 15
 Range, n miles: 450 at 14 kt
 Complement: 5 plus 75 passengers

Comment: Both based at Devonport. Swath design with hydraulically operated telescopic gangways. To remain in service until 2022.



CAWSAND 5/2008, Peter Ford / 1353503

3 OBAN CLASS (YFL)

SD OBAN SD ORONSAY SD OMAGH

Displacement, tons: 297 full load
 Dimensions, feet (metres): 90.9 x 24 x 12.3 (27.7 x 7.3 x 3.8)
 Main machinery: 2 Cummins N14M diesels; 1,050 hp(m) (785 kW); 2 Kort-Nozzles
 Speed, knots: 10
 Range, n miles: 1,700 at 10 kt
 Complement: 4

Comment: Built by McTay Marine and completed January to July 2000. Capable of carrying 60 passengers. *Oban* based at Devonport and the other two on the Clyde. To remain in service until 2022.



OBAN 5/2008*, A A de Kruijf / 1335217

4 PADSTOW AND NEWHAVEN CLASSES (YFL)

SD PADSTOW SD NEWHAVEN SD NUTBOURNE SD NETLEY

Displacement, tons: 57 standard; 125 full load
 Dimensions, feet (metres): 60 x 21.3 x 8.9 (18.3 x 6.5 x 2.7)
 Main machinery: 2 Cummins 6 CTA diesels; 710 hp(m) (522 kW); 2 shafts
 Speed, knots: 10
 Range, n miles: 230 at 10 kt
 Complement: 3

Comment: Built by Aluminium Shipbuilders at Fishbourne, Isle of Wight and completed May to November 2000. Capable of carrying 60 passengers and based at Devonport (*Padstow*) and Portsmouth. Catamaran hulls. To remain in service until 2022.



PADSTOW 3/2008*, B Sullivan / 1335216

3 MANLY CLASS (YAG)

SD MELTON SD MENAI SD MEON

Displacement, tons: 143 full load
 Dimensions, feet (metres): 80 x 21 x 9.8 (24.4 x 6.4 x 3.0)
 Main machinery: 1 Lister-Blackstone ESR4 MGR diesel; 320 hp (239 kW); 1 shaft
 Speed, knots: 10
 Range, n miles: 700 at 10 kt
 Complement: 8 (2 officers)

Comment: All built by Richard Dunston, Thorne. All completed by early 1983. *Melton* is at Kyle of Lochalsh, the other two are at Devonport. To remain in service until 2022.



MEON 8/2008*, Marco Ghigino / 1353517

1 FBM CATAMARAN CLASS (YFL)

SD NORTON

Displacement, tons: 21 full load
 Dimensions, feet (metres): 51.8 x 18 x 4.9 (15.8 x 5.5 x 1.5)
 Main machinery: 2 Mermaid Turbo 4 diesels; 280 hp (209 kW); 2 shafts
 Speed, knots: 10
 Range, n miles: 400 at 10 kt
 Complement: 2

Comment: Built by FBM Marine in 1989. Catamaran design. Can carry 30 passengers or 2 tons stores. Based at Portsmouth



NORTON 7/2008*, A A de Kruijf / 1335218

0 + 1 SUPPORT SHIP (AG)

Name	No	Builders	Commissioned
SD VICTORIA	-	Damen Shipyard, Galetz	May 2010

Displacement, tons: 2,500 full load
 Measurement, tons: 850 dwt
 Dimensions, feet (metres): 272.3 x 62.5 x 13.9 (83.0 x 16.0 x 4.25)
 Main machinery: 2 Caterpillar 3526B diesels; 4,000 hp (3.0 MW); 2 shafts, cp props; 1 bow thruster; 805 hp (600 kW)
 Speed, knots: 14
 Complement: 16 plus additional accommodation for 72
 Radars: Surface search/navigation; E/F-band.
 Navigation: I-band.

Comment: Damen Support Ship 8316 design. The ship, to replace *Newton*, is to be capable of worldwide operations including military training, transport of personnel and equipment and conduct of diving support operations. Facilities include classrooms, briefing and operations rooms, workshops, extensive storage areas, a helicopter winching deck, and provision to carry and operate Rigid Inflatable Boats (RIBs). To be delivered on 28 May 2010



SUPPORT SHIP 6/2008*, Serco Denholm / 1298813

0 + 4 BERTHING TUGS (YTM)

SD RELIABLE SD BOUNTIFUL SD RESOURCEFUL SD DEPENDABLE

Displacement, tons: 370
 Dimensions, feet (metres): 95.5 x 32.8 x 15.7 (29.1 x 10.0 x 4.8)
 Main machinery: 2 Caterpillar 3512 diesels; 4,025 hp (3.0 MW); 2 Rolls Royce US 175 thrusters
 Speed, knots: 12
 Complement: To be announced
 Radars: Navigation: 2 JRC 5210; I-band.

Comment: Damen Azimuth Tractor Drive (ATD) Tug 2909 design. *Reliable* (based on the Clyde) to be delivered on 27 November 2009, *Bountiful* (Clyde) on 2 April 2010, *Resourceful* (Portsmouth) on 28 May 2010 and *Dependable* (Portsmouth) on 23 July 2010.



ATD 2909 6/2008*, Serco Denholm / 1298811

0 + 2 SUPPORT VESSELS (AG)

Name	No	Builders	Commissioned
SD TREMENDOUS	—	ADYard, Abu Dhabi	2009
SD TRIUMPHANT	—	ADYard, Abu Dhabi	2009

Displacement, tons: 1,700
Dimensions, feet (metres): 164.4 × 42.6 × 13.9 (50.1 × 13.0 × 4.25)
Main machinery: 2 Caterpillar 3512 diesels, 3,800 hp (2.85 MW); 2 shafts; 1 bow thruster; 500 kW; 1 stern thruster; 335 kW
Speed, knots: 12
Complement: 12 (6 officers)
Radars: Surface search/navigation: E/F-band
Navigation: I-band.

Comment: Henderson design. Shallow draft, anchor handler design incorporating a large clear after deck, winches and deck crane. *Tremendous* (to replace *Tormentor*) to be delivered on 31 October 2009 and *Triumphant* (to replace *Tornado*) on 31 December 2009.

0 + 2 BERTHING TUGS (YTM)

SD INDEPENDENT SD INDULGENT

Displacement, tons: 345
Dimensions, feet (metres): 85.6 × 31.0 × 14.1 (26.09 × 9.44 × 4.3)
Main machinery: 2 Caterpillar 3512B diesels; 3,500 hp (2.6 MW); 2 Rolls Royce US 155 thrusters; 1 bow thruster
Speed, knots: 13
Complement: 8
Radars: Navigation: JRC 5210; I-band.

Comment: Damen Azimuth Stern Drive Tug 2509 design. *Independent* to be delivered on 16 October 2009 and *Indulgent* on 31 December 2009. Both based at Portsmouth



ASD 2509 6/2008*, Serco Denholm / 1798810

3 LARGE WORKBOATS (YTM)

SD HERCULES SD MARS SD JUPITER

Displacement, tons: 270
Dimensions, feet (metres): 87.3 × 27.7 × 10.2 (26.61 × 8.44 × 3.12)
Main machinery: 2 Caterpillar 3508B diesels; 2,200 hp (1.6 MW); 2 shafts; 2 Van de Giessen nozzles
Speed, knots: 12
Complement: 9
Radars: Navigation: 2 JRC 5210; I-band.

Comment: Damen Stan Tug 2608 design. *Hercules* (based at Devonport) delivered on 9 January 2009, *Mars* (Clyde) on 27 March 2009 and *Jupiter* (Clyde) on 26 June 2009.



STAN TUG 2608 6/2008*, Serco Denholm / 1798819

0 + 1 TRANSPORT VESSEL (YFB)

SD EVA

Displacement, tons: 120
Dimensions, feet (metres): 108.9 × 24.3 × 6.4 (33.2 × 7.4 × 1.95)
Main machinery: 2 Caterpillar C32-C diesels; 2,800 hp (2.1 MW); 2 shafts
Speed, knots: 22
Complement: 4 plus 34 passengers
Radars: JRC 5210; I-band.

Comment: Damen FCS 3307 design. A crew transport vessel embodying a 'Sea Axe' bow. Aluminium construction. To be delivered on 21 August 2009 and to be based on the Clyde. To replace *Adamant*.



FCS 3307 6/2008*, Serco Denholm / 1798807

0 + 4 BERTHING TUGS (YTM)

SD EILEEN SD SUZANNE SD CHRISTINA SD DEBORAH

Displacement, tons: 245
Dimensions, feet (metres): 69.5 × 30.8 × 11.8 (21.2 × 9.4 × 3.6)
Main machinery: 2 Caterpillar 3508 diesels; 2,000 hp (1.5 MW); 2 Rolls Royce US 155 thrusters
Speed, knots: 11
Complement: To be announced
Radars: Navigation: 2 JRC 5210; I-band.

Comment: Damen Azimuth Stern Drive Tug 2009 design. *Eileen* (based at Devonport) to be delivered on 21 May 2010, *Suzanne* (Portsmouth) on 30 July 2010, *Christina* (Portsmouth) on 8 October 2010 and *Deborah* (Devonport) on 17 December 2010.



ASD 2009 6/2008*, Serco Denholm / 1298808

3 PERSONNEL TENDERS (YFL)

SD CLYDE SPIRIT SD SOLENT SPIRIT SD TAMAR SPIRIT

Measurement, tons: 100 grt
Dimensions, feet (metres): 62.8 × 17.4 × 5.4 (19.15 × 5.3 × 1.65)
Main machinery: 2 Caterpillar C 32 diesels; 2,200 hp (1.64 MW); 2 shafts
Speed, knots: 20
Complement: 3 plus 12 passengers
Radars: Navigation: JRC 5210; I-band.

Comment: Damen Stan Tender 1905 design. Steel hull with aluminium superstructure. Transport craft used for transfer of pilots, VIPs and personnel. *Clyde Spirit* (based on the Clyde) delivered on 27 June 2008, *Solent Spirit* (based at Portsmouth) on 25 July 2008 and *Tamar Spirit* (based at Devonport) on 17 October 2008.



SOLENT SPIRIT 6/2008*, Maritime Photographic / 1798802

0 + 2 MULTIPURPOSE VESSELS (YAG)

SD NAVIGATOR SD RAASAY

Displacement, tons: 310
 Dimensions, feet (metres): 86.3 x 34.9 x 8.4 (26.3 x 10.64 x 2.55)
 Main machinery: 2 Caterpillar C18 diesels; 957 hp (713 kW); 2 shafts; 1 Veth-jet bow thruster
 Speed, knots: 8
 Complement: 3 plus 12 passengers
 Radars: JRC JMA 5210; I-band

Comment: Damen Multi Cat 2510 design. *Navigator* is to be used for buoy handling and mooring, equipped with a single crane capable of lifting up to 9 tonnes, the ship is to be capable of support diving operations. She is to be delivered on 17 July 2009. *Raasay*, is to be equipped with two cranes to carry out torpedo recovery, towed sonar array deployment and recovery, diving training and other trials duties. To be based at Kyle of Lochalsh, she is to be delivered on 8 January 2010.



MULTI CAT 2510 (Buoy Handler) 6/2008*, Serco Denholm / 129880K

3 PERSONNEL TENDERS (YFL)

SD CLYDE RACER SD SOLENT RACER SD TAMAR RACER

Measurement, tons: 100 grt
 Dimensions, feet (metres): 52.5 x 15.9 x 4.1 (16.0 x 4.85 x 1.25)
 Main machinery: 2 Caterpillar 3406 diesels; 1,100 hp (820 kW); 2 shafts
 Speed, knots: 20
 Complement: 3 plus 10 passengers
 Radars: Navigation: JRC 5210; I-band.

Comment: Damen Stan Tender 1505 design. Transport craft used for transfer of pilots, VIPs and personnel. *Clyde Racer* (based on the Clyde) delivered on 20 June 2008, *Solent Racer* (based at Portsmouth) on 19 September 2008 and *Tamar Racer* (based at Devonport) on 10 October 2008. Aluminium construction.



SOLENT RACER 8/2008*, Maritime Photographic / 130406D

1 HARBOUR WORKBOAT (YTL)

SD TILLY

Displacement, tons: 45
 Dimensions, feet (metres): 47.7 x 16.3 x 5.9 (14.55 x 4.98 x 1.8)
 Main machinery: 2 Caterpillar 3406C diesels; 600 hp (447 kW); 2 shafts; 2 Van de Giesen nozzles
 Speed, knots: 9
 Complement: To be announced
 Radars: Navigation: JRC JAMA-5210; I-band.

Comment: Damen Stan Tug 1405 design. General purpose inshore waters and harbour workboat delivered on 9 January 2009. Based at Devonport.



STANTUG 1405 6/2008*, Serco Denholm / 1798805

1 PENRYN CLASS (YTL)

SD PENRYN

Measurement, tons: 32 grt
 Dimensions, feet (metres): 61.7 x 23.6 x 2.6 (18.8 x 7.2 x 0.8)
 Main machinery: 2 Detroit 8082 diesels; 1,300 hp (970 kW); 2 shafts
 Speed, knots: 18
 Complement: 3 plus 75 passengers

Comment: Built by Chantier Metalnox, France in 1990. Based at Devonport.



PENRYN 3/2008*, B Sullivan / 1315215

2 HARBOUR WORKBOATS (YTL)

SD CATHERINE SD EMILY

Displacement, tons: 29.4
 Dimensions, feet (metres): 40.3 x 13.5 x 5.1 (12.3 x 4.13 x 1.55)
 Main machinery: 1 Caterpillar 3056 diesel; 165 hp (123 kW); 1 shaft
 Speed, knots: 8
 Complement: To be announced
 Radars: JRC JMA 5104; I-band.

Comment: Inshore waters and harbour workboats. Damen Pushy Cat 1204 design. Steel construction. *Catherine* (based at Portsmouth) delivered on 4 January 2008 and *Emily* (based on the Clyde) on 8 March 2008



CATHERINE 2/2008*, Maritime Photographic / 1353773

For details of the latest updates to *Jane's Fighting Ships* online and to discover the additional information available exclusively to online subscribers please visit
jfs.janes.com

ARMY (ROYAL LOGISTIC CORPS)

Notes: (1) Six Mk 4 LCVs are listed in the RN section. One is based in the Falklands.
 (2) One Range Safety Craft is listed in RMAS section.
 (3) 32 Combat Support Boats delivered by 2002. These are 8.2 m craft, road transportable and with a top speed of 30 kt.
 (4) Four new 14 m Army workboats were delivered in 2008. They are to be capable of fire fighting, pollution control, mexeflote operations, towed flexible barge duties, diving operations and general tug duties.
 (5) 17 Port and Maritime Regt, RLC is based at Marchwood, Southampton.



COMBAT SUPPORT BOAT

1/2004 / 1167573



WORKBOAT WB 41

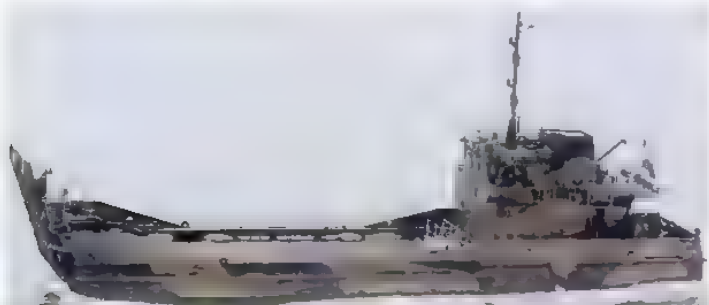
7/2008*, Derek Fox / 1353504

6 RAMPED CRAFT, LOGISTIC (RCL)

Name	No	Builders	Commissioned
ANDALSNES	L 107	James and Stone, Brightlingsea	22 May 1984
AKYAB	L 108	James and Stone, Brightlingsea	15 Dec 1984
AACHEN	L 110	James and Stone, Brightlingsea	12 Feb 1987
AREZZO	L 111	James and Stone, Brightlingsea	26 Mar 1987
ARROMANCHES (ex-Aghella)	L 106 (ex-L 112)	James and Stone, Brightlingsea	12 June 1987
AUDEMER	L 113	James and Stone, Brightlingsea	21 Aug 1987

Displacement, tons: 295 full load
 Dimensions, feet (metres): 109.2 x 28.2 x 4.9 (33.3 x 8.6 x 1.5)
 Main machinery: 2 Dorman 8JTCWM diesels, 504 hp (376 kW) sustained; 2 shafts
 Speed, knots: 10 Range, n miles: 900 at 10 kt
 Complement: 6 (2 NCOs)
 Military lift: 96 tons
 Radars: Navigation. Racal Decca; I-band.

Comment: *Andalsnes* and *Akyab* based in Cyprus, remainder at Southampton.



ARROMANCHES

8/2007, Maritime Photographic / 1170253



AUDEMER

7/2006, Frank Findler / 1187453

SCOTTISH FISHERIES PROTECTION AGENCY

Notes: (1) The Agency is responsible for the enforcement of sea fisheries regulations around the Scottish coast to a distance of 200 n miles. It has a complement of 275.
 (2) There are two Cessna F-406 Caravan II aircraft with Bendix 1500 radars.

2 JURA CLASS (PSO)

JURA HIRTA

Measurement, tons: 2,182 grt
 Dimensions, feet (metres): 275.6 x 42.6 x 14.7 (84.0 x 13.0 x 4.5)
 Main machinery: Diesel-electric; 3 Wärtsilä Gensets; 6,500 hp (4.8 MW); 1 shaft; cp prop;
 1 Brunvoll bow thruster (*Hirta*); 1 Brunvoll stern thruster (*Hirta*)
 Speed, knots: 18
 Complement: 16 (7 officers)
 Radars: Surface search/navigation: Sperry Marine Bridgemaster; E/F/I-bands.

Comment: *Jura* built by Ferguson Shipbuilders, Port Glasgow. Launched on 28 April 2005 and entered service in early 2006 to replace *Sulisker*. *Hirta* built by Stocznia Polnocna, Gdansk, launched on 17 August 2007 and entered service in late 2007. A third ship is no longer planned.



JURA

1/2006, SFPA / 1159412

1 SULISKER CLASS (PSO)

NORNA

Displacement, tons: 1,586 full load
 Dimensions, feet (metres): 234.3 x 38 x 17.6 (71.4 x 11.6 x 5.4)
 Main machinery: 2 Ruston 6AT350 diesels; 6,000 hp (4.48 MW) sustained; 2 shafts;
 cp props; bow thruster; 450 hp (336 kW)
 Speed, knots: 18
 Range, n miles: 7,000 at 13 kt
 Complement: 18 (7 officers) plus 6 spare bunks
 Radars: Navigation: 2 Racal Decca Bridgemaster; I-band.

Comment: Built by Richards, Lowestoft and completed in June 1988. *Sulisker* was decommissioned in early 2006 and *Vigilant* in 2008.



NORNA

6/2005, Maritime Photographic / 1153974

1 MINNA CLASS (PBO)

MINNA

Displacement, tons: 855 full load
 Dimensions, feet (metres): 156.5 x 32.8 x 14.8 (47.7 x 10.0 x 4.5)
 Main machinery: 2 Wärtsilä Gensets; 2,896 hp (2.16 MW); 2 Indar propulsion motors;
 2,145 hp (1.6 MW); 2 shafts, 1 Kamewa transverse thruster (150 kW)
 Speed, knots: 14
 Complement: 15 (6 officers)

Comment: Built by Ferguson Shipbuilders, Port Glasgow. Launched in February 2003 and accepted by SFPA on 31 July 2003 as replacement for *Westra*. Procurement of a second similar ship was cancelled following a review in 2006.



MINNA

6/2003, SFPA / 0561556

CUSTOMS

Notes: HM Revenue and Customs Maritime Branch operates five offshore patrol vessels. The fleet comprises four Damen 42 m craft (*Seeker, Searcher, Vigilant, Valiant*), one Vosper Thornycroft 36 m craft (*Sentinel*).



VALIANT 1/2009, *Maritime Photographic* / 1352516



SENTINEL 5/2001, *A Sharma* / 0131218

TRINITY HOUSE

Notes: The Corporation of Trinity House, with its HQ in London, has three responsibilities. It is the General Lighthouse Authority (GLA) for England, Wales and the Channel Islands, a Deep Sea Pilotage Authority for UK; and a major maritime charity, funded by its endowments, which supports the education, welfare and training of mariners and the promotion of safety at sea. In its GLA role, Trinity House provides nearly 600 aids to navigation including lighthouses, lightvessels, buoys, beacons, a differential global positioning service and an experimental radio navigation service e-LORAN. Funding for these operations is by light dues levied on commercial shipping calling at UK ports. Operations are controlled from its Harwich centre while a depot at Swansea serves the west coast.

PATRICIA

Displacement, tons: 3,139 full load
Dimensions, feet (metres): 284.0 x 46.0 x 14.0 (86.3 x 13.8 x 4.3)
Main machinery: 4 Ruston Oil diesels; 4,285 bhp (3.2 MW); connected via 4 generators to 2 motors; 3,452 hp (2.54 MW); 2 shafts
Speed, knots: 14
Range, n miles: 10,000 at 12 kt
Complement: 25 (8 officers)

Comment: Built by Henry Robb Ltd, Leith. Commissioned in May 1982



PATRICIA 7/2008, *Maritime Photographic* / 1353515

GALATEA

Displacement, tons: 3,960 full load
Dimensions, feet (metres): 275.5 x 54.1 x 14.8 (84.0 x 16.5 x 4.25)
Main machinery: 3 Wärtsilä 8L20 diesels; 2 shafts
Speed, knots: 13
Range, n miles: 5,250 at 12 kt
Complement: 18

Comment: New multifunction tender built by Stocznia Remontowa SA shipbuilders at Gdansk, Poland. Launched on 26 July 2006, she was named by The Queen on 17 October 2007. Design features include a large working deck area and a forward helicopter flight deck. She is equipped with a dynamic positioning system.



GALATEA 12/2008, *Maritime Photographic* / 1353514

ALERT

Displacement, tons: 325 full load
Dimensions, feet (metres): 128.9 x 26.2 x 7.8 (39.3 x 8.0 x 2.4)
Main machinery: 2 Caterpillar 3512 diesels; 4,023 hp (3 MW); 2 shafts; cp props; bow thruster
Speed, knots: 16
Range, n miles: 400 at 12 kt
Complement: 5

Comment: Rapid intervention vessel built by Stocznia Remontowa SA shipbuilders at Gdansk, Poland. Launched on 11 October 2006, she was delivered in 2006. In addition to maintaining aids to navigation, the vessel provides a fast response capability and the means to carry out emergency wreck marking and hydrographic survey services. Her primary areas of operation are the Dover Strait, English Channel and Southern North Sea. The ship is equipped with a dynamic positioning system.



ALERT 5/2006, *Mark Rayner* / 1167514

NORTHERN LIGHTHOUSE BOARD

Notes: The Northern Lighthouse Board (NLB) is the General Lighthouse Authority for Scotland and the Isle of Man. The Board provides Aids to Navigation (AtoN) including lighthouses, buoys and beacons and radio navigation aids. NLB is funded from the General Lighthouse Fund, which draws most of its income from the levy of light dues on commercial and fishing vessels calling at UK and Republic of Ireland ports. Operations are directed from its headquarters in Edinburgh.

PHAROS**Measurement, tons:** 3,672 grt**Dimensions, feet (metres):** 276.2 x 54.1 x 13.9 (84.2 x 16.5 x 4.25)**Main machinery:** Diesel-electric; 2 azimuth props; 2 bow thrusters**Speed, knots:** 13.5**Complement:** 18 (7 officers) plus accommodation for 12

Comment: The contract for the construction of a new multifunction tender was signed with Remontowa Shipyard, Gdansk, Poland on 11 November 2004. The ship was launched on 3 February 2006 and delivered in March 2007. *Pharos* the tenth NLB vessel to carry the name has replaced the former vessel now used as a fishery patrol vessel by the government of South Georgia. The new ship is fitted with dynamic positioning, a large aft working deck area, buoy and chain handling, towing, integrated bridge management system, full hydrographic survey suite and moon pool, helicopter deck and a 30-tonne crane.

**PHAROS**

4/2007, NLB / 1170250

POLE STAR**Displacement, tons:** 1,373 full load**Dimensions, feet (metres):** 169.0 x 39.4 x 11.5 (51.5 x 12.0 x 3.5)**Main machinery:** Diesel-electric; 3 Cummins Wärtsilä generators; 3,700 hp (2.8 MW);

2 motors; 2,680 hp (2 MW); 2 azimuth props; 2 bow thrusters

Speed, knots: 12**Complement:** 15 (6 officers)**Radars:** Sperry Marine; E/F/I-bands.

Comment: Built by Ferguson Shipbuilders, Port Glasgow. Laid down on 28 July 1999 and delivered on 15 September 2000. Principal roles are hydrographic survey and buoy handling. Equipped with dynamic positioning and an 18-tonne crane.

**POLE STAR**

11/2007, NLB / 1170249

MARITIME & COASTGUARD AGENCY

Notes: The Maritime & Coastguard Agency is responsible for the development, promotion and enforcement of high standards of marine safety, response to maritime emergencies 24 hours a day, reduction of the risk of pollution of the marine environment from ships and, where pollution occurs, minimisation of its impact on the United Kingdom.

Response to maritime emergencies within the UK SAR region is undertaken by HM Coastguard, the MCA's Counter-pollution Response Branch and firefighting teams from the Maritime Incident Response Group. SAR and counter pollution is co-ordinated through a network of 18 Maritime Rescue Co-ordination Centres (MRCCs). Each MRCC provides continuous emergency telephone, radio and satellite communications distress watch plus safety information and radio medical advice services. The counter-pollution branch provides response to marine pollution and provides scientific and technical advice on shoreline clean up.

The MCA provides four civilian SAR helicopters (Sikorsky S-92 and Agusta Westland 139) under contract from CHC Scotia. They are based at Sumburgh, Stornoway, Lee-on-Solent and Portland. Fixed-wing aircraft include a BN Islander which conducts surveillance patrols over the Dover Strait and forms part of the Channel Navigation Information Service while, for counter-pollution, a Cessna 404 and Cessna 406 are operated by the RVL Group of Coventry. Fitted with radar, IR and UV detection equipment. Additionally a Cessna 406 and two Lockheed Electra aircraft are available for dispersant spraying. Four emergency towing vessels for SAR, counter-pollution and salvage are under contract from Klyne Tugs Ltd: *Anglian Prince* (1,598 tons gwt), *Anglian Princess* and *Anglian Sovereign* (2,270 tons gwt) and *Anglian Monarch* (1,480 tons gwt). These are stationed in the Fair Isle, Minches, SW Approaches and Dover Strait areas.

HM Coastguard has its own corps of 3,500 volunteer Auxiliary Coastguards divided into 390 Coastguard Rescue Teams around the coast of UK. HM Coastguard also make significant use of Royal National Lifeboat Institution all-weather and inshore lifeboats and military SAR helicopters.

The MCA is also responsible for inspections and surveys of UK vessels, port state control inspections of non UK ships, the enforcement of merchant shipping legislation, the setting of ship and seafarer standards and maritime security.

**ANGLIAN PRINCESS**

3/2008, B Sullivan / 1353513

**ANGLIAN PRINCE**

10/2004, Maritime Photographic / 1043573

**AB-139**

7/2007, MCA / 1353512



7/2007, MCA / 1170247

United States



Country Overview

The United States of America is a federal republic which comprises 48 contiguous states (bounded to the north by Canada and to the south by Mexico) and the states of Alaska and Hawaii. External territories include Puerto Rico, American Samoa, Guam and the US Virgin Islands. With an area of 3,717,800 square miles, it occupies much of North America and has a coastline of 10,762 n miles with the Atlantic and Pacific Oceans and with the Gulf of Mexico. Washington, DC is the capital while New York, New York, is the largest city and a leading seaport. Other principal ports include New Orleans, Louisiana; Houston, Texas; Valdez, Alaska; Baton Rouge, Louisiana; Corpus Christi, Texas; Long Beach, California; Norfolk, Virginia; Tampa, Florida; Los Angeles, California; St Louis, Missouri; and Duluth, Wisconsin. There is an extensive inland waterway network, the three main components of which are the Mississippi river system (13,000 n miles long), the Great Lakes (ocean-going vessels can sail between the Great Lakes and the Atlantic Ocean via the St Lawrence Seaway (opened 1953)) and coastal waterways. Territorial seas (12 n miles) are claimed. A 200 n mile EEZ has been claimed but the limits have only been partly defined by boundary agreements.

Unified Combatant Commanders

Commander, US Strategic Command:
General Kevin P Chilton
Commander, US Pacific Command:
Admiral Timothy J Keating
Commander, US Joint Forces Command:
General James N Mattis
Commander, US European Command:
General Bentz J Craddock
Commander, US Northern Command:
General Gene Renuart
Commander, US Southern Command:
Admiral James G Stavridis
Commander, US Central Command:
General David H Petraeus
Commander, US Africa Command:
General William E Ward
Commander, US Special Operations Command:
Admiral Eric T Olson

Headquarters Appointments

Chief of Naval Operations:
Admiral Gary Roughead
Vice Chief of Naval Operations:
Admiral Patrick M Walsh
Director, Naval Nuclear Propulsion:
Admiral Kirkland J Donald
Chief of Naval Personnel:
Vice Admiral Mark E Ferguson III

Headquarters Appointments—continued

Commander, Naval Sea Systems Command:
Vice Admiral Kevin M McCoy
Commander, Naval Air Systems Command:
Vice Admiral David J Venlet
Commander, Space and Naval Warfare Systems Command:
Rear Admiral Michael C Bachman

Fleet Commanders

Commander, US Fleet Forces Command:
Admiral Jonathan W Greenert
Commander, US Pacific Fleet:
Admiral Robert F Willard
Commander, Allied Joint Forces Command, Naples, and US Naval Forces Europe:
Admiral Mark Fitzgerald
Commander, Military Sealift Command:
Rear Admiral Robert D Reilly, Jr

Flag Officers (Atlantic Area)

Commander, Second Fleet:
Vice Admiral Mel Williams Jr
Commander, Naval Surface Force, Atlantic Fleet:
Rear Admiral Kevin M Quinn
Commander, Sixth Fleet, Allied Joint Command Lisbon and Striking and Support Forces NATO:
Vice Admiral James A Winnefeld
Commander, Submarine Force Atlantic and Allied Submarine Command:
Vice Admiral John J Donnelly
Commander, Naval Air Force, Atlantic Fleet:
Rear Admiral Richard J O'Hanlon
Commander, Navy Region Europe and Maritime Air, Naples:
Rear Admiral David J Mercer
Commander, Naval Forces Southern Command and Fourth Fleet:
Rear Admiral Joseph D Kernan

Flag Officers (Pacific Area)

Commander, Seventh Fleet:
Vice Admiral John M Bird
Commander, Naval Surface Force, Pacific Fleet:
Vice Admiral Derwood C Curtis
Commander, Third Fleet:
Vice Admiral Samuel J Locklear III
Commander, Naval Air Forces and Naval Air Force, Pacific Fleet:
Vice Admiral Thomas J Kilcline
Commander, US Naval Forces, Japan:
Rear Admiral James D Kelly

Flag Officers (Pacific Area)—continued

Commander, Submarine Force, Pacific Fleet:
Rear Admiral Douglas J McAneeny
Commander, US Naval Forces, Korea:
Rear Admiral Thomas S Rowden
Commander, US Naval Forces, Marianas:
Rear Admiral William D French
Commander, Naval Mine and Anti-Submarine Warfare Command:
Rear Admiral Robert P Girner

Flag Officer (Central Area)

Commander, US Naval Forces, Central Command, and Fifth Fleet:
Vice Admiral William E Gortney

Marine Corps

Commandant:
General James T Conway
Assistant Commandant:
General James F Amos
Commander, US Marine Corps Forces Command:
Lieutenant General Richard F Natonski
Commander, US Marine Corps Forces Pacific:
Lieutenant General Keith J Stalder
Commander, Marine Forces Reserve and Commander Marine Forces North:
Lieutenant General Jack W Bergman
Commanding General I MEF and Commander US Marine Corps Forces Central Command:
Lieutenant General Samuel T Helland
Commanding General II MEF:
Lieutenant General Donnis Hejlik
Commanding General III MEF and Commander, Marine Corps Bases, Japan:
Lieutenant General Richard C Zilmer

Prefix to Ships' Names

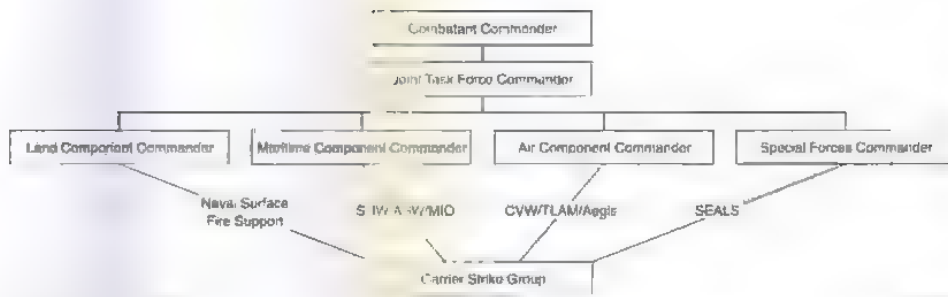
USS (United States Ship) Warships
USNS (United States Naval Ship) Military Sealift Command

Personnel

	1 Jan 2007	1 Jan 2008	1 Jan 2009
Navy			
Officers	51,880	49,709	49,735
Warranters	1,579	1,628	1,653
Enlisted	290,823	278,738	275,667
Marine Corps			
Officers	17,286	17,794	18,508
Warranters	1,826	1,829	1,849
Enlisted	159,385	166,103	179,994

Strength of the Fleet (1 January 2009)

Type	Active (NRF) (Reserve)	Building (Projected) Conversion/SLEP	Type	Active (NRF) (Reserve)	Building (Projected) Conversion/SLEP
SHIPS OF THE FLEET					
Strategic Missile Submarines			Research		
SSBN (Ballistic Missile Submarines) (nuclear-powered)	14	—	AGE Research	2	1
Cruise Missile Submarines	4	—	HSV High Speed Vessels	2	1 (9)
(SSGN) (nuclear-powered)			AGOR Oceanographic	4	—
Attack Submarines			MILITARY SEALIFT COMMAND INVENTORY		
SSN Submarines (nuclear-powered)	53	13	Naval Fleet Auxiliary Force		
Aircraft Carriers			T-AOE Fast Combat Support	4	—
CVN Multipurpose Aircraft Carriers (nuclear-powered)	11	1 (1)	T-AKE Auxiliary Cargo and Ammunition	6	4 (4)
Cruisers			T-AE Ammunition	4	—
CG Guided Missile Cruisers	22	—	T-AFS Combat Stores	2	—
Destroyers			T-AH Hospital	2	—
DDG 1000	—	2 (1)	T-AD Oilers	14	—
DDG Guided Missile Destroyers	54	8 (8)	T-ARS Salvage	4	—
Frigates			T-ATF Fleet Ocean Tugs	4	—
FFH Frigates	21 (9)	—	Special Mission Ships		
LCS Littoral Combat Ships	1	1	AS Submarine Tenders	2	—
Patrol Forces			T-AG/T-AGM Miscellaneous	2	1
PC Coastal Defense Ships	8	—	T-AGOS Surveillance/Patrol	5	—
Command Ships			T-AGS Surveying	9	—
LCC Command Ships	2	—	T-ARC Cable Repair	1	—
Amphibious Warfare Forces			Strategic Sealift Force		
LHA Amphibious Assault Ships (general purpose)	2	1	T-AKR Fast Sealift	11	—
LHD Amphibious Assault Ships (multipurpose)	7	1	T-AOT Tankers	4	—
LPD Amphibious Transport Docks	9	5 (1)	Prepositioning Programme		
LSD Dock Landing Ships	12	—	T-AK	17	—
LSV Logistic Support Vessels	8	—	T-AKR Large, Medium-Speed, Ro-Ro	9	—
Mine Warfare Forces			T-AG	1	—
MCM Mine Countermeasures Ships	14	—	T-AVB Aviation Logistic	2	—
			Ready Reserve Force		
			T-ACS Crane Ships	6	—
			T-AK Break Bulk	8	—
			T-AKR Ro-ro	36	—
			T-AOT/T-AOG Product Tankers	1	—



CHAIN OF COMMAND

advised by the Chairman of the Joint Chiefs of Staff. The Unified Combatant Commanders are four-star officers who have broad geographic areas of functional responsibilities. Exercising Combatant Command (COCOM), they have authority to employ forces as necessary to accomplish assigned military missions and are as follows:

Commander US European Command (Stuttgart-Vaihingen, Germany)
 Commander US Africa Command (Stuttgart, Germany)
 Commander US Northern Command (Peterson AFB, Colorado)
 Commander US Pacific Command (Honolulu, Hawaii)
 Commander US Southern Command (Miami, Florida)
 Commander US Central Command (MacDill AFB, Florida)
 Commander US Joint Forces Command (Norfolk, Virginia)
 Commander US Special Operations Command (MacDill AFB, Florida)
 Commander US Transportation Command (Scott AFB, Illinois)
 Commander US Strategic Command (Offutt AFB, Nebraska)

The Unified Combatant Commanders may decide to exercise Operational (OPCON) command of naval forces directly. Alternatively, they may delegate such powers to another officer who might be a subordinate Unified Commander (for example Commander, US Forces Korea), a service component commander (Army, Navy, Air Force, Marine Corps and so on), a functional component commander (air, maritime, land, special forces), a joint task force commander or a single service force commander.

Africa Command (AFRICOM) was established in October 2007 as a sub-unified command subordinated to US European Command for a transition period of one year. It became a stand-alone unified command on 1 October 2008, with the commander reporting to the Secretary of Defense like other unified commanders. AFRICOM Headquarters is at Kelley Barracks in Stuttgart, Germany. Future arrangements will be considered in co-operation with partner nations and the African Union. Unlike traditional unified commands, AFRICOM focuses on war prevention rather than war-fighting. The aim is to work with African nations and organisations to build regional security and crisis-response capacity. AFRICOM has assumed control over existing US government programmes in Africa that had been administered by US Central, European and Pacific Commands. The US force presence in Africa includes 1,700 personnel at Camp Lemonnier in Djibouti. Military advisers assigned to US embassies and diplomatic missions help to co-ordinate peacekeeping training and other Defense Department programs in support of US foreign policy.

Navy force commanders have a dual chain of command. They report to the Chief of Naval Operations for administrative matters such as training and equipping of forces and are also responsible to the combatant commanders for providing forces to accomplish missions. They include the following:

Commander US Fleet Forces Command
 Commander US Pacific Fleet
 Commander US Naval Forces Europe
 Commander US Naval Forces Central Command
 Commander Navy Reserve Force
 Commander Military Sealift Command

Once deployed in theatre, naval forces are operationally assigned to three-star numbered fleet commanders:

Commander US Second Fleet (Atlantic)
 Commander US Third Fleet (Eastern Pacific)
 Commander US Fourth Fleet (Caribbean, Central and South America)
 Commander US Fifth Fleet (Arabian Gulf and Indian Ocean)
 Commander US Sixth Fleet (Mediterranean)
 Commander US Seventh Fleet (Western Pacific)

These arrangements are intended to provide a framework that provides a clear chain of command while retaining the flexibility to be adapted to the operational circumstances. For example, it is feasible for a multimission naval task group, such as a carrier strike group (CSG) (baseline composition: 1 CVN/CV, 2 CG/DDG, 1 DD/FFG, 1 SSN and 1 logistic support ship) or an expeditionary strike group (ESG) (baseline composition: 3 amphibious ships (LHD/LHA, LPD and LSD), 2 CG/DDG, 1 DD/FFG and 1 SSN) to support service, component, and other superior commanders simultaneously.

Tactical Command and Composite Warfare Commander

US naval task groups and forces operate under Composite Warfare Commander (CWC) doctrine. The officer in tactical command (OTC) is responsible for accomplishing the missions of his assigned forces. The CWC directs the force and controls warfare functions. The OTC may designate a subordinate commander as CWC but, in general practice, the roles are combined. The OTC/CWC is supported by Principal Warfare Commanders (PWC), Functional Warfare Commanders (FWC), Functional Warfare Commanders (PWC), Functional Warfare Commanders (FWC) and Coordinators.

PWCs include the Air Defense Commander (ADC), Strike Warfare Commander (STWC), Information Warfare Commander (IWC), Anti-submarine Warfare Commander (ASWC), and Surface Warfare Commander (SUWC). ASW and SLW areas can be combined under a Sea Combat Commander (SCC). PWCs collect and distribute information pertinent to their warfare areas and can be delegated authority to respond to threats with assigned assets.

FWCs perform duties of a scope or duration more limited than that of a PWC. Typical FWCs include Maritime Interception Operations Commander (MIOC), Mine Warfare Commander (MIWC), Operational Deception Group Commander, Screen Commander (SC) and Underway Replenishment Group (URG) Commander.

Coordinators are responsible to the OTC/CWC for managing assets and resources. Among assigned Coordinators are the Air Resource Element Coordinator (AREC), Air Control Authority (ACA), Cryptologic Resource Coordinator (CRC), Force Over-the-horizon Track Coordinator (FOTC), Force Track Coordinator (FTC), Helicopter Element Coordinator (HEC), Submarine Operations Coordinating Authority (SOCA), TLAM Launch Area Coordinator (LAC) and TLAM Strike Coordinator (TSC).

The OTC/CWC may activate any or all of these warfare commanders and coordinators as necessary. The guiding principle of CWC doctrine is flexibility to meet operational requirements.

Multinational Operations

US naval forces regularly participate in peacetime and wartime multinational operations. Although the President always retains command authority over US forces, he may place them under control of a foreign commander as required to achieve specific military objectives. Multinational operations may be conducted under the structure of a formal alliance (such as NATO) or of an ad hoc coalition (Operation Desert Shield/Desert Storm).

Complex Naval Task Forces

Complex Task Forces usually consist of multiple CSGs and/or ESGs and may also include naval assets of allied nations. Such forces may operate together under three generic command and control structures.

In Situation A, the forces integrate, the senior officer present becomes the overall OTC/CWC and a new single CWC organisation is established.

In Situation B, task groups do not integrate. The senior OTC/CWC coordinates the tactical operations of all naval forces and delegates responsibilities and TACON of specific forces to junior commanders as appropriate. The senior OTC/CWC may also designate junior commanders as sector OTC/CWCs.

In Situation C, each group retains its own OTC/CWC and its own set of warfare commanders and coordinators. The OTC/CWC of the supported force (or a common superior)

draws on the assets of the entire force to achieve joint and combined force objectives.

Amphibious Operations

'Commander Amphibious Task Force' (CATF) and 'Commander Landing Force' (CLF) are historic naval command terms whose functional responsibilities are recognised by Joint Doctrine. The common superior establishes command relationships between CATF and CLF who are considered coequal in planning. CATF is responsible for operations at sea while CLF dictates landing force objectives and landing and drop zones.

US Marine Corps Organisation

Marine Corps Structure

Title 10 directs that the Marine Corps is to consist of three divisions and three air wings with their necessary logistics support and that there is to be a similar organisation in the reserves consisting of one division, one air wing, and their respective logistical support groups. MEFs I (Camp Pendleton, CA), II (Camp Lejeune, NC) and III (Okinawa, Japan) are the three standing Marine Expeditionary Forces (MEFs).

The MEF is the USMC's principal war-fighting organisation. Commanded by a lieutenant general, it consists of 50-60,000 personnel and includes, typically, a division, air wing, Marine Logistics Group (MLG) and headquarters group. MEFs can conduct a broad scope of missions in any environment for 60 days and are supported by amphibious shipping and/or Maritime Prepositioning Squadrons (MPS). Because of its size, the MEF is normally committed sequentially, building on a smaller operational unit such as a Marine Expeditionary Brigade (MEB) or Marine Expeditionary Unit (MEU).

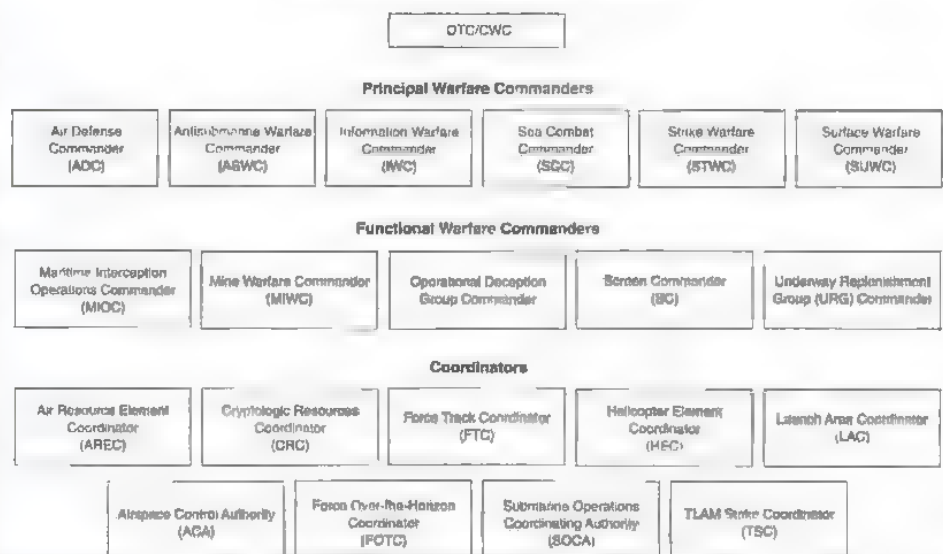
The MEB is designed as the lead element for a MEF or for small-scale contingencies. Command by a major general or brigadier, it consists of 14-18,000 Marine and Navy personnel and has thirty days sustainability. The ground combat element consists of an infantry regiment reinforced by artillery, some armour, light armoured vehicles, assault amphibian vehicles, and combat engineers. These assets can be divided into four battalion-size manoeuvre elements, supported by three to six fixed- and rotary-wing aircraft squadrons.

MEUs routinely forward deploy on Expeditionary Strike Groups (ESG). Commanded by a colonel, MEUs contain approximately 2,200 Marine and Navy personnel and can sustain operations for fifteen days. MEUs normally consist of a reinforced infantry Battalion Landing Team (BLT), a composite helicopter squadron (with air command and control and six Harriers), and a MEU Combat Logistics Battalion (CLB). Typically, such a force can act as the lead element for a larger force and/or provide shaping/engagement activities, deterrence, and limited power projection. It has the capability to conduct company to battalion-sized raids to the range limits of assigned helicopters, roughly 70-100 miles from the ESG. An ESG typically consists of 1 LHD/LHA, 1 LPD and 1 LSD.

Marine Corps Operations

Operations are conducted by Marine Air Ground Task Forces (MAGTFs) whose size and composition will be dictated by operational circumstances. A MAGTF can be established by drawing ground, aviation, and combat service support assets from divisions, air wings, and their support groups. At the lower end of the scale, MEUs are available as immediately responsive, sea-based MAGTFs while, on a much greater scale, a full MEF might be required. This might be based on one of the standing MEFs or, as in Operation Desert Shield/Desert Storm, drawn from all three standing MEFs. A MAGTF always consists of a Command Element (CE), Ground Combat Element (GCE), Aviation Combat Element (ACE) and a Combat Service Support Element (CSSE).

Composite Warfare Commander Structure



CWC STRUCTURE

0531963

Embarked MEU

Marine Corps amphibious forces embarked on ESGs come under the OPCON of the naval or maritime component commander. They remain under the naval or maritime component commander throughout an amphibious operation if they will re-embark. If they transition to sustained operations ashore, they chop to either the Marine component commander or the land component commander. A Marine Corps component commander may be designated as the joint force maritime, land, or air component commander.

Communications and Data Systems

Advanced Combat Direction System (ACDS)

ACDS is a centralized, automated command and control system. An upgrade from the Naval Tactical Data System (NTDS) for aircraft carriers and large-deck amphibious ships, it provides the capability to identify and classify targets, prioritize and conduct engagements, and exchange targeting information and engagement orders within the battle group and among different service components in the joint theatre of operations. ACDS is a core Sea Shield component of non-Aegis/non-SSDS combat systems.

ACDS consists of two variants. The ACDS Block 0 system replaces obsolete NTDS computers and display consoles and incorporates new software. ACDS Block 0 is deployed on five aircraft carriers, five Wasp (LHD-1) class amphibious assault ships, and all five Tarawa (LHA-1) class amphibious assault ships. ACDS Block 1 is installed in one ship: Wasp. Following the OPEVAL failure of ACDS Block 1, it is to be replaced by the Ship Self Defense System (SSDS).

AEGIS Combat System

The AEGIS system is designed as a total weapon system, from detection to kill in the air, surface and sub-surface domains.

The SPY-1 radar system is the primary air and surface radar for the Aegis Combat System installed in the *Ticonderoga* (CG-47) and Arleigh Burke (DDG-51) class warships. It is a multifunction, phased-array radar capable of search, automatic detection, transition to track, tracking of air and surface targets, and missile engagement support. The third variant of this radar, SPY-1D(V), the Littoral Warfare Radar, improves the radar's capability against low-altitude, reduced radar cross-section targets in heavy clutter environments, and in the presence of intense electronic countermeasures. The SPY-1 Series radars also demonstrated the capability to detect and track theatre ballistic missiles. AEGIS equipped platforms include Spanish F-100 and Japanese DDG ship classes.

Automated Digital Network System (ADNS)

The Automated Digital Network System is responsible for the transport of all Wide Area Network (WAN) Internet Protocol (IP) services which connect afloat units to various global shore sites. It provides ship and shore IP connectivity and promotes efficient use of available satellite and line of sight communications bandwidth. ADNS converges all voice, video, and data communications between ship and shore to an IP medium and takes advantage of all shipborne RF to transmit data efficiently. Specifically, it automates routing and switching of tactical and strategic C4I data via Transmission Control Protocol/Internet Protocol (TCP/IP) networks linking deployed battle group units with each other and with the Defense Information Systems Network (DISN) ashore. ADNS uses Commercial Off-the-Shelf (COTS) and Non-Developmental Item (NDI) Joint Tactical Architecture (JTA) - compliant hardware (routers, processors and switches), and commercial-compliant software in a standardised, scalable, shock-qualified rack design.

Challenge Athena (WSC-8)

Challenge Athena is part of the Navy commercial wideband satellite program (CWSP). It is a full-duplex, high data-rate communications link that operates in the C-band spectrum up to 2 048 Mbps. The Challenge Athena terminal (AN/WSC 8(V)1,2) with modifications by the developer/manufacturer is also capable of operating in the Ku-band spectrum. Because of open ocean limitations, there are currently no plans to enhance Navy's commercial satellite terminal to include Ku coverage. CWSP provides access to voice, video, data and imagery circuit requirements. It supports fleet commander flagships (LCC/AGF), aircraft carriers (CV/CVN), amphibious ships (LHA/LHD/LPD) and other selected ships, including hospital ships (T-AH) and submarine tenders (AS). Terminals are also installed at training locations in San Diego, California, and Norfolk, Virginia. Examples of communications circuits that are provided include, Joint Service Imagery Processing System-Navy/Concentrator Architecture (JSIPS-N/JCA), Naval and Joint Fires Network (JFN), Video Tele-Conferencing (VTC), Video Information Exchange system (VIXS), Video Tele-Medicine (VTM), Video Tele-Training (VTT), Afloat Personal Telephone Service (APTS), Automated Digital Network System (ADNS), Integrated Digital Switching Network (IDSN) for voice/telephone, Secret/Unclassified Internet Protocol Router Networks (SIPRNET/NIPRNET), and Joint Worldwide Intelligence Communications System (JWICS). The CWSP terminal uses commercial satellite connectivity and COTS/NDI equipment. In recent years, it has become an integral part of Navy's SATCOM architecture because of the overburdened military satellite communications systems.

Co-operative Engagement Capability (CEC)

Co-operative Engagement Capability (CEC) improves battle force air-defense capabilities by integrating the sensor data of each co-operating ship and aircraft into a single, real-time, fire-control-quality composite track picture. CEC also interfaces the weapons capabilities of each CEC equipped

ship in the battle group to integrate engagement capability. By simultaneously distributing sensor data on airborne threats to each ship within a battle group, CEC extends the range at which a ship can engage hostile missiles to well beyond the radar horizon, thereby improving area, local, and self-defense capabilities. Operating under the direction of a designated commander, CEC enables a strike group or joint task force to act as a single, geographically dispersed combat system to confront the evolving threat of anti-ship cruise missiles and theatre ballistic missiles. As of 2008, CEC is installed on seven aircraft carriers, *Nimitz*, *Eisenhower*, *John C Stennis*, *George Washington*, *Ronald Reagan*, *Carl Vinson* and *George H W Bush*; nine Aegis cruisers; 26 new construction destroyers; 10 amphibious ships and 21 E-2C Hawkeyes. CEC is planned for installation on CVN 68, CVN 21, CG 47, DDG 51, LHA 6 and DDG 1000 class ships, all E-2D Advanced Hawkeye aircraft, the US Army's Joint Land Attack Cruise Missile Defense Elevated Netted Sensor System (JLENS), and the US Marine Corps' Composite Tracking Network (CTN).

Distributed Common Ground System-Navy (DCGS-N)

DCGS-N Increment One is the Navy component of the Department of Defense (DoD) DCGS family of systems. DCGS-N provides integration of intelligence, surveillance, reconnaissance, and targeting (ISR&T) capabilities. Increment One will include: the Global Command and Control System-Joint Integrated Imagery and Intelligence (GCCS-I3) for intelligence analysis and processing tools and capabilities; GALE Lite (Generic Area Limitation Environment) for SIGINT analysis; Common Geopositioning Services (CGS) for imagery processing and exploitation, as well as aim-point measurement in support of precision guided and coordinate seeking weapons; implementation of the DCGS Integration Backbone (DIB) for sharing intelligence within the DCGS family of systems; use of Net Centric Enterprise Services (NCEs) standards to enhance interoperability and expose ISR data to the wider DoD audience; and exchange of ISR&T and Command and Control (C²) track information with the fielded GCCS family of systems. DCGS-N will migrate to a Common Computing Environment (CCE) construct in alignment with the Integrated Shipboard Network System (ISNS)/SC Networks/Consolidated Afloat Networks and Enterprise Services (CANES) concept starting in FY14 with DCGS-N Increment Two. DCGS-N Increment One (Block One) will undergo an afloat operational evaluation (OPEVAL) in late 2009, with Initial Operational Capability (IOC) in 2010. DCGS-N Increment One will replace the JSIPS-N systems and will be fielded to all aircraft carriers, amphibious assault ships (LHA/LHD), fleet command ships (LCC), and to select shore ISR&T reach back sites.

Global Broadcast Service (GBS)

The Global Broadcast Service augments and interfaces with other systems to provide virtual two-way Internet Protocol (IP) networked communications to deliver a continuous, high-speed, one-way flow of high-volume information broadcast to support: routine operations, training and military exercises, special activities, crisis, situational awareness, weapons targeting, intelligence, and the transition to and conduct of operations short of nuclear war. Homeland defensive operations are supported by a requirement for continental US coverage, which also provides exercise support, training and work-ups for deployment. GBS also supports military operations with US allies or coalition forces. GBS is an information technologies, mission-essential, national security system providing network-centric warfare communications, but does not incorporate nuclear survivability and hardening features. GBS provides a limited anti-jam capability and this may become a required capability in future. GBS will provide the capability to disseminate quickly large information products to various joint and small user platforms. With increased capacity, faster delivery of data, and near real-time receipt of imagery and data to the warfighter, it will reduce reliance on current MILSATCOM systems.

Global Command and Control System (GCCS)

GCCS is a comprehensive, worldwide network-centric system which provides the National Command Authority (NCA), Joint Chiefs of Staff, combatant and functional unified commands, Services, Defense Agencies, Joint Task Forces and their Service components, and others with information processing and dissemination capabilities necessary to conduct Command and Control (C²) of forces. GCCS is a means to implement the Command, Control, Communications, Computers, and Intelligence for the Warrior (C² IFTW) concept. GCCS provides the operational commanders with a near-realtime Common Operational Picture, intelligence information, collaborative joint operational planning and execution tools, and other information necessary for the execution of joint operations.

Global Command and Control System (Maritime) (GCCS-M) (ex-JMCCS)

GCCS-Maritime (GCCS-M) (formerly the Joint Maritime Command Information System (JMCCS)) is the designated command and control (C²) migration system for the Navy and is the naval implementation of the Global Command and Control System (GCCS). The evolutionary integration of previous C² and intelligence systems, GCCS-M supports multiple warfighting and intelligence missions for commanders at every echelon, in all afloat, ashore, and tactical naval environments, and for joint, coalition, and allied forces. GCCS-M meets the joint and service requirements for a single, integrated, scalable Command and Control (C²) system that receives, displays, correlates, fuses, and maintains geo-locational track information on friendly, hostile, and neutral land, sea, and air forces and integrates it with available intelligence and environmental information. GCCS-M supports evolving concepts for

Network-Centric Operations by receiving, displaying, correlating, fusing, and integrating all available track, intelligence and imagery information for the warfighter. More than 56 joint and Naval systems are interfaced with GCCS-M to exchange data and support warfighter capabilities in 14 mission areas. Key capabilities include:

- Multisource information management
- Display and dissemination through extensive communications interfaces
- Multisource data fusion and analysis/decision making tools
- Force co-ordination

GCCS-M is implemented afloat (capabilities formerly met by the Navy Tactical Command System-Afloat (NTCS-A) and Joint Maritime Command Information System (JMCCS) Afloat), at ashore fixed command centers (capabilities formerly met by the Operational Support System (OSS) and JMCCS Ashore), and as the command and control (C²) portion of mobile command centers (known as Tactical Support Center (TSC) and Tactical-Mobile).

GCCS-M Version 4.1 will begin fielding in 2010. By using GCCS-Joint as its baseline, it will bring enhanced levels of interoperability with other GCCS-Joint based applications such as the Distributed Common Ground System family of systems. In addition to various other new capabilities, GCCS-M 4.1 will increase track capacity to 100,000 and Ballistic Missile Defense planning.

Integrated Broadcast Service/Joint Tactical Terminal (IBS/JTT)

The Integrated Broadcast Service (IBS) is a system-of-systems that will migrate the Tactical Receive Equipment and Related Applications Data Dissemination System (TRDDS), Tactical Information Broadcast Service (TIBS), Tactical Reconnaissance Intelligence Exchange System (TRIXS), and Near Real-Time Dissemination (NRTD) system into an integrated service with a common format. The IBS will send data via communications paths, such as UHF, SHF, EHF, GBS, and via networks. This program supports Indications Warning (I&W), surveillance, and targeting data requirements of tactical and operational commanders and targeting staffs across all warfare areas. It comprises broadcast-generation and transceiver equipment that provides intelligence data to tactical users. The Joint Tactical Terminal (JTT) will receive, decrypt, process, format, distribute, and transmit tactical data according to preset user-defined criteria across open-architecture equipment. JTT will be modular and will have the capability to receive all current tactical intelligence broadcasts (TDDS, TADIXS B, TIBS, and TRIXS). JTT will also be interoperable with the follow-on IBS UHF broadcasts. However, the current JTT form factor does not meet space and weight constraints for a majority of the Navy and Air Force airborne platforms. Therefore, to ensure joint interoperability, the Navy and Air Force are pursuing a Special Operations Command designed Embedded National Tactical Receiver (ENTR) for airborne platforms.

Integrated Radar Optical Surveillance and Sighting System (IROSS)

IROSS is the Situational Awareness component of the Shipboard Protection System (SPS) Increment one. It employs COTS-based/Open Architecture products, and its key components include SPS-73 or equivalent surface search radar, electro-optical/infrared devices, an integrated surveillance system, spotlights, long range acoustic devices, and remotely operated stabilised small arms mounts. SPS Increment 1 is designed to detect, classify and engage real-time asymmetric threats at close-range to ships in port, at anchor and while transiting choke points or operating in restricted waters. The system provides 360° Situational Awareness (SA) and employs COTS integration to support incremental modifications as needed to tailor the system to the mission. The system has undergone extensive testing in the laboratory and a prototype is being tested at sea in *Ramage*. The system is scheduled to be installed in most ship classes including surface combatants, patrol boats, amphibious and auxiliary ships, and Coast Guard cutters.

Joint Service Imagery Processing System (JSIPS-N)

JSIPS-N provides a digital imagery processing and management system, with the capability to task, process, exploit, and disseminate imagery, imagery-derived products, and imagery intelligence (IMINT) based on National, theatre, and tactical sensors. As a primary mission, JSIPS-N assists strike planners, tactical aviators, and USMC amphibious planners in the delivery of precision ordnance. JSIPS-N is installed on aircraft carriers (CVN), amphibious assault ships (LHA/LHD), fleet command ships (LCC), and at selected shore sites. A Service Life Extension Program (SLEP) is underway (JSIPS-N 6.0). The JSIPS-N SLEP is comprised of four subsystems: Common Geopositioning Services (CGS); Image Product Library (IPL), Imagery Exploitation Support System (IESS) Client; and the VANTAGE Shared Airborne Reconnaissance Pod (SHARP) processing and exploitation capability. The JSIPS-N system will be replaced on a one-for-one basis by the Distributed Common Ground System-Navy (DCGS-N), Increment One, Block One starting in FY09.

Joint Surveillance Target Attack Radar System (JSTARS)

JSTARS is described as a 'bulletproof anti-jam datalink', utilizing omnidirectional broadcast on UHF SATCOM. It receives and transmits real time MT/FTI/SAR data via a secure uplink and downlink. It is used to demonstrate 'sensor to shooter' technology.

Joint Tactical Information Distribution System (JTIDS)

A joint program directed by the Office of the Secretary of Defense, JTIDS is a digital information-distribution

system which provides rapid, crypto-secure, jam-resistant (frequency-hopping), and low-probability-of-exploitation tactical data and voice communication at a high data rate to Navy tactical aircraft and ships and Marine Corps units. JTIDS also provides capabilities for common-grid navigation and automatic communications relay. It has been integrated into numerous platforms and systems, including US Navy aircraft carriers, cruisers, destroyers, amphibious assault ships, E-2C Hawkeye aircraft and EP-3 Aries aircraft; US Air Force Airborne Warning and Command System (AWACS) aircraft; and US Marine Corps Tactical Air Operations Centers (TAOCs) and Tactical Air Command Centers (TACCs). Foreign country participants include Australia, Canada, France, Germany, Japan, NATO, Saudi Arabia and the United Kingdom. Additionally, JTIDS has been identified as the preferred communications link for Theatre Ballistic Missile Defense programs. JTIDS is the first implementation of the Link-16 Joint Message Standard (J - aeries) and provides the single, near real-time, joint datalink network for information exchange among joint and combined forces for command and control of tactical operations.

Land Attack Warfare System (LAWS)

This prototype system networks all shooters (tactical air, shore artillery and seaborne fire support) into a Battle Local Area Network (Battle LAN) known as the 'Ring of Fire'. This automatically assigns fire missions to the most capable unit in the Battle LAN. LAWS controls preplanned missions, including Tomahawk, as well as time critical calls for fire from land forces. Fleet Battle Experiment ALFA was the initial test of this system.

Mark XIIA Identification Friend or Foe (IFF) Mode 5

IFF provides positive friendly identification to improve mission effectiveness, increase situational awareness, and minimise likelihood of fratricide. It supports Common Operational and Tactical Pictures. The Mark XIIA system adds Mode 5 to the existing modes included in the Mark XII system. Mode 5 is an ACAT II program that achieved Milestone 'C' in July 2006. It is being fielded as an Engineering Change Proposal to existing IFF digital interrogators and transponders aboard selected Navy USMC and Coast Guard aircraft, surface, and subsurface units. Other Services and some NATO nations are also fielding IFF Mode 5 capability.

Miniature Demand Assigned Multiple Access (Mini-DAMA)

Mini-DAMA is a communications system that supports the exchange of secure and non-secure Battle Group coordination data, tactical data and voice between base band processing equipment over UHF SATCOM, 25/5 kHz DAMA, 25/5 kHz Non-DAMA, and UHF LOS. The Navy has completed installations for submarines and Arleigh Burke destroyers AV(2), mine warfare ships V(2) and aircraft V(3). Aircraft installations V(2) continue. These Mini-DAMA radio installations provide the channel utilisation efficiency by employing Time Division Multiple Access (TDMA) methods that have been achieved for surface warfare ships and shore stations equipped with the larger version TD-1271 DAMA multiplexer.

Mission Data System (MDS)

This system allows planners to view Tomahawk Land Attack Missile information. MDS receives via TADIXS A or OTICXS I digital Mission Data Updates (MDUs) from the Cruise Missile Support Activity (CMSA) and stores preplanned TLAM strike plans. Initial TLAM mission data fill is distributed via magnetic tape media provided by the CMSA.

Multifunctional Information Distribution - Low Volume Terminal (MIDS-LVT)

MIDS-LVT is a multinational co-operative development program to design, develop, and produce a tactical information distribution system equivalent in capability to Joint Tactical Information Distribution System (JTIDS), but in a low-volume, lightweight, compact terminal designed for fighter aircraft with applications in helicopters, ships, and ground sites. The United States is the MIDS LVT program leader with France, Germany, Italy and Spain entering into a European partnership, called EUROMIDS. US Navy procurement is targeted for F/A-18 Hornet aircraft as the lead aviation platform and surface craft. MIDS-LVT is a pre-programmed product improvement (P3I) for JTIDS Class 2 Terminal and provides identical capabilities at a reduced size and weight. MIDS-LVT employs the Link-16 (TADIL-J) message standard of US Navy/NATO publications. MIDS-LVT is fully interoperable with JTIDS and was designed in response to current aircraft, surface ship, submarine, and ground-host volume and weight constraints. The solution variants-MIDS-LVT (1), MIDS-LVT (2), and MIDS-LVT (3) - support US Navy, US Marine Corps, and US Air Force aircraft; US Navy ships, US Army Patriot, THAAD, MEADS and ground-based defense systems; USAF and USMC ground-based Command and Control platforms; and potentially other tactical aircraft and ground-based systems. The MIDS-LVT (1) variant will be used in the MIDS on Ship (MOS) program providing the Link 16 capability to new-construction surface warships.

NATO Improved Link Eleven (NILE) Program

This program, known as either NILE or Link 22, fulfills a North Atlantic Treaty Organization (NATO) Operational Staff Requirement to develop a digital datalink with the aim of increasing the timeliness of the tactical information transfer over in a dense and hostile communications threat environment. The system is capable of using both fixed frequency and frequency hopping waveforms in both the Ultra High Frequency (UHF) and High Frequency (HF) bands. While designed to replace Link 11 on these media, and to provide a more robust Tactical Beyond Line of Sight capability, the Link 22 message set is designed to be more aligned with and to complement Link 16, easing multilink operations. Modern automated Network Management capabilities minimise the pre-planning requirements associated with Link 16 Networks. Link 22 has been developed to fulfil the operational requirement to exchange tactical data between tactical data systems (including operators) and to exchange necessary network management data. Link 22 incorporates F-series and J-series message standards (formats and protocols), a Time Division Multiple Access (TDMA) architecture, specific communications media and protocols, and specific procedures.

Ship Self-Defense System (SSDS) Mk 1 and 2

SSDS provides the integrated combat system for aircraft carriers and amphibious ships, enabling them to keep pace with the Anti-Ship Cruise Missile (ASCM) threat. Moving toward an open-architecture distributed-processing system, SSDS integrates the detection and engagement elements of the combat system. With automated weapons control doctrine, Cooperative Engagement Capability (CEC), and enhanced battlespace awareness, SSDS provides these ships with a robust self-defense capability in support of Sea Shield.

SSDS Mk 1 provides doctrine-based, Quick Reaction Combat Capability (QRCC), plus automated detect through multi-threat engagement capability. It enhances capabilities

for Force Protection using own-ship and remote data in support of AAW capstone requirements.

SSOS Mk 2 integrates with Co-operative Engagement Capability (CEC) and provides the QRCC of SSDS Mk 1 and selected features of the Advanced Combat Direction System (ACDS) to support multi-warfare area capability, improve joint interoperability and provide an integrated, coherent real-time command and control system for CVN, LPD and LHD class ships. SSDS Mk 1 has been installed in 12 LSDs; and SSDS Mk 2 in seven CVNs (CVN 68, 69, 70, 73, 74, 76, 77) and 10 LPDs (LPD 17, 18, 19, 20, 21, 22, 23, 24, 25, 26) and two LHDs (LHD 7, 8). An open-architecture version of Mk 2, similar to DDG 1000 OA, was installed on CVN 68.

Theatre Battle Management Core System (TBMCS)

TBMCS replaces the Contingency Theatre Automated Planning System (CTAPS) as the only command and control system authorised to produce the Air-Tasking Order (ATO). TBMCS has the capability to plan and execute air operations in any theatre of operations and is considered the core system for the Air Force's Air Operation Center (AOC). All services use TBMCS and, within the USN, it is installed in carriers, command ships and large-deck amphibious ships (LHA/LHD) and the Maritime Operations Centers.

Trusted Information Systems (TIS)

The Multi-Level Security (MLS) capabilities of the Navy's Ocean Surveillance Information System (OSIS) and Radiant Mercury are complementary systems which have been combined into a single TIS programme. The aim is to facilitate development and expansion of a Commander's capability automatically to exchange critical intelligence and operational information with all forces whether US, allied, or coalition.

The OSIS Evolutionary Development (OED) system is DoD's only PL-4 accredited C4I processing and dissemination system. It serves as the backbone automated information system supporting the Common Operational Picture (COP) at US and allied Joint Intelligence Centers (JICs). OED receives, processes, and disseminates timely all-source surveillance information on fixed and mobile targets of interest, both afloat and ashore, within an MLS environment. OED permits operators to collaborate in multiple domains, monitor, analyse, and support multiple views of the battle space corresponding to multiple security classification levels. Its robust correlation and communications subsystems ensure extremely rapid delivery of both record message traffic and intelligence broadcasts in support of the Unified Combatant Commanders, Joint Task Force commanders, individual units, and allies. The MLS capabilities in OED are certified and accredited to support compartmented multilevel networks at the SCI level and are envisioned to serve as the core technology upon which future Navy networks and databases running at multiple classification levels can be effectively combined to allow appropriately cleared operators access to information from a single workstation.

Radiant Mercury (RM) provides the accredited capability to automatically sanitise, transiterate, and downgrade classified, formatted information to users at lower classification levels. RM helps ensure critical indications and warning intelligence is provided quickly to operational decision makers at various security and releasability levels. RM is currently fielded on Force Level ships bridging data transfer between SCI GCCS-M and GENSER GCCS-M. RM also serves as a sanitiser within OED Radiant Mercury Imagery Guard (RMIG) combines a digital signature process with RM allowing the networked transfer of imagery between security domains.

Major commercial shipyards

Shipbuilders

Austal USA, Mobile, Alabama
General Dynamics Corporation, Bath Iron Works, Bath, Maine
General Dynamics Corporation, Electric Boat, Groton, Connecticut
General Dynamics Corporation, National Steel and Shipbuilding Company, San Diego, California
Marinette Marine Corporation, Marinette, Wisconsin
Northrop Grumman Shipbuilding, New Orleans, Louisiana
Northrop Grumman Shipbuilding, Pascagoula, Mississippi
Northrop Grumman Shipbuilding, Newport News, Virginia.

Ship Repairers

Al Larson Boat Shop, Terminal Island, California
Newport Shipyard Newport, Rhode Island

Atlantic Dry Dock Corp., Jacksonville, Florida
Atlantic Marine, Inc, Jacksonville, Florida
Atlantic Marine, Inc, Mobile, Alabama
BAE Systems San Francisco Ship Repair, San Francisco, California
BAE Systems Norfolk Ship Repair, Norfolk, Virginia
BAE Systems San Diego Ship Repair, San Diego, California
BAE Systems Hawaii Shipyards, Inc., Honolulu, Hawaii
Bay Ship & Yacht Co., Alameda, California
Bender Shipbuilding & Repair Co., Inc, Mobile, Alabama
Cascazo General Inc, Portland, Oregon
Colonna's Shipyard, Inc, Norfolk, Virginia
Detyens Shipyards, Inc, Charleston, South Carolina
Earl Industries, LLC, Portsmouth, Virginia
Intermarine USA, Savannah, Georgia
Lake Union Drydock Co., Seattle, Washington
Marine Hydraulics International Inc, Norfolk, Virginia
Metal Trades, Inc, Hollywood, South Carolina

Metro Machine Corp., Norfolk, Virginia
North Florida Shipyards, Inc, Jacksonville, Florida
Northrop Grumman Continental Maritime of San Diego, Inc., California
Pacific Ship Repair & Fabrication, San Diego, California.
Tampa Ship, LLC, Tampa, Florida
Technico Corporation, Chesapeake, Virginia
Todd Pacific Shipyards Corp., Seattle, Washington
VT Hatter Marine Inc, Gulfport, Mississippi.

Notes: All the yards mentioned have been involved in naval shipbuilding, overhaul, or modernisation. General Dynamics/Electric Boat yard is engaged only in submarine work and Newport News is the only US shipyard capable of building nuclear-powered aircraft carriers.

Major Warships Taken Out of Service 2006 to mid-2009

Submarines

2006 *Honolulu*
2007 *Hyman G Rickover, Minneapolis-Saint Paul*
2008 *Augusta*

Aircraft Carriers

2007 *John F Kennedy*
2009 *Kitty Hawk*

Command Ships

2006 *Coronado*

Amphibious Forces

2006 *Austin, Tranton* (to India)
2007 *Saipan, Shreveport, Ogden*
2008 *Tarawa, Juneau*

Mine Warfare Ships

2006 *Osprey, Robin, Oriola* (to Taiwan), *Falcon* (to Taiwan)
2007 *Heron and Pelican* (to Greece), *Cardinal* and *Raven* (to Egypt), *Cormorant, Black Hawk, Shrike, Kingfisher*

Auxiliaries

2006 *Camden*
2008 *Kilauea, Niagara Falls, Spica*

Special Mission Ships

2008 *Hayes*

HULL NUMBERS

Notes: Ships in reserve not included

SUBMARINES

Ballistic Missile Submarines

Ohio class	
SSBN 730	Henry M Jackson
SSBN 731	Alabama
SSBN 732	Alaska
SSBN 733	Nevada
SSBN 734	Tennessee
SSBN 735	Pennsylvania
SSBN 736	West Virginia
SSBN 737	Kentucky
SSBN 738	Maryland
SSBN 739	Nebraska
SSBN 740	Rhode Island
SSBN 741	Maine
SSBN 742	Wyoming
SSBN 743	Louisiana

Cruise Missile Submarines

Ohio class	
SSGN 726	Ohio
SSGN 727	Michigan
SSGN 728	Florida
SSGN 729	Georgia

Attack Submarines

Seawolf class	
SSN 21	Seawolf
SSN 22	Connecticut
SSN 23	Jimmy Carter

Los Angeles class

SSN 688	Los Angeles
SSN 690	Philadelphia
SSN 691	Memphis
SSN 696	Bremerton
SSN 699	Jacksonville
SSN 700	Dallas
SSN 701	La Jolla
SSN 705	City of Corpus Christi
SSN 706	Albuquerque
SSN 711	San Francisco
SSN 713	Houston
SSN 714	Norfolk
SSN 715	Buffalo
SSN 717	Olympia
SSN 719	Providence
SSN 720	Pittsburgh
SSN 721	Chicago
SSN 722	Key West
SSN 723	Oklahoma City
SSN 724	Louisville
SSN 725	Hetena
SSN 750	Newport News
SSN 751	San Juan
SSN 752	Pasadena
SSN 753	Albany
SSN 754	Topeka
SSN 755	Miami
SSN 756	Scranton
SSN 757	Alexandria
SSN 758	Asheville
SSN 759	Jefferson City
SSN 760	Annapolis
SSN 761	Springfield
SSN 762	Columbus
SSN 763	Santa Fe
SSN 764	Boise
SSN 765	Montpelier
SSN 766	Charlotte
SSN 767	Hampton
SSN 768	Hartford
SSN 769	Toledo
SSN 770	Tucson
SSN 771	Columbia
SSN 772	Greenville
SSN 773	Cheyenne

Virginia class

SSN 774	Virginia
SSN 775	Texas
SSN 776	Hawaii
SSN 777	North Carolina
SSN 778	New Hampshire
SSN 779	New Mexico (bldg)
SSN 780	Missouri (bldg)
SSN 781	California (bldg)
SSN 782	Mississippi (bldg)
SSN 783	Minnesota (bldg)
SSN 784	North Dakota (bldg)
SSN 785	Jack Warner (bldg)

SURFACE COMBATANTS

Aircraft Carriers

Enterprise class	
CVN 65	Enterprise

Nimitz class

CVN 68	Nimitz
CVN 69	Dwight D Eisenhower
CVN 70	Carl Vinson
CVN 71	Theodore Roosevelt
CVN 72	Abraham Lincoln
CVN 73	George Washington
CVN 74	John C Stennis
CVN 75	Harry S Truman

Aircraft Carriers—continued

CVN 76	Ronald Reagan
CVN 77	George HW Bush
Gerald R Ford class	
CVN 78	Gerald R Ford (bldg)

Cruisers

Ticonderoga class	
CG 52	Bunker Hill
CG 53	Mobile Bay
CG 54	Antietam
CG 55	Leyte Gulf
CG 56	San Jacinto
CG 57	Lake Champlain
CG 58	Philippine Sea
CG 59	Princeton
CG 60	Normandy
CG 61	Monterey
CG 62	Chancellorsville
CG 63	Cowpens
CG 64	Gettysburg
CG 65	Chosin
CG 66	Hue City
CG 67	Shiloh
CG 68	Anzio
CG 69	Vicksburg
CG 70	Lake Erie
CG 71	Cape St George
CG 72	Yafra Gulf
CG 73	Port Royal

Destroyers

Zumwalt class	
DDG 1000	Zumwalt (bldg)
DDG 1001	Michael Mansoor (bldg)

Arleigh Burke class

DDG 51	Arleigh Burke
DDG 52	Berry
DDG 53	John Paul Jones
DDG 54	Curtis Wilbur
DDG 55	Stout
DDG 56	John S McCain
DDG 57	Mitscher
DDG 58	Laboon
DDG 59	Russell
DDG 60	Paul Hamilton
DDG 61	Ramage
DDG 62	Fitzgerald
DDG 63	Stethem
DDG 64	Cerney
DDG 65	Benfold
DDG 66	Gonzalez
DDG 67	Coie
DDG 68	The Sullivans
DDG 69	Milus
DDG 70	Hopper
DDG 71	Ross
DDG 72	Mahan
DDG 73	Decatur
DDG 74	McFaul
DDG 75	Donald Cook
DDG 76	Higgins
DDG 77	O'Kane
DDG 78	Porter
DDG 79	Oscar Austin
DDG 80	Roosevelt
DDG 81	Winston S Churchill
DDG 82	Lassen
DDG 83	Howard
DDG 84	Bulkeley
DDG 85	McCampbell
DDG 86	Shoup
DDG 87	Mason
DDG 88	Preble
DDG 89	Mustin
DDG 90	Chaffee
DDG 91	Pinckney
DDG 92	Momson
DDG 93	Chung-Hoon
DDG 94	Nitze
DDG 95	James E Williams
DDG 96	Bainbridge
DDG 97	Halsey
DDG 98	Forrest Sherman
DDG 99	Farragut
DDG 100	Kidd
DDG 101	Gridley
DDG 102	Sampson
DDG 103	Truxtun
DDG 104	Sterett
DDG 105	Dewey
DDG 106	Stockdale
DDG 107	Gravelly (bldg)
DDG 108	Wayne E Meyer (bldg)
DDG 109	Jason Dunham (bldg)
DDG 110	William P Lawrence (bldg)
DDG 111	Spruance (bldg)
DDG 112	Michael Murphy (bldg)

Frigates

Oliver Hazard Perry class	
FFG 8	McInerney
FFG 28	Boone (NRF)
FFG 29	Stephen W Groves (NRF)
FFG 32	John L Hall
FFG 33	Jarrett
FFG 36	Underwood

Frigates—continued

FFG 37	Crommelin (NRF)
FFG 38	Curtis (NRF)
FFG 39	Doyle (NRF)
FFG 40	Halyburton
FFG 41	McClusky (NRF)
FFG 42	Klakring (NRF)
FFG 43	Thach
FFG 45	De Wert
FFG 46	Rentz
FFG 47	Nicholas
FFG 48	Vandegrift
FFG 49	Robert G Bradley
FFG 50	Taylor
FFG 51	Gary
FFG 52	Carr
FFG 53	Hawes
FFG 54	Ford
FFG 55	Elrod
FFG 56	Simpson (NRF)
FFG 57	Reuben James
FFG 58	Samuel B Roberts
FFG 59	Kauffman
FFG 60	Rodney M Davis (NRF)
FFG 61	Ingraham

Littoral Combat Ships

LCS 1	Freedom
LCS 2	Independence (bldg)
LCS 3	Fort Worth (bldg)
LCS 4	Coronado (bldg)

Coastal Patrol Craft

Cyclone class	
PC 3	Hurricane
PC 5	Typhoon
PC 6	Sirocco
PC 7	Squall
PC 9	Chinook
PC 10	Firebolt
PC 11	Whirlwind
PC 12	Thunderbolt

COMMAND SHIPS

Blue Ridge class	
LCC 19	Blue Ridge
LCC 20	Mount Whitney

AMPHIBIOUS FORCES

Amphibious Assault Ships

Wasp class	
LHD 1	Wasp
LHD 2	Essex
LHD 3	Kearsarge
LHD 4	Boxer
LHD 5	Bataan
LHD 6	Bonhomme Richard
LHD 7	Two Jims
LHD 8	Makin Island (bldg)

Tarawa class

LHA 4	Nassau
LHA 5	Peleliu

America class

LHA 6	America
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Amphibious Transport Docks

Austin class	
LPD 7	Cleveland
LPD 8	Dubuque
LPD 9	Denver
LPD 13	Nashville
LPD 15	Ponce

San Antonio class

LPD 17	San Antonio
LPD 18	New Orleans
LPD 19	Mesa Verde
LPD 20	Green Bay
LPD 21	New York (bldg)
LPD 22	San Diego (bldg)
LPD 23	Anchorage (bldg)
LPD 24	Arlington (bldg)
LPD 25	Somerset (ord)

Amphibious Cargo Ships

Whidbey Island class	
LSD 41	Whidbey Island
LSD 42	Germantown
LSD 43	Fort McHenry
LSD 44	Gunston Hall
LSD 45	Comstock
LSD 46	Tortuga
LSD 47	Rushmore
LSD 48	Ashland

Harpers Ferry class

LSD 49	Harpers Ferry
LSD 50	Carter Hall
LSD 51	Oak Hill
LSD 52	Pearl Harbor

MINE WARFARE FORCES**Mine Countermeasures Ships****Avenger class**

MCM 1	Avenger
MCM 2	Defender (NRF)
MCM 3	Sentry (NRF)
MCM 4	Champion (NRF)
MCM 5	Guardian
MCM 6	Devastator
MCM 7	Patriot
MCM 8	Scout
MCM 9	Pioneer
MCM 10	Warrior
MCM 11	Gladiator (NRF)
MCM 12	Ardent
MCM 13	Dextrous
MCM 14	Chief

MATERIAL SUPPORT SHIPS**Submarine Tenders****Emory S Land class**

AS 39	Emory S Land
AS 40	Frank Cable

MISCELLANEOUS**High Speed Vessels**

HSV-2	Swift
HSV-4676	Westpac Express
FSF-1	Sea Fighter

Oceanographic Research Ships

AGOR 14	Melville
AGOR 15	Knorr
AGOR 23	Thomas G Thompson
AGOR 24	Roger Revolle
AGOR 25	Atlantis
AGOR 26	Kilo Moana

MILITARY SEALIFT COMMAND**NAVAL FLEET AUXILIARY FORCE****Fast Combat Support Ships**

T-AOE 6	Supply
T-AOE 7	Rainier
T-AOE 8	Arctic
T-AOE 10	Bridge

Ammunition Ships

T-AE 32	Flint
T-AE 33	Shasta
T-AE 34	Mount Baker
T-AE 35	Kiska

Cargo and Ammunition Ships

TAKE 1	Lewis and Clark
TAKE 2	Sacagawea
TAKE 3	Alan Shepard
TAKE 4	Richard E Byrd
TAKE 5	Robert E Peary
TAKE 6	Amelia Earhart
TAKE 7	Carl M Brashear (bldg)
TAKE 8	Wally Schirra (bldg)
TAKE 9	Matthew Perry (bldg)
TAKE 10	Charles Drew (bldg)
TAKE 11	Washington Chambers (bldg)
TAKE 12	William McLean (bldg)

Combat Stores Ships

T-AFS 5	Concord
T-AFS 7	San Jose
T-AFS 10	Saturn

Hospital Ships

T-AH 18	Mercy
T-AH 20	Comfort

Oilers**Henry J Kaiser class**

T-AO 187	Henry J Kaiser (PREPO)
T-AO 189	John Lenthall
T-AO 193	Walter S Diehl
T-AO 194	John Ericsson
T-AO 195	Leroy Grumman
T-AO 196	Kanawha
T-AO 197	Pecos
T-AO 198	Big Horn
T-AO 199	Tippecanoe
T-AO 200	Guadalupe
T-AO 201	Patuxent
T-AO 202	Yukon
T-AO 203	Laramie
T-AO 204	Rappahannock

Salvage Ships

T-ARS 50	Safeguard
T-ARS 51	Grasp
T-ARS 52	Salvor
T-ARS 53	Grapple

Fleet Ocean Tugs**Powhatan class**

T-ATF 168	Catawba
T-ATF 169	Navajo
T-ATF 171	Sioux
T-ATF 172	Apache

SPECIAL MISSION SHIPS**Cable Repair Ship**

T-ARC 7	Zeus
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Aviation Logistic Ship

T-AG 5001	VADM K R Wheeler
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Missile Range Instrumentation Ships

T-AGM 23	Observation Island
T-AGM 24	Invincible
T-AGM 25	Howard O Lorenzen (b.dg)

Navigation Test/Launch Area Support Ship

T-AG 45	Waters
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Surveying Ships/Oceanographic Ships

T-AGS 51	John McDonnell
T-AGS 60	Pathfinder
T-AGS 61	Sumner
T-AGS 62	Bowditch
T-AGS 63	Henson
T-AGS 64	Bruce C Heezen
T-AGS 65	Mary Sears

Ocean/Air Surveillance Ships

T-AGOS 19	Victorious
T-AGOS 20	Able
T-AGOS 21	Effective
T-AGOS 22	Loyal
T-AGOS 23	Impeccable

STRATEGIC SEALIFT FORCE**Fast Sealift Ships**

T-AKR 287	Algo!
T-AKR 288	Bolatrix
T-AKR 289	Denebola
T-AKR 290	Pollux
T-AKR 291	Altair
T-AKR 292	Regulus
T-AKR 293	Capella
T-AKR 294	Antares

Large, Medium-speed Ro-Ro

T-AKR 295	Shughart
T-AKR 296	Gordon
T-AKR 297	Yano
T-AKR 298	Gilliland
T-AKR 300	Bob Hope
T-AKR 301	Fisher
T-AKR 302	Seay
T-AKR 303	Mendocna
T-AKR 304	Pillilau
T-AKR 305	Brittin
T-AKR 306	Benavidez

Tankers

T-AOT 1122	Paul Buck
T-AOT 1123	Samuel L Cobb
T-AOT 1124	Richard G Matthiesen
T-AOT 1125	Lawrence H Gianella

PREPOSITIONING PROGRAMME**Container Ships**

T-AK 4296	Capt Steven L Bennett
T-AK 4396	Maj Bernard F Fisher
T-AK 4543	Lt Col John U D Page
T-AK 4544	SSGT Edward A Carter Jr

Large, Medium-Speed, Ro-Ro

T-AKR 310	Watson
T-AKR 311	Sisler
T-AKR 312	Dahl
T-AKR 313	Red Cloud
T-AKR 314	Charlton
T-AKR 315	Watkins
T-AKR 316	Pomeroy
T-AKR 317	Soderman

Aviation Logistic Ships

T-AVB 3	Wright
T-AVB 4	Curtiss

Maritime Prepositioning Ships

T-AK 3000	CPL Louis J Hauga, Jr
T-AK 3002	PFC James Anderson, Jr
T-AK 3003	1st Lt Alex Bonnyman
T-AK 3005	SGT Matej Kocak
T-AK 3008	PFC Eugene A Obregon
T-AK 3007	MAJ Stephen W Pless
T-AK 3008	2nd Lt John P Bobo
T-AK 3009	PFC Dewayne T Williams
T-AK 3010	1st Lt Baldomero Lopez
T-AK 3011	1st Lt Jack Lummus
T-AK 3012	SGT William R Button
T-AK 3015	1st Lt Harry L Martin
T-AK 3018	L/Cpl Roy M Wheat
T-AK 3017	GYSGT Fred W Stockham

READY RESERVE FORCE

(see pages 961-962)

SUBMARINES

Notes: (1) **Deep submergence vehicles:** The Deep Submergence Vehicles (DSV) are listed following the 'Research Ships' section.

(2) **Seal Delivery Vehicles (SDVs):** There are 10 Mk VIII Mod 1 six-man mini wet submersibles in service for naval commando units. These SDVs can be carried by suitably modified SSNs and SSGN. Range 35 n miles at up to

150 ft. All have undergone SLEP from 1995 to improve performance. Attempts to introduce a more capable design, ASDS, were abandoned in 2008 and a Request for Information for a new class of submarine-launched Joint Multi-Mission Submarine (JMMS) was issued on 30 December 2008. A class of three units is to enter service from 2016.

(3) **Unmanned Undersea Vehicles (UUVs):** Torpedo-sized and larger unmanned undersea vehicles are under development. Potential applications include underwater surveillance, mine-countermeasures and anti-submarine warfare. Early experience was gained with the Mine Search System (MSS), operational testing of which was completed in 1993. The 35 ft long vehicle had a titanium hull and demonstrated the performance of mine detection sonars and the ability of a UUV to survey designated areas with precise navigation. Further proof-of-concept experience was gained with the Long-Term Mine Reconnaissance System (LMRS) which was designed to be launched from the 21 in torpedo tubes of an SSN. An engineering development system was delivered in 2002 but the programme was discontinued in favour of development of a modular UUV in which payloads can be swapped. This concept is to be demonstrated in the experimental Advanced Development UUV (ADUUV). In late 2008, the Navy cancelled phase 1 of the Mission-Reconfigurable UUV (MRUUV) due to "technical and engineering limitations". The vehicle had been scheduled to enter service in 2016. Development of a large diameter UUV continued. In October 2007, the first successful end-to-end submerged operation of two UUVs was demonstrated in SSN 768 *Hartford*. Further ahead, MRUUVs of larger size and longer endurance might be developed for launch from submarines and surface ships. Surface ship near-term programmes include the Battlespace Preparation Autonomous Underwater Vehicle, to be deployed in the Littoral Combat Ship, and the Surface Mine Countermeasures UUV.



SDV Mk VIII

10/1997, A McKaskle, USN / 0053312

Strategic Missile Submarines (SSBN)

Notes. The Trident missile fitted SSBN force provides the principal US strategic deterrent under the control of US Strategic Command at Offutt Air Force Base, Nebraska. The Strategic Arms Reduction Treaty (START), implemented in December 2001, limits the combined number of SLBM and ICBM re-entry bodies (RBs) to 4,900. Although there

may be further bi-lateral agreements with Russia to update verification regimes, the Bush administration has decided to pursue long-term strategic nuclear force reductions without further detailed arms control negotiations. The START II treaty has thus been overtaken. As part of the reduction, the first four Ohio class submarines are no

longer required for strategic service. These boats have been converted into conventionally-armed guided missile SSGNs, capable also of deploying Special Forces. Although the missile tubes on SSGNs will not contain SLBMs, they will continue to count against START treaty limits.

14 OHIO CLASS (SSBN)

Name	No	Builders	Launched	Commissioned	F/S
HENRY M JACKSON	SSBN 730	General Dynamics (Electric Boat Div)	15 Oct 1983	6 Oct 1984	PA
ALABAMA	SSBN 731	General Dynamics (Electric Boat Div)	19 May 1984	25 May 1985	PA
ALASKA	SSBN 732	General Dynamics (Electric Boat Div)	12 Jan 1985	25 Jan 1986	AA
NEVADA	SSBN 733	General Dynamics (Electric Boat Div)	14 Sep 1985	16 Aug 1986	PA
TENNESSEE	SSBN 734	General Dynamics (Electric Boat Div)	13 Dec 1986	17 Dec 1988	AA
PENNSYLVANIA	SSBN 735	General Dynamics (Electric Boat Div)	23 Apr 1988	9 Sep 1989	PA
WEST VIRGINIA	SSBN 736	General Dynamics (Electric Boat Div)	14 Oct 1989	20 Oct 1990	AA
KENTUCKY	SSBN 737	General Dynamics (Electric Boat Div)	11 Aug 1990	13 July 1991	PA
MARYLAND	SSBN 738	General Dynamics (Electric Boat Div)	10 Aug 1991	13 June 1992	AA
NEBRASKA	SSBN 739	General Dynamics (Electric Boat Div)	15 Aug 1992	10 July 1993	PA
RHODE ISLAND	SSBN 740	General Dynamics (Electric Boat Div)	17 July 1993	9 July 1994	AA
MAINE	SSBN 741	General Dynamics (Electric Boat Div)	16 July 1994	29 July 1995	PA
WYOMING	SSBN 742	General Dynamics (Electric Boat Div)	15 July 1995	13 July 1996	AA
LOUISIANA	SSBN 743	General Dynamics (Electric Boat Div)	27 July 1996	6 Sep 1997	PA

Displacement, tons: 16,764 surfaced; 18,750 dived
Dimensions, feet (metres): 560 x 42 x 36.4
(170.7 x 12.8 x 11.1)

Main machinery: Nuclear; 1 GE PWR S8G; 2 turbines; 60,000 hp (44.8 MW); 1 shaft; 1 Magnetek auxiliary prop motor; 325 hp (242 kW)

Speed, knots: 24 dived
Complement: 155 (15 officers)

Missiles: SLBM: 24 Lockheed Trident II; stellar inertial guidance to 12,000 km (6,500 n miles); thermonuclear warheads of up to 12 MIRVs of either Mk 4 with W76 of 100 kT each, or Mk 5 with W88 of 300-475 kT each, CEP 90 m. A limit of 8 RVs was set in 1991 under the START counting rules.

Torpedoes: 4—21 in (533 mm) Mk 68 bow tubes. Raytheon Mk 48 ADCAP Mod 5/6/7; wire-guided (option); active/passive homing to 50 km (27 n miles)/38 km (21 n miles) at 40/55 kt; warhead 267 kg, depth to 800 m (2,950 ft).

Countermeasures: Decoys: External and internal (reloadable) anti-torpedo decoy.

ESM WLR-8(V)5; intercept. WLR-10; radar warning.

Combat data systems: DWS-118 and CCS Mk 2 Mod 3 with UYK 43/UYK 44 computers.

Weapons control: Mk 98 fire-control system.

Radars: Surface search/navigation/fire control. AN/BPS-15J and AN/BPS-16(V)2, I/J-band

Sonars: IBM BQQ-6; passive search.

Raytheon BQS 13; spherical array for BQQ-6. Ametek BQS-15; active/passive for close contacts; high frequency.

Western Electric BQR-15 (with BQQ-9 signal processor); TB-16 passive towed array, TB-23 thin line array.

Raytheon BQR-19; active for navigation; high frequency.

Programmes: The size of the SSBN forces has been reduced to 14 hulls. *Ohio* completed conversion to SSGN in 2005. *Florida* and *Michigan* in 2006 and *Georgia* in 2007

Modernisation: All Ohio class SSBNs have been converted to deploy Trident II missiles. Ohio class SSBNs are being upgraded with ARCI (Acoustic Rapid COTS Insertion) sonar and CCS Mk 2 Block 1C fire-control systems. Installation in *Alaska*, *Nevada*, *Pennsylvania*, *West*

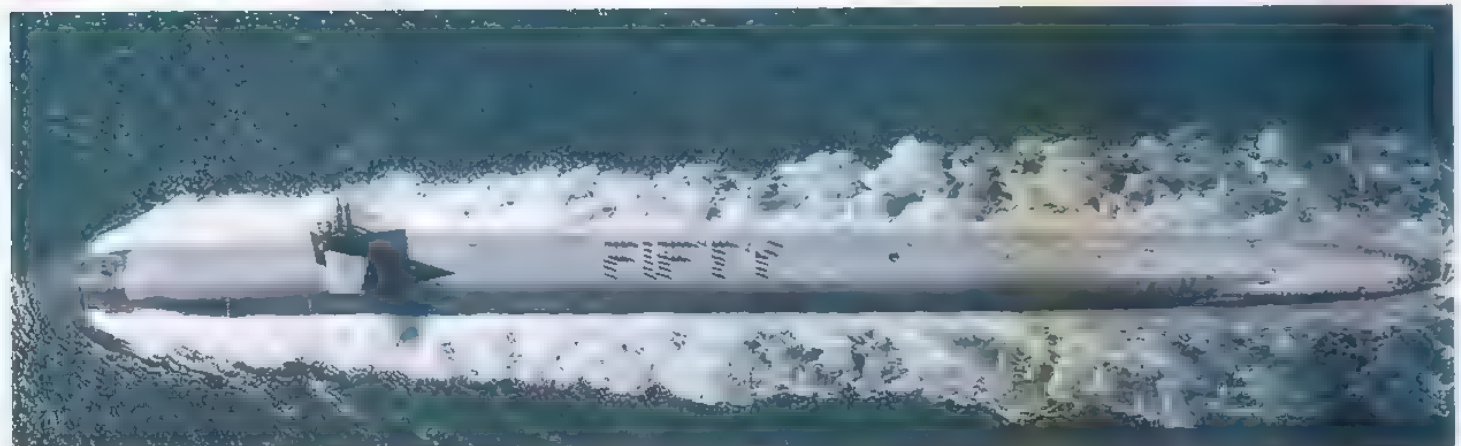
Virginia, *Maryland*, *Kentucky*, *Alabama*, *Rhode Island*, *Henry M Jackson* and *Nebraska* is complete and is scheduled to be completed in *Tennessee* and *Maine* in 2009.

Structure: The size of the Trident submarine is dictated primarily by the 24 vertically launched Trident missiles and the reactor plant to drive the ship. The reactor has a nuclear core life of about 20 years between refuellings. Diving depth is 244 m (800 ft). Kollmorgen Type 152 and Type 82 periscopes. Mk 19 Air Turbine Pump for torpedo discharge.

Operational: The eight Pacific Fleet units are based at Bangor, Washington, while the six Atlantic Fleet units are based at King's Bay, Georgia. SSBNs 741 and 743 transferred to Bangor on 1 October 2005. In the current state of worldwide tensions, a modified alert status has been implemented. Single crews were considered but rejected. Hull life of the class has been extended.



ALABAMA

4/2004, *Ships of the World* / 1043704

PENNSYLVANIA

12/2005, *Ships of the World* / 1154028

Cruise Missile Submarines (SSGN)

4 OHIO CLASS (SSGN)

Name	No	Builders	Launched	Commissioned	F/S
OHIO	SSGN 726 (ex-SSBN 726)	General Dynamics (Electric Boat Div)	7 Apr 1979	11 Nov 1981	PA
MICHIGAN	SSGN 727 (ex-SSBN 727)	General Dynamics (Electric Boat Div)	26 Apr 1980	11 Sep 1982	PA
FLORIDA	SSGN 728 (ex-SSBN 728)	General Dynamics (Electric Boat Div)	14 Nov 1981	18 June 1983	AA
GEORGIA	SSGN 729 (ex-SSBN 729)	General Dynamics (Electric Boat Div)	6 Nov 1982	11 Feb 1984	AA

Displacement, tons: 16,764 surfaced; 18,750 dived
Dimensions, feet (metres): 580 × 42 × 36.4
 (170.7 × 12.8 × 11.1)

Main machinery: Nuclear; 1 GE PWR S8G; 2 turbines, 60,000 hp (44.8 MW); 1 shaft; 1 Magnetek auxiliary prop motor; 325 hp (242 kW)

Speed, knots: 25

Complement: 155 (15 officers)

Missiles: SLCM Up to 154 Raytheon Tomahawk Block III and Block IV; TERCOM and GPS aided inertial navigation system with DSMAC to 1,600+ km (865+ n miles) at 0.7 Mach; warhead (WDU 36B) 454 kg.

Torpedoes: 4–21 in (533 mm) Mk 68 bow tubes. Raytheon Mk 48 ADCAP Mod 5/6/7; wire-guided (option), active/passive homing to 50 km (27 n miles)/38 km (21 n miles) at 40/55 kt; warhead 267 kg, depth to 800 m (2,950 ft).

Countermeasures: Decoys: 8 launchers for Countermeasures Set Acoustic (CSA) and internal (reloadable) anti-torpedo decoy system.

ESM: BLC-10; radar and comms intercept and analysis

Combat data systems: AN/BYG-1 Combat Control System.

Weapons control: AN/BYG-1.

Radars: Surface search/navigation/fire control AN/BPS 15J; IJ-band

Sonars: Lockheed Martin AN/BQQ-10 suite. AN/BQQ-6; passive search (spherical array) TB-23; passive towed array (thin line). TB-16; passive towed array (fat line).

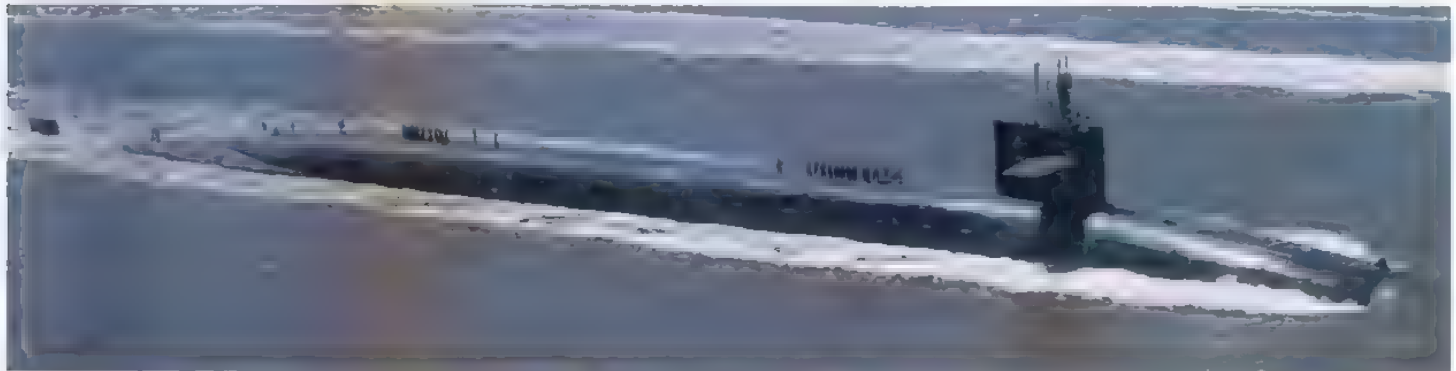
Programmes: The 1994 nuclear posture review recommended a 14-SSBN force and that the remaining four Ohio class be converted to SSGN role. The SSGN would include land attack, special forces insertion and support and ISR roles. Conversion contract with General Dynamics Electric Boat in October 2002. *Ohio* started mid-life refuelling on 15 November 2002 and conversion work (at Puget Sound Naval Shipyard) on 19 November 2003. She completed conversion in December 2005. *Florida* started mid-life refuelling in August 2003 and conversion work (at Norfolk Naval Shipyard) in April 2004. She completed conversion in April 2006. *Michigan* started refuelling in March 2004 and conversion work (at Puget Sound) in January 2005. She completed conversion in November 2006. *Georgia* started refuelling in March 2005 and started conversion (at Norfolk) in October 2005. She completed conversion in November 2007.

Modernisation: Conversion work allows SSGN to carry up to 154 Tomahawk or Tactical Tomahawk missiles by enabling seven cruise missiles to be fired from each of 22 of the

current 24 Trident missile tubes. Eight of these tubes are interchangeable with Special Forces stowage canisters. The remaining two tubes are permanently configured for wet/dry launch of up to 66 special operations forces. The combat system is also to be upgraded and future payloads are being developed to augment the baseline configuration. SSGNs have been upgraded with Acoustic Rapid COTS Insertion (ARCI) sonar system.

Structure: The size of the submarine was dictated primarily by the 24 missile tubes and the reactor plant to drive the ship. The reactor has a nuclear core life of about 20 years between refuellings. Diving depth is 244 m (800 ft). Type BJ periscope and Integrated Submarine Imaging System (ISIS), Mk 19 Air Turbine Pump for torpedo discharge.

Operational: *Georgia* played the part of an SSGN during Exercise 'Silent Hammer' in 2004. This tested procedures for strikes against time-critical targets and use of special operations forces. An onboard battle-centre tested communications and networking required to support them. All boats returned to the fleet by 2007. *Ohio* and *Michigan* are based at Bangor, WA, and *Florida* and *Georgia* are based at King's Bay, GA. During her year-long maiden deployment, which began in October 2007, *Ohio* swapped crew several times. *Ohio* based at Guam when forward deployed.



FLORIDA

4/2006, US Navy / 116/5/17



OHIO

10/2006, US Navy / 116/5/76



OHIO

11/2008, US Navy / 13536/8

Attack Submarines (SSN)

5 + 13 VIRGINIA CLASS (SSN)

Name	No	Builders	Start date	Launched	Commissioned	F/S
VIRGINIA	SSN 774	General Dynamics (Electric Boat)	5 Aug 1997	7 Aug 2003	23 Oct 2004	AA
TEXAS	SSN 775	Northrop Grumman, Newport News Shipbuilding	1 Aug 1998	9 Apr 2005	9 Sep 2006	PA
HAWAII	SSN 776	General Dynamics (Electric Boat)	6 Oct 1999	28 Apr 2006	5 May 2007	PA
NORTH CAROLINA	SSN 777	Northrop Grumman, Newport News Shipbuilding	1 Apr 2001	5 May 2007	3 May 2008	PA
NEW HAMPSHIRE	SSN 778	General Dynamics (Electric Boat)	1 Oct 2002	21 Feb 2008	25 Oct 2008	AA
NEW MEXICO	SSN 779	Northrop Grumman, Newport News Shipbuilding	1 Mar 2004	22 Jan 2009	2009	Bldg
MISSOURI	SSN 780	General Dynamics (Electric Boat)	1 Feb 2005	2010	2010	Bldg
CALIFORNIA	SSN 781	Northrop Grumman, Newport News Shipbuilding	1 Feb 2006	2011	2011	Bldg
MISSISSIPPI	SSN 782	General Dynamics (Electric Boat)	19 Feb 2007	2012	2012	Bldg
MINNESOTA	SSN 783	Northrop Grumman, Newport News Shipbuilding	1 Feb 2008	2013	2013	Bldg
NORTH DAKOTA	SSN 784	General Dynamics (Electric Boat)	2009	2014	2014	Bldg
JACK WARNER	SSN 785	Northrop Grumman, Newport News Shipbuilding	2010	2015	2015	Bldg

Displacement, tons: 7,800 dived
Dimensions, feet (metres): 377 x 34 x 30.5
 (114.9 x 10.4 x 9.3)

Main machinery: Nuclear; 1 GE PWR SSG; 2 turbines; 40,000 hp (29.84 MW); 1 shaft; pump jet propulsor; 1 secondary propulsion submerged motor

Speed, knots: 34 dived
Complement: 134 (14 officers)

Missiles: SLCM: Raytheon Tomahawk Block IV; land attack, TERCOM and GPS aided inertial navigation system with DSMAC to 1,600+ km (865 n miles) at 0.7 Mach; warhead (WDU-36B) 454 kg. 12 VLS tubes (SSN 774-783) external to the pressure hull.

Torpedoes: 4-21 in (533 mm) bow tubes. Raytheon Mk 48 ADCAP Mod 5/6/7; wire-guided (option); active/passive homing to 50 km (27 n miles)/38 km (21 n miles) at 40/55 kt; warhead 267 kg; depth to 800 m (2,950 ft). Air turbine pump discharge. Total of 38 including SLCM and torpedoes.

Mines: Can lay Mk 67 Mobile and Mk 60 Captor mines (until new mines are available)

Countermeasures: Decoys. External and internal (reloadable); anti-torpedo decoy.

ESM: AN/BLQ-10; radar and comms intercept and analysis.

Combat data systems: AN/BYG-1.

Radars: Surface search/navigation/fire control: AN/BPS 16(V)4, I/J-band.

Sonars: Lockheed Martin BQQ-10 sonar suite including bow spherical active/passive array; BQG-5A wide aperture flank passive arrays, high-frequency active keel and fin arrays; TB-16 and TB-29(A) towed arrays; WLY-1 acoustic intercept

Programmes: In February 1997, a teaming agreement was reached between Electric Boat Division of General Dynamics Corporation and Newport News Shipbuilding (now Northrop Grumman Newport News) jointly to build and deliver the Virginia class. Electric Boat is the lead design yard and prime contractor and delivers the even numbered hulls. Newport News delivers the odd numbered hulls. Construction of sub-assemblies is undertaken at the Electric Boat facilities in Groton, CT, at Quonset Point RI and at Northrop Grumman Newport News. Components are then shipped either to the Groton shipyard or to Newport News for final assembly and delivery. This division of construction responsibility



VIRGINIA

7/2004, US Navy / 1043661

takes advantage of modular design and construction and provides the most affordable approach to submarine construction at the two shipyards. Advanced funding for first of class in FY96. Second of class funding in FY96, third in FY98 and fourth in FY00. The SSN 774-777 constitute Block I. A follow-on block buy procurement contract, signed in August 2003 for six submarines, maintained the Electric Boat and Northrop Grumman Newport News teaming arrangement. This contract was modified in January 2004 to a multi-year procurement contract. This modification includes provisions to provide early funding, allowing the bulk purchase of materials for more than one submarine at a significant overall cost saving. SSN 778-783 constitute Block II. Another multi-year contract for the procurement of eight Block III (SSN 784-791) was signed on 22 December 2008. It calls for one boat per year in FY09 and FY10 and two per year in FY11, 12 and 13. A program of 30 hulls is planned

Structure: Seawolf level quietening. Reactor core will last the life of the ship. Automated steering and diving control, using fly-by-wire technology, and automated

hovering system. Host ship for Advanced SEAL Delivery System (ASDS) mini-submarine or Dry Deck Shelter (DDS). Integral lockout trunk and reconfigurable torpedo room to accommodate approximately 40 Special Operations Forces and equipment. Block III boats are to be built with a modified bow to incorporate a new sonar design and two large-diameter payload tubes to replace 12 VLS tubes in Blocks I and II. Fibre-optic photonics masts replace conventional periscopes for imaging. High frequency sonar for mine and obstacle detection. Twelve Vertical Launch System (VLS) tubes. Test depth 488 m (1,600 ft).

Operational: Optimised for coastal operations without sacrificing traditional deep-water capabilities. Designed for flexibility to change missions and perform a variety of mission areas: anti-submarine warfare, anti-surface warfare, covert intelligence/surveillance and reconnaissance, clandestine mine warfare, battle group support, covert support of Special Operations Forces, and power projection/strike. SSN 775-777 to be homeported at Pearl Harbor from 2009.



VIRGINIA

7/2004, US Navy / 1043661

3 SEAWOLF CLASS (SSN)

Name	No	Builders	Start date	Launched	Commissioned	F/S
SEAWOLF	SSN 21	General Dynamics (Electric Boat)	25 Oct 1989	24 June 1995	19 July 1997	PA
CONNECTICUT	SSN 22	General Dynamics (Electric Boat)	14 Sep 1992	1 Sep 1997	11 Dec 1998	PA
JIMMY CARTER	SSN 23	General Dynamics (Electric Boat)	12 Dec 1995	5 June 2004	19 Feb 2005	PA

Displacement, tons: 8,060 surfaced; 9,138, 12,158 (SSN 23) dived
Dimensions, feet (metres): 353; 453.2 (SSN 23) x 42.3 x 35.8 (107.6; 138.1 x 12.9 x 10.9) (see *Modernisation*)
Main machinery: Nuclear; 1 Westinghouse PWR S6W, 2 turbines; 45,000 hp (33.57 MW); 1 shaft; pumpjet propulsor; 1 (4 in SSN 23) Westinghouse secondary propulsion submerged motor(s)
Speed, knots: 39 dived
Complement: 140 (14 officers)

Missiles: SLCM Raytheon Tomahawk Block III and Block IV; TERCOM and GPS aided navigation with DSMAC to 1,600+ km (865+ n miles) at 0.7 Mach; warhead (WDU 36B) 454 kg.

Torpedoes: 8–26 in (660 mm) tubes (external measurement is 30 in (762 mm)); Raytheon Mk 48 ADCAP Mod 5/6/7, wire-guided (option); active/passive homing to 50 km (27 n miles)/38 km (21 n miles) at 40/55 kt; warhead 257 kg, depth to 800 m (2,950 ft). Air turbine discharge. Total of 50 tube-launched missiles and torpedoes.

Mines: 100 in lieu of torpedoes.

Countermeasures. Decoys: External and internal (reloadable) anti-torpedo decoy.

ESM BLD-1, AM/BLQ-10 radar and comms intercept.

Combat data systems: General Electric BSY-2 system, USC-38 EHF JMCIS.

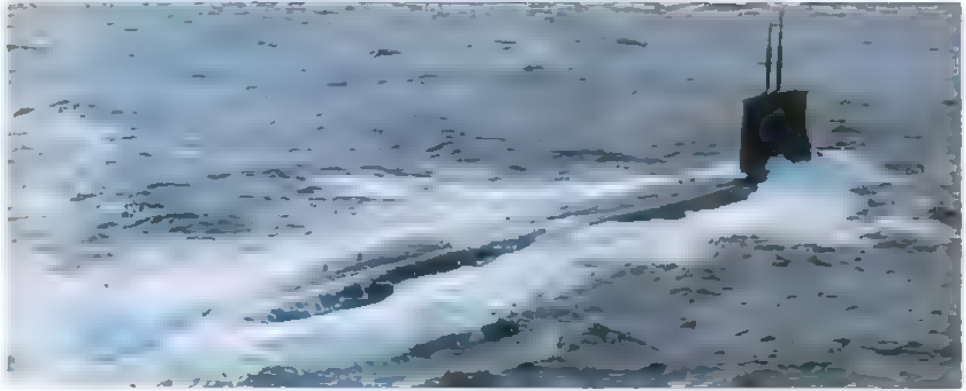
Weapons control: Raytheon Mk 2 FCS.

Radars: Navigation: AN/BPS-16(V)3; I/J-band.

Sonars: BSY-2 suite with bow spherical active/passive array and wide aperture passive flank arrays; TB-16 and TB-29(A) surveillance and tactical towed arrays; WLY-1 system

Programmes: First of class ordered on 9 January 1989; second of class on 3 May 1991 and third on 30 April 1996. Design changes to *Carter* contracted in late 1999 delayed the launch by four years.

Modernisation: The hull of SSN 23 is about 30 m longer to accommodate an hour-glass shaped Ocean Interface section with larger payload apertures to the sea. Modular architecture allows configuration for specific missions.



SEAWOLF

4/2004, *Ships of the World* / 1043702

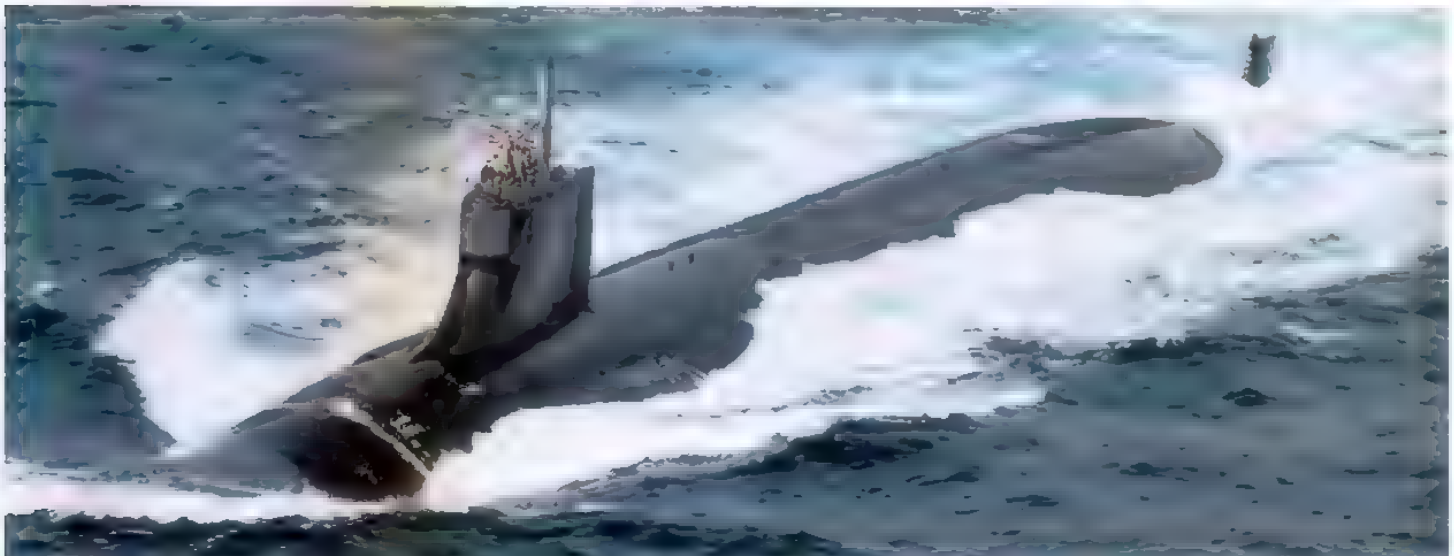
Payloads could include standoff vehicles, distributed sensors and leave-behind weapons that would be activated after the submarine has left the area. It also supports Special Operations Forces including Dry Deck Shelter (DDS) and the Advanced SEAL Delivery System (ASDS). *Carter* retains all of the *Seawolf* class's original war-fighting capability. All three boats have or are converting to a common open architecture and COTS Submarine Warfare Federated Tactical System (SWFTS) to establish a common submarine baseline that can be easily upgraded.

Structure: The modular design has more weapons, a higher tactical speed, better sonar and an ASW mission effectiveness 'three times better than the improved Los Angeles class' according to the Navy. It is estimated that over a billion dollars was allocated for research and development including the S6W reactor system. Panels around wide aperture sonar array and torpedo tube doors were redesigned and refitted following sea-trials

of SSN 21. Mk 21 Air turbine torpedo discharge pump. There are no external weapons. Emphasis has been put on sub-ice capabilities including retractable bow planes. Test depth 1,950 ft (594 m).

Operational: A quoted 'silent' speed of 20 kt. Other operational advantages include greater manoeuvrability and space for subsequent weapon systems development. All three boats transferred to new home port at Bremerton, WA, in 2007.

Opinion: This submarine was intended to restore the level of acoustic advantage (in the one to one nuclear submarine engagement against the Russians) which the USN had enjoyed for three decades. At the same time the larger capacity of the magazine enhances overall effectiveness in a number of other roles. The decision to discontinue building this very expensive design was the result of falling defence budgets at the end of the Cold War and changing submarine mission requirements.



CONNECTICUT

11/2007, *US Navy* / 1353645

JIMMY CARTER

2/2005, *Ships of the World* / 1127057

45 LOS ANGELES CLASS (SSN)

Name	No	Builders	Laid down	Launched	Commissioned	F/S
LOS ANGELES	SSN 688	Newport News Shipbuilding	6 Jan 1972	6 Apr 1974	13 Nov 1976	PA
PHILADELPHIA	SSN 690	General Dynamics (Electric Boat Div)	12 Aug 1972	19 Oct 1974	25 June 1977	AA
MEMPHIS	SSN 691	Newport News Shipbuilding	23 June 1973	3 Apr 1976	17 Dec 1977	AA
BREMERTON	SSN 698	General Dynamics (Electric Boat Div)	8 May 1976	22 July 1978	28 Mar 1981	PA
JACKSONVILLE	SSN 699	General Dynamics (Electric Boat Div)	21 Feb 1976	18 Nov 1978	16 May 1981	PA
DALLAS	SSN 700	General Dynamics (Electric Boat Div)	9 Oct 1976	28 Apr 1979	18 July 1981	AA
LA JOLLA	SSN 701	General Dynamics (Electric Boat Div)	16 Oct 1976	11 Aug 1979	24 Oct 1981	PA
CITY OF CORPUS CHRISTI	SSN 705	General Dynamics (Electric Boat Div)	4 Sep 1979	25 Apr 1981	8 Jan 1983	PA
ALBUQUERQUE	SSN 706	General Dynamics (Electric Boat Div)	27 Dec 1979	13 Mar 1982	21 May 1983	AA
SAN FRANCISCO	SSN 711	Newport News Shipbuilding	26 May 1977	27 Oct 1979	24 Apr 1981	PA
HOUSTON	SSN 713	Newport News Shipbuilding	29 Jan 1979	21 Mar 1981	25 Sep 1982	PA
NORFOLK	SSN 714	Newport News Shipbuilding	1 Aug 1979	31 Oct 1981	21 May 1983	AA
BUFFALO	SSN 715	Newport News Shipbuilding	25 Jan 1980	8 May 1982	6 Nov 1983	PA
OLYMPIA	SSN 717	Newport News Shipbuilding	31 Mar 1981	30 Apr 1983	17 Nov 1983	PA
PROVIDENCE	SSN 718	General Dynamics (Electric Boat Div)	14 Oct 1982	4 Aug 1984	27 July 1985	AA
PITTSBURGH	SSN 720	General Dynamics (Electric Boat Div)	15 Apr 1983	8 Dec 1984	23 Nov 1985	AA
CHICAGO	SSN 721	Newport News Shipbuilding	5 Jan 1983	13 Oct 1984	27 Sep 1986	PA
KEY WEST	SSN 722	Newport News Shipbuilding	6 July 1983	20 July 1985	12 Sep 1987	PA
OKLAHOMA CITY	SSN 723	Newport News Shipbuilding	4 Jan 1984	2 Nov 1985	9 July 1988	AA
LOUISVILLE	SSN 724	General Dynamics (Electric Boat Div)	16 Sep 1984	14 Dec 1985	8 Nov 1986	PA
HELENA	SSN 725	General Dynamics (Electric Boat Div)	28 Mar 1985	28 June 1986	11 July 1987	PA
NEWPORT NEWS	SSN 750	Newport News Shipbuilding	3 Mar 1984	15 Mar 1986	3 June 1989	AA
SAN JUAN	SSN 751	General Dynamics (Electric Boat Div)	16 Aug 1985	6 Dec 1986	6 Aug 1988	AA
PASADENA	SSN 752	General Dynamics (Electric Boat Div)	20 Dec 1985	12 Sep 1987	11 Feb 1989	PA
ALBANY	SSN 753	Newport News Shipbuilding	22 Apr 1985	13 June 1987	7 Apr 1990	AA
TOPEKA	SSN 754	General Dynamics (Electric Boat Div)	13 May 1986	23 Jan 1988	21 Oct 1989	PA
MIAMI	SSN 755	General Dynamics (Electric Boat Div)	24 Oct 1986	12 Nov 1988	30 June 1990	AA
SCRANTON	SSN 756	Newport News Shipbuilding	29 June 1986	3 July 1989	26 Jan 1991	AA
ALEXANDRIA	SSN 757	General Dynamics (Electric Boat Div)	19 June 1987	23 June 1990	29 June 1991	AA
ASHEVILLE	SSN 758	Newport News Shipbuilding	1 Jan 1987	28 Oct 1989	28 Sep 1991	PA
JEFFERSON CITY	SSN 759	Newport News Shipbuilding	21 Sep 1987	24 Mar 1990	29 Feb 1992	PA
ANNAPOLIS	SSN 760	General Dynamics (Electric Boat Div)	15 June 1988	18 May 1991	11 Apr 1992	AA
SPRINGFIELD	SSN 761	General Dynamics (Electric Boat Div)	29 Jan 1990	4 Jan 1992	8 Jan 1993	AA
COLUMBUS	SSN 762	General Dynamics (Electric Boat Div)	7 Jan 1991	1 Aug 1992	24 July 1993	PA
SANTA FE	SSN 763	General Dynamics (Electric Boat Div)	9 July 1991	12 Dec 1992	8 Jan 1994	PA
BOISE	SSN 764	Newport News Shipbuilding	25 Aug 1988	20 Oct 1990	7 Nov 1992	AA
MONTPELIER	SSN 765	Newport News Shipbuilding	19 May 1989	6 Apr 1991	13 Mar 1993	AA
CHARLOTTE	SSN 766	Newport News Shipbuilding	17 Aug 1990	3 Oct 1992	16 Sep 1994	PA
HAMPTON	SSN 767	Newport News Shipbuilding	2 Mar 1990	28 Sep 1991	6 Nov 1993	PA
HARTFORD	SSN 768	General Dynamics (Electric Boat Div)	27 Apr 1992	4 Dec 1993	10 Dec 1994	AA
TOLEDO	SSN 769	Newport News Shipbuilding	6 May 1991	28 Aug 1993	24 Feb 1995	AA
TUCSON	SSN 770	Newport News Shipbuilding	15 Aug 1991	19 Mar 1994	9 Sep 1995	PA
COLUMBIA	SSN 771	General Dynamics (Electric Boat Div)	24 Apr 1993	24 Sep 1994	9 Oct 1995	PA
GREENEVILLE	SSN 772	Newport News Shipbuilding	28 Feb 1992	17 Sep 1994	18 Feb 1996	PA
CHEYENNE	SSN 773	Newport News Shipbuilding	6 July 1992	4 Apr 1995	13 Sep 1996	PA

Displacement, tons: 6,900 standard; 7,011 dived

Dimensions, feet (metres): 360.0 × 33 × 32.3

(109.7 × 10.1 × 9.9)

Main machinery: Nuclear; 1 GE PWR S6G; 2 turbines, 35,000 hp (26 MW); 1 shaft; 1 Magnetek auxiliary prop motor; 325 hp (242 kW)

Speed, knots, 33 dived

Complement: 134 (13 officers)

Missiles: SLCM: Raytheon Tomahawk Block III and Block IV; TERCOM and GPS aided navigation with DSMAC to 1,600+ km (865+ n miles) at 0.7 Mach; warhead (WDU 36B) 454 kg.

SSN 719-722 and 751 onwards are equipped with the Vertical Launch System, which places 12 launch tubes external to the pressure hull behind the spherical array forward

Torpedoes: 4—21 in (533 mm) bow tubes. Raytheon Mk 48 ADCAP Mod 5/6/7; wire-guided (option); active/passive homing to 50 km (27 n miles)/38 km (21 n miles) at 40/55 kt; warhead 267 kg; depth to 900 m (2,950 ft). Total of 26 weapons can be tube-launched, for example—12 Tomahawk, 14 torpedoes.

Mines: Can lay Mk 67 Mobile and Mk 60 Captor mines.

Countermeasures: Decoys. External and internal (reloadable) anti-torpedo decoy.

ESM: BRD-7/BLD-1; direction finding. WLR-1H (in 771-773). WLR-8(V)2/6; intercept. WSQ-5 (periscope) and WLR-10; radar warning. BLQ-10 radar and comms intercept

Combat data systems: CCS Mk 2 (688-750) with UYK 7 computers; BSY-1 (751-773) with UYK 43/UYK 44 computers. JOTS, BGIXS and TADIX-A can be fitted. USC-38 EHF Link 11; Link 16 being fitted. AN/BYG-1 fire control being fitted.

Radars: Surface search/navigation/fire control; AN/BPS-75H, UJ-band.

Sonars: Lockheed Martin AN/BQQ-10; passive/active search and attack; low frequency. BSY-1 (SSN 751 onwards) TB-23/29(A) thin line array and TB-16; passive towed array

BQS-15; active close range including ice detection; high frequency.

MIDAS (mine and ice detection avoidance system) (SSN 772, 766) are fitted to operate ASDS

Programmes: Various major improvement programmes and updating design changes caused programme delays in the late 1980s. From SSN 751 onwards the class is prefixed by an 'I' for 'improved'. Programme concluded at 62 hulls. Eleven paid off by mid-1999 and a further six by late 2008.

Modernisation: Mk 117 TFCS backfitted in earlier submarines of the class. EHF communications and Link 16 are being fitted. HDR antenna fitted on the majority of the class. BQQ-10 and TB-29 fitted in most. An ARC (Acoustic Rapid COTS Insertion) AN/BQQ-10 programme from 1997 to 2006 to backfit BQQ-5 sonars with open system architecture. Five of the class (SSN 688, 690, 700, 701 and 715) are capable of operating with DDS. Two others (SSN 772, 766) are fitted to operate ASDS

Structure: Every effort has been made to improve sound quieting and from SSN 751 onwards the class has acoustic tile cladding to augment the 'mammalian' skin which up to then had been the standard USN outer casing coating. Also from SSN 751 onwards the forward hydro planes are fitted forward instead of on the fin. The forward hydro planes are retractable mainly for surfacing through ice. The S6G reactor is a modified version of the D2G type



BOISE

7/2008, B Prézelin / 1353576



DALLAS (with DDS)

9/2006, US Navy / 1167570

The towed sonar array is stowed in a buster on the side of the casing. Diving depth is 450 m (1,475 ft). Various stepped design improvements have added some 220 tons to the class displacement between 688 and 773.

Operational: The Los Angeles class is the mainstay of the attack submarine force. The land-attack mission has been a notable feature of operations in Iraq, Kosovo and Afghanistan. Under-ice operations are still a priority and several (SSN 751, 767) have surfaced at the North Pole. Special forces and intelligence gathering missions

are also conducted. Normally additional Tomahawk missiles are carried internally (in addition to those stored externally). Weapon types/numbers vary according to mission. Neither TASM nor Harpoon are now deployed. Nuclear weapons disembarked but still available. ASDS trials in SSN 772 during 2002. SSN 711 seriously damaged in collision with an undersea mountain south of Guam on 8 January 2005. SSN 711 was fitted with the bow section of SSN 718. SSN 767 changed home port to San Diego in 2007 and SSN 699 to Pearl Harbour in 2008.



HELENA

10/2007, Michael Nitz / 1353547



TOPEKA

10/2007, Michael Nitz / 1353546



ASHEVILLE

2/2006, US Navy / 1167581



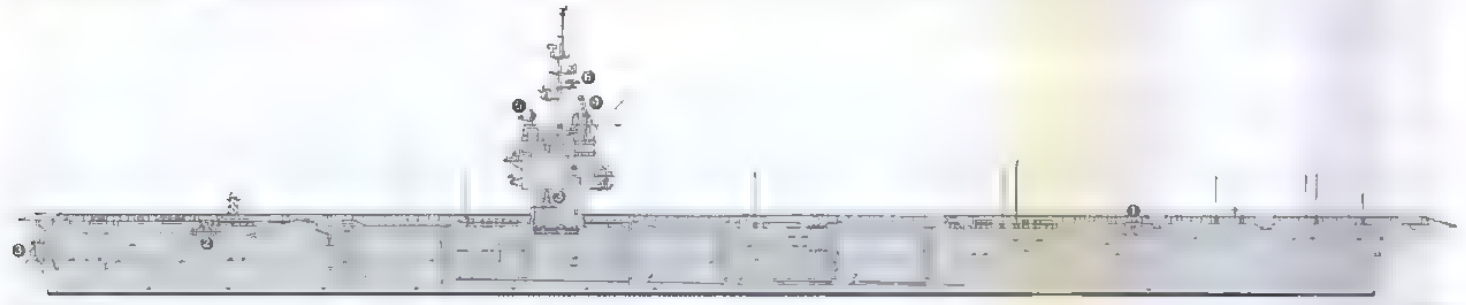
TOLEDO

1/2006, US Navy / 1167582

AIRCRAFT CARRIERS

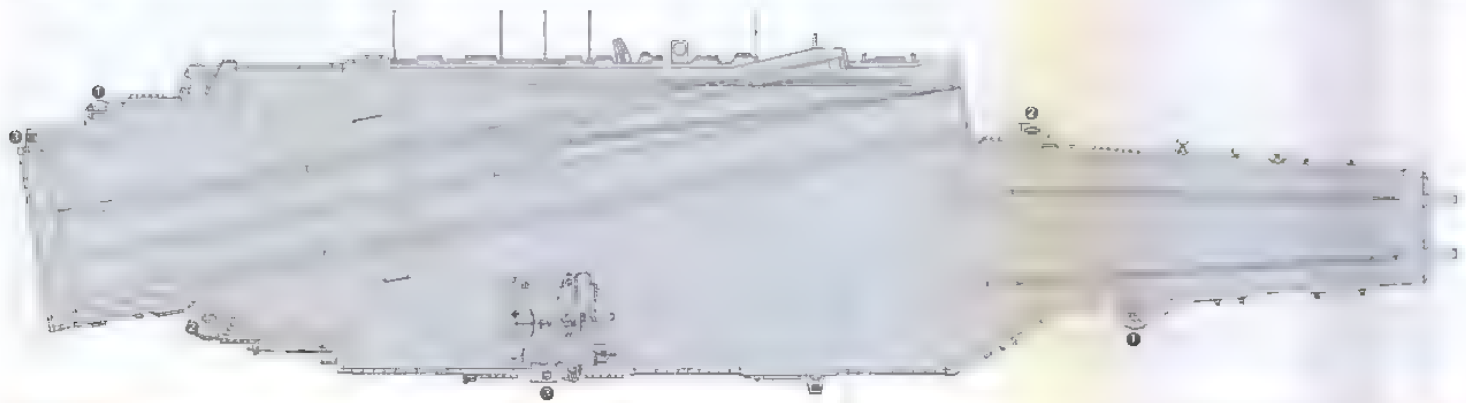
1 ENTERPRISE CLASS (CVNM)

Name	No	Builders	Laid down	Launched	Commissioned	F/S
ENTERPRISE	CVN 65	Newport News Shipbuilding	4 Feb 1958	24 Sep 1960	25 Nov 1961	AA
<p>Displacement, tons: 73,502 light; 75,700 standard, 89,600 full load</p> <p>Dimensions, feet (metres): 1,123 × 133 × 39 (342.3 × 40.5 × 11.9)</p> <p>Flight deck, feet (metres): 1,088 × 252 (331.6 × 76.8)</p> <p>Main machinery: Nuclear; 8 Westinghouse PWR A2W; 4 Westinghouse turbines; 280,000 hp (209 MW); 4 emergency diesels, 10,720 hp (8 MW); 4 shafts</p> <p>Speed, knots: 33</p> <p>Complement: 3,350 (171 officers); 2,480 aircrew (225 officers); Flag staff 70 (25 officers)</p> <p>Missiles: SAM: 2 Raytheon GMLS Mk 29 octuple launchers; NATO Sea Sparrow RIM-7P; semi-active radar homing to 16 km (8.6 n miles) at 2.5 Mach; warhead 38 kg 2 GMLS Mk 49 RAM RIM-116; 21 rds/launcher; passive IR/anti-radiation homing to 9.6 km (5.2 n miles) at 2.5 Mach; warhead 9.1 kg.</p> <p>Guns: 2 General Electric/General Dynamics 20 mm Vulcan Phalanx 6-barrelled Mk 15; 3,000 rds/min (or 4,500 in Block 1) combined to 1.5 km.</p> <p>Countermeasures: Decoys: SLQ-25 Torpedo Countermeasures Transmitting Set (Nixie). ESM/ECM SLQ 32(V)4, intercept and jammers.</p> <p>Combat data systems: ACDS Block 0 naval tactical and advanced combat direction systems; Links 4A, 11, 14, 16 and Satellite Tadi J. GCCS(M) SATCOMS; SSR-1, WSC-3 (UHF DAMA), WSC-6 (SHF), WSC-8 (SHF), USC 38 (EHF), SSR-2A (GBS) (see Data Systems at front of section).</p> <p>Weapons control: 2 Mk 91 Mod 1 MFCS directors (part of NSSMS Mk 57 SAM system)</p> <p>Radars: Air search: ITT SPS-48E; 3D, E/F-band Raytheon SPS-49(V)5; C/D-band Hughes Mk 23TAS; D-band SPQ-9B in due course Surface search: Norden SPS-67, G-band. CCA: SPN-41, SPN 43C; 2 SPN 46; J/F/K-band Navigation: Raytheon SPS-64(V)9; Furuno 900; I/J-band. Fire control: 4 Mk 95; I/J-band (for SAM). Tacan: URN 25.</p> <p>Fixed-wing aircraft: Composition of air-wing depends on mission and typically includes: 44 F/A-18A/C/E/F Hornet, 4 EA-6B Prowler; 4 E-2C Hawkeye.</p> <p>Helicopters: 4 SH-60F; 2 HH-60H Seahawk. Up to 9 SH-60B Seahawk are dispersed among carrier strike group.</p> <p>Programmes: Authorised in FY58. Underwent a refit/overhaul at Puget Sound Naval SY, Bremerton, Washington from January 1979 to March 1982. Latest complex overhaul including refuelling started at Newport News in early 1991 and completed 27 September 1994. Minor refit in 1997 and again in 2002.</p> <p>Modernisation: Mk 25 Sea Sparrow was installed in late 1967 and this has been replaced by two Mk 29 and supplemented with three 20 mm Mk 15 CIWS. A reshaping of the island took place in her 1979-82 refit. This included a replacement mast similar to the Nimitz class with SPS-48C and 49 radars. Improvements during latest overhaul included SPS-48E and Mk 23 TAS air search radars, SPN-46 precision approach and landing radar and C² and EW systems. RAM was fitted in 2004.</p> <p>Structure: Built to a modified Forrestal class design. <i>Enterprise</i> was the world's second nuclear-powered surface warship (the cruiser <i>Long Beach</i> was completed a few months earlier). Aviation facilities include four deck edge lifts, two forward and one each side abaft the island. There are four 295 ft C 13 Mod 1 catapults. Hangars cover 216,000 sq ft with 25 ft deck head. Aviation fuel, 8,500 tons.</p> <p>Operational: 12 days' aviation fuel for intensive flying. Scheduled to be decommissioned in 2013 after 52 years service. She will be replaced in the force structure by CVN 78. Based at Norfolk, VA</p>						



ENTERPRISE

(Scale 1 : 1,800), Ian Sturton / Osprey



ENTERPRISE

(Scale 1 : 1,800), Ian Sturton / Osprey



ENTERPRISE

7/2006, US Navy / 116/192

10 NIMITZ CLASS (CVNM)

Name	No	Builders	Laid down	Launched	Commissioned	F/S
NIMITZ	CVN 68	Newport News Shipbuilding	22 June 1968	13 May 1972	3 May 1975	PA
DWIGHT D EISENHOWER	CVN 69	Newport News Shipbuilding	15 Aug 1970	11 Oct 1975	18 Oct 1977	AA
CARL VINSON	CVN 70	Newport News Shipbuilding	11 Oct 1975	15 Mar 1980	13 Mar 1982	PA
THEODORE ROOSEVELT	CVN 71	Newport News Shipbuilding	13 Oct 1981	27 Oct 1984	25 Oct 1986	AA
ABRAHAM LINCOLN	CVN 72	Newport News Shipbuilding	3 Nov 1984	13 Feb 1988	11 Nov 1989	PA
GEORGE WASHINGTON	CVN 73	Newport News Shipbuilding	25 Aug 1986	21 July 1990	4 July 1992	PA
JOHN C STENNIS	CVN 74	Newport News Shipbuilding	13 Mar 1991	13 Nov 1993	9 Dec 1995	PA
HARRY S TRUMAN	CVN 75	Newport News Shipbuilding	29 Nov 1993	13 Sep 1996	25 July 1998	AA
RONALD REAGAN	CVN 76	Newport News Shipbuilding	12 Feb 1998	4 Mar 2001	12 July 2003	PA
GEORGE HW BUSH	CVN 77	Newport News Shipbuilding	6 Sep 2003	9 Oct 2006	10 Jan 2009	AA

Displacement, tons: 72,916 (CVN 68-70), 73,973 (CVN 71) standard; 91,487 (CVN 68-70), 96,386 (CVN 71), 102,000 (CVN 72-77) full load

Dimensions, feet (metres): 1,040 pp; 1,092 oa x 134 wl x 37 (CVN 68-70); 38.7 (CVN 71); 39 (CVN 72-76), 39.8 (CVN 77) (317; 332.9 x 40.8 x 11.3; 11.8, 11.9; 12.1)

Flight deck, feet (metres): 1,082; 779.8 (angled) x 252 (332.9, 237.7 x 76.8)

Main machinery: Nuclear; 2 Westinghouse/GE PWR A4W/A1G reactors; 4 turbines; 280,000 hp (209 MW); 4 emergency diesels; 10,720 hp (8 MW); 4 shafts

Speed, knots: 30

Complement: 3,200 (160 officers); 2,480 aircrew (320 officers); Flag 70 (25 officers)

Missiles: SAM: 2 (CVN 68, 69, 70, 73, 74, 76, 77) or 3 (CVN 71, 72, 75) Raytheon GMLS Mk 29 octuple launchers; NATO Sea Sparrow RIM-7P; semi-active radar homing to 16 km (8.5 n miles) at 2.5 Mach; warhead 38 kg. ESSM in due course.

2 GMLS Mk 49 RAM RIM-116 launchers; 21 rds/launcher; passive IR/anti-radiation homing to 9.6 km (5.2 n miles) at 2.5 Mach; warhead 9.1 kg

Guns: 2 (CVN 70, 71, 73) or 3 (CVN 72, 74, 75) General Electric/General Dynamics 20 mm Vulcan Phalanx 6-barrelled Mk 15; 4,500 rds/min combined to 1.5 km.

Countermeasures: Decoys: SLQ 25 Torpedo Countermeasures Transmitting Set (Nixie).

ESM/ECM: SLQ-32(V)4 intercept and jammers.

Combat data systems: ACDS Block 0 (CVN 71-72, 75) naval tactical and advanced combat direction systems; Links 4A, 11, 16 and Satellite Tadi J. GCCS (M) SATCOMS, SSR-1, WCS-3A (UHF DAMA), WSC-6 (SHF), WSC-8 (SHF), USC-38 (EHF), SSR 2A (GBS) (see Data Systems at front of section). SSDS Mk 2 (CVN 68, 69, 70, 73, 74, 76, 77) To be back-fitted in all as part of the CAPSTONE combat system upgrade.

Weapons control: 3 Mk 91 Mod 1 MFCS directors (part of the NSSMS Mk 57 SAM system).

Radars: Air search: ITT SPS-48E; 3D; E/F-band

Raytheon SPS-49(V)5 (CVN 71, 72, 75) or SPS-49A(V)1 (CVN 68, 69, 70, 73, 74, 76, 77); C/D-band.

Hughes Mk 23 TAS (CVN 71, 72, 75); D-band or SPQ-9B (CVN 68-70, 73, 74, 76, 77).

Surface search: Norden SPS-67(V)1; G-band.

CCA, SPN-41, SPN-43C, 2 SPN-46; J/F/J/K-band.

TPX-42A Direct Altitude and Identity Readout (DAIR)

Navigation: Raytheon SPS-64(V)9 (CVN 71, 72, 75) or SPS-73(V)12 (CVN 68, 70, 73, 74) or SPS-73(V)17 (CVN 69, 76, 77); Furuno 900; I/J-band.

Fire control: 4 Mk 95; I/J-band (2 per GMLS Mk 29 launcher).

Tacan: URN 25.

Fixed-wing aircraft: Composition of air-wing depends on mission and typically includes. 44 F/A-18A/C/E/F Hornet, 4 EA-6B Prowler; 4 E-2C Hawkeye.

Helicopters: 4 SH-60F and 2 HH-60H Seahawk and up to 9 SH-60B Seahawk.

Programmes: Nimitz was authorised in FY67, Dwight D Eisenhower in FY70, Carl Vinson in FY74, Theodore Roosevelt in FY80 and Abraham Lincoln and George Washington in FY83. Construction contracts for John C Stennis and Harry S Truman were awarded in June 1988 and for Ronald Reagan in December 1994. Authorised in FY99, construction contract for George H W Bush awarded in January 2001.

Modernisation: CVN 68 completed a three-year Refuelling and Complex Overhaul (RCOH) in 2001. RCOH of CVN 69 started in 2001 and completed in January 2005. RCOH of CVN 70 started in November 2005 and is scheduled to be completed in March 2009. RCOH of CVN 71 is to start in 2008. SSDS Mk 2 Mod 0 originally installed in CVN 68 (upgraded to Mk 2 Mod 1 in 2006). This includes fitting two RAM systems and SPQ-9B radar vice Mk 23 TAS. SSDS Mk 2 Mod 1 fitted to CVN 68, 69, 76 and 77 RAM systems replace one Mk 29 and all Phalanx launchers on CVN 68 and 69. CVN 74 similarly refitted during 2005 docking but retains upgraded CIWS (Phalanx) mounts as well. CVN 73 was similarly upgraded in 2007.

The SSDS upgrade package in CVN 73 and 74 is known as the CAPSTONE combat system upgrade. CAPSTONE is being installed in CVN 70 during RCOH and will be scheduled for CVN 71, 72 and 75 in due course.

Structure: Damage control measures include sides with system of full and empty compartments (full compartments can contain aviation fuel), approximately 2.5 in Kevlar plating over certain areas of side shell, box protection over magazine and machinery spaces. Aviation facilities include four lifts, two at the forward end of the flight deck, one to starboard abaft the island and one to port at the stern. There are four steam catapults (C13-1 (CVN 68-71), C13-2 (CVN 72-77)) and four (or three on CVN 76 and 77) Mk 7 Mod 3 arrester wires. Launch rate is one every 20 seconds. The hangar can hold less than half the full aircraft complement, deckhead is 25.6 ft. Aviation fuel, 8,500 tons. Tactical Flag Command Centre for Flagship role. During RCOH, CVN 68 and 69 fitted with reshaped island (the mainmast has three yardarms to support more antennas) Major structural differences in CVN 76 and 77 include: a three-wire arresting system (to replace the four-wire system), an enlarged island structure which incorporates a bigger bridge, a three yardarm mainmast and the after mast (separate in previous ships) and an internal ordnance elevator. Other changes include a bulbous bow to reduce drag and a modified flight deck (angled deck increased by 0.1°) to allow the use of two catapults while aircraft land.

Operational: Multimission role of 'strike/ASW'. From CVN 70 onwards ships have an A/S control centre and A/S facilities; CVN 68 and 69 are backfitted. Endurance of 16 days for aviation fuel (steady flying) with greater than 1 million miles before nuclear reactor refuelling is required. Only one refuelling is required in the life of the ship. Ships' complements and air wing can be changed depending on the operational task. CVNs 69, 75 and 77 based at Norfolk, VA. CVNs 68, 70 and 76 based at San Diego, CA, CVN 74 at Bremerton, WA, and CVN 72 at Everett, WA. CVN 73 replaced CV 63 at Yokosuka in late 2008. CVN 77 began initial sea trials on 13 February 2009.



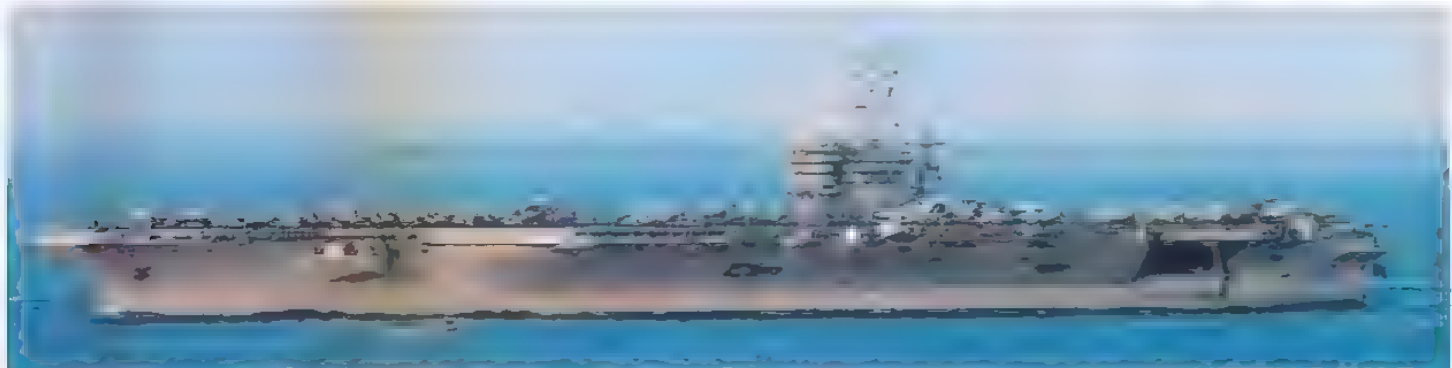
RONALD REAGAN

(Scale 1 : 1,800), Ian Sturton / 1043489



RONALD REAGAN

(Scale 1 : 1,800), Ian Sturton / 1043490



NIMITZ

2/2008*, Hachiro Nakai / 1353577



HARRY STRUMAN

6/2004, *Ships of the World* / 1043700



GEORGE WASHINGTON

8/2008*, *US Navy* / 135364



ABRAHAM LINCOLN

4/2008*, US Navy / 1353520



DWIGHT D EISENHOWER

12/2006, Tom Philpott / 1167588



GEORGE WASHINGTON

10/2008*, Michael Nitz / 1353619

0 + 1 (2) GERALD R FORD CLASS (CVN)

Name	No	Builders	Laid down	Launched	Commissioned
GERALD R FORD	CVN 78	Northrop Grumman Newport News	2009	2013	2015
-	CVN 79	Northrop Grumman Newport News	2013	2017	2019
-	CVN 80	Northrop Grumman Newport News	2017	2021	2023

Displacement, tons: 100,000 approx
Dimensions, feet (metres): 1,091.8 x 134.0 x 40.8 (332.8 x 40.8 x 12.4)
Flight deck, feet (metres): 109.8 x 256 (332.8 x 78.0)
Main machinery: Nuclear; 2 reactors; 4 shafts
Speed, knots: 30+
Complement: 4,660 ship and aircrew

Missiles: SAM: 2 Raytheon GMLS Mk 29 launchers for Raytheon Evolved Sea Sparrow RIM-7, 2 GMLS Mk 49 RAM RIM-116.
Guns: 3 General Electric/General Dynamics 20 mm Vulcan Phaenx Mk 15 6-barrelled.
Countermeasures: ESM/ECM, SEWIP Block 2/3
Torpedo defence: SLQ-25C
Combat data systems: CEC, USG-2A; Links 4, 11, 16.
Weapons control: SSDS Mk II.
Radars: Air search: Dual Band Radar (DBR); Raytheon SPY-3; 3D; I-band and Lockheed Martin Volume Search Radar (VSRI), 3D; E/F-band.

Navigation: SPS-73V(18)
Fire control: 4 Mk 95; I/J-band (2 per GMLS 29 launchers).
Tacan: URN-25

Fixed-wing aircraft: Composition will depend on mission but will comprise 75+ aircraft (JSF, F/A-18E/F, EA-18G, E-2D, MH-60R/S, J-UCAS)

Programmes: Northrop Grumman Newport News awarded a construction preparation contract in May 2004 for detailed design, component development, long-lead procurement and advanced construction of the lead ship CVN 78. First steel cut on 11 August 2005.

Structure: The Ford class flight deck and below deck have been optimised to increase sortie rates and improve weapons movement. This is to be accomplished with a new design and relocation of the island, three aircraft lifts and an advanced weapons elevators (AWE). Other features include four Electromagnetic Aircraft Launching

Systems (EMALS), Advanced Arresting Gear (AAG) system, new SSDS open architecture combat system, fully integrated warfare system, a new nuclear power plant, and a flexible ship architecture to support the rapid insertion of future warfighting technologies. Significant habitability improvements are to be incorporated.

Operational: CVN 78 class ships will require 500-900 fewer personnel than the Nimitz class complement. Increased sortie rates (by 25 per cent) and reduced depot maintenance requirements will increase operational availability. New command centre to combine force networking with flexible, open system architecture to support simultaneous multiple missions, including integrated strike planning, joint/coalition operations and special warfare missions. Planned service life 50 years



CVN 78 (artist's impression)

4/2006, US Navy / 1150240

CRUISERS

Notes: (1) **Integrated Ship Controls.** Formerly known as Smart Ship, Integrated Ship Controls (ISC) began as Naval Research Advisory Committee recommendation in 1996 to reduce manning through technology. *Yorktown* (CG 48) was selected as first Smart Ship with implementation of 47 workload-reduction initiatives tested and evaluated during a five-month deployment completed in June 1997. Fourteen more initiatives were installed in July 1997. Core systems included: Integrated Bridge System (IBS), Integrated Condition Assessment System (ICAS), Machinery Control

System (MCS), Damaged Control System (DCS), Fuel Control System (FCS), fibre optic Local Area Network (LAN) and Wireless Internal Communication System (WICS). *Yorktown's* experience validated these technologies, combined with changes in policies, procedures and new watch routines, to generate substantial reductions in workload. *Monterey* (CG 61) was fitted in 2000; *Valley Forge* (CG 50) and *Mobile Bay* (CG 53) in 2001; *Annetam* (CG 54) in 2002, *Hue City* (CG 66) in 2003; *Cape St George* (CG 71) in 2004; *San Jacinto* (CG 56) in 2006; *Leyte Gulf* (CG 65), *Philippine Sea* (CG 58)

and *Chancellorsville* (CG 62) in 2007. *Bunker Hill* (CG 52) and *Lake Champlain* (CG 57) in 2008. Remaining ships of class are to receive ISC either as a stand-alone upgrade or during the Cruiser Modernisation Programme.

(2) CG(X) is the proposed replacement for the *Ticonderoga* (CG 47) class cruisers. It is expected to be a follow-on variant of the DDG 1000, incorporating an integrated power system and using a similar hull-form, but with enhanced missile-defence and air warfare capability. Results of the CG(X) Analysis of Alternatives were being staffed in early 2009.



GETTYSBURG

6/2008, Michael Ritz / 1353774

22 TICONDEROGA CLASS (CGHM)

Name	No	Builder/Programme	Laid down	Launched	Commissioned	F/S
BUNKER HILL	CG 52	Ingalls Shipbuilding	11 Jan 1984	11 Mar 1985	20 Sep 1986	PA
MOBILE BAY	CG 53	Ingalls Shipbuilding	6 June 1984	22 Aug 1985	21 Feb 1987	PA
AMTITAM	CG 54	Ingalls Shipbuilding	16 Nov 1984	14 Feb 1986	6 June 1987	PA
LEYTE GULF	CG 55	Ingalls Shipbuilding	18 Mar 1985	20 June 1986	26 Sep 1987	AA
SAN JACINTO	CG 56	Ingalls Shipbuilding	24 July 1985	14 Nov 1986	23 Jan 1988	AA
LAKE CHAMPLAIN	CG 57	Ingalls Shipbuilding	3 Mar 1986	3 Apr 1987	12 Aug 1988	PA
PHILIPPINE SEA	CG 58	Bath Iron Works	8 May 1986	12 July 1987	18 Mar 1989	AA
PRINCETON	CG 59	Ingalls Shipbuilding	15 Oct 1986	2 Oct 1987	11 Feb 1989	PA
NORMANDY	CG 60	Bath Iron Works	7 Apr 1987	19 Mar 1988	9 Dec 1989	AA
MONTEREY	CG 61	Bath Iron Works	19 Aug 1987	23 Oct 1988	16 June 1990	AA
CHANCELLORSVILLE	CG 62	Ingalls Shipbuilding	24 June 1987	15 July 1988	4 Nov 1989	PA
COWPENS	CG 63	Bath Iron Works	23 Dec 1987	11 Mar 1989	9 Mar 1991	PA
GETTYSBURG	CG 64	Bath Iron Works	17 Aug 1988	22 July 1989	22 June 1991	AA
CHOSIN	CG 65	Ingalls Shipbuilding	22 July 1988	1 Sep 1989	12 Jan 1991	PA
HUE CITY	CG 66	Ingalls Shipbuilding	20 Feb 1989	1 June 1990	14 Sep 1991	AA
SHILOH	CG 67	Bath Iron Works	1 Aug 1989	8 Sep 1990	2 July 1992	PA
ANZIO	CG 68	Ingalls Shipbuilding	21 Aug 1989	2 Nov 1990	2 May 1992	AA
VICKSBURG	CG 69	Ingalls Shipbuilding	30 May 1990	2 Aug 1991	14 Nov 1992	AA
LAKE ERIE	CG 70	Bath Iron Works	6 Mar 1990	13 July 1991	24 July 1993	PA
CAPE ST GEORGE	CG 71	Ingalls Shipbuilding	19 Nov 1990	10 Jan 1992	12 June 1993	AA
VELLA GULF	CG 72	Ingalls Shipbuilding	22 Apr 1991	13 June 1992	18 Sep 1993	AA
PORT ROYAL	CG 73	Ingalls Shipbuilding	18 Oct 1991	20 Nov 1992	9 July 1994	PA

Displacement, tons: 9,957 full load
Dimensions, feet (metres): 567 × 55 × 31 (sonar)
(172.8 × 16.8 × 9.5)

Main machinery: 4 GE LM 2600 gas turbines, 86 000 hp (64.16 MW) sustained; 2 shafts; cp props

Speed, knots: 30

Range, n miles: 6,000 at 20 kt

Complement: 358 (24 officers); accommodation for 405 total

Missiles: SLCM: Raytheon Tomahawk Block III and Block IV; TERCOM and GPS aided navigation with DSMAC to 1,600+ km (865+ n miles) at 0.7 Mach; warhead (WDU 36B) 454 kg

SSM: 8 McDonnell Douglas Harpoon (2 quad, ● active radar homing to 240 km (130 n miles) at 0.9 Mach; warhead 227 kg. Extended range SLAM can be fired from modified Harpoon canisters.

SAM: 122 Raytheon Standard SM-2 Block III and IVA, command/inertial guidance; semi-active radar and IR homing to 167 km (90 n miles) at 2.5 Mach. SAM and ASROC missiles are fired from 2 Mk 41 Mod 0 vertical launchers ● (61 missiles per launcher), Standard SM-3 Block 1A (in designated ships); command/inertial/GPS guidance and IR homing to 650 n miles (1,200 km) at 3 Mach

A/S: Loral ASROC VLA which has a range of 16.6 km (9 n miles); inertial guidance of 1.6-10 km (1-5.4 n miles); payload Mk 46 Mod 5 Nearthip or Mk 50.

Guns: 2 FMC 5 in (127 mm)/54 Mk 45 Mod 1 ●; 20 rds/min to 23 km (12.6 n miles) anti-surface; weight of shell 32 kg

2 General Electric/General Dynamics 20 mm/76 Vulcan Phalanx 6-barrelled Mk 15 Mod 2 ●; 3,000 rds/min (4,500 in Block 1) combined to 1.5 km. To be fitted with high-definition thermal imagers (HDTI) for tracking small craft, 2 McDonnell Douglas 25 mm, 4—12.7 mm MGs.

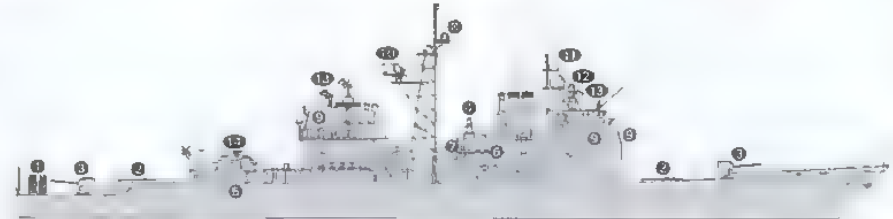
Torpedoes: 6—324 mm Mk 32 (2 triple) Mod 14 tubes (fitted in the ship's side aft) ●; 36 Honeywell Mk 46 Mod 5; anti-submarine; active/passive homing to 11 km (5.9 n miles) at 40 kt; warhead 44 kg or Alliant/Westinghouse Mk 50; active/passive homing to 15 km (8.1 n miles) at 50 kt; warhead 45 kg shaped charge.

Countermasures: Decoys: Up to 8 Loral Hycor SRBOC 6-barrelled fixed Mk 36 Mod 2 ●; IR flares and chaff Nulka being acquired. SLQ-25 Nixie; towed torpedo decoy ESM/ECM: Raytheon SLQ-32(V3)/SLY-2 ●; intercept, jammers.

Combat data systems: CEC being fitted 1996-2007 starting with CG 66 and 69. NTDS with Links 4A, 11, 14. GCCS (M) and Link 16 being fitted. Link 22 in due course. SATCOM WRN-5, WSC-3 (UHF), USC-38 (EHF), UYK-7 computers (CG 52-58); UYK 43/44 (CG 59 onwards); SQQ-28 for LAMPS sonobuoy datalink ● (see Data Systems at front of section).

Weapons control: SWG-3 Tomahawk WCS. SWG-1A Harpoon LCS. Aegis Mk 7 Mod 4 multitarget tracking with Mk 99 MFCS (includes 4 Mk 80 illuminator directors); has at least 12 channels of fire, Singer Librascope Mk 116 Mod 6 (53B) or Mod 7 (53C) FCS for ASW Lockheed Mk 86 Mod 9 GFCs (to be replaced by Mk-160 Mod 11 from 2008).

Radars: Air search/fire control: RCA SPY-1A phased arrays ●; 3D; E/F-band (CG 52-58). Raytheon SPY-1B phased arrays, 3D; E/F-band (CG 59 on).



BUNKER HILL

(Scale 1 : 1,500), Ian Sturton / 0581793

Air search: Raytheon SPS-49(V)7 or 8 ●; C/D-band; range 457 km (250 n miles).

Surface search: ISC Cardion SPS-55 ●; I/J-band.

Navigation: Raytheon SPS-64(V)8; I-band.

Fire control: Lockheed SPQ-9A/B ●; I/J-band.

Four Raytheon SPG-62 ●; I/J-band.

Tacan URN 25. IFF Mk XII AIMS UPX-29

Sonars: Gould/Raytheon SQQ-89(V)3 (CG 52 onwards); combines hull-mounted active SQS-53B (CG 52-67) or SQS-53C (CG 68-73) and passive towed array SQR-19.

Helicopters: 2 SH-60B Seahawk LAMPS III ●. UAV in due course.

Modernisation: The Cruiser Modernisation (CG Mod) Programme is an extensive capability enhancement and service-life extension that is to be applied to all 22 ships. The principal feature of the programme is to be installation of Aegis Open Architecture (AOA) to upgrade the Aegis Weapon System (AWS), ACB 08/ACB 12 Computer Programme and associated displays and computing infrastructure. The new computer programme is to replace several existing computer programme baselines and provide improved tactical performance and functionality. The AOA upgrade is to provide capacity for future combat system growth over the life of the class as well as mission expansion, such as Ballistic Missile Defense (BMD). The Mk 34 Mod 4 Gun Weapon System upgrade includes the Mk 45 Mod 2 5 in/62 caliber guns, associated Mk 160 Mod 11 fire-control system and optical sights for improved land-attack capability. Additionally, several upgraded command, control, communications, computers and intelligence (C4I) systems and enhanced force-protection capabilities are to be installed. Layered defence is improved through installation of the Vulcan Phalanx Block 1B, modification of the Mk 41 VLS launchers to fire ESSM, installation of the Mk 53 Mod 5 Decoy Launch System (Nulka) and replacement of SPQ-9A with SPQ-9B radar to increase detection and engagement of surface and air threats. Modernised Baseline 3 (CG 59-64) and 4 (CG 65-73) cruisers will rejoin the fleet equipped with improved anti-submarine warfare capability through installation of the SQQ-89A(V)15 upgrade and the Multi-Function Towed Array, Baseline 2 (CG 52-58) are to retain SQQ-89(V)3. The programme will also include a significant Hull, Mechanical and Electrical (HM&E) package that features alterations in weight and movement correction, hull and deckhouse structural improvements, corrosion-control

enhancements, hangar deck strengthening, distributive system enhancements and many quality-of-service upgrades. The modernisation will install the Integrated Ship Controls (ISC), or Smartship, and all-electric modifications on ships that have not yet received the alterations. Cruisers with ISC previously installed will receive system upgrades.

Complete modernisation is to be accomplished in two primary phases. The first phase involves HM&E Centric Modernisation availabilities to include ISC and all-electric modifications, in addition to stand-alone combat systems ship changes. Duration of this phase is projected to be less than six months and is to occur in ship's homeport. The initial HM&E Centric Modernisation availability for *San Jacinto* began in July 2006 and was completed in January 2007. Three more cruisers completed their HM&E upgrades in 2007 and two more in 2008. The second phase involves the full Combat Systems Modernisation refits which include a fully integrated combat system upgrade and those HM&E ship changes not previously completed. *Bunker Hill* (CG 52) is the first ship to undergo the full upgrade and is scheduled to rejoin the fleet in 2009. She is to be followed by *Mobile Bay* and *Philippine Sea*. Modernisation for all ships is to be completed by 2017. CGs having previously received the HM&E upgrades will have integrated combat system upgrades installed during homeport upkeep periods.

Structure: The Ticonderoga class design is a modification of the Spruance class. The same basic hull is used, with the same gas-turbine propulsion plant although the overall length is slightly increased. The design includes Kevlar armour to protect vital spaces. No stabilisers. Later ships have a lighter tripod mainmast vice the square quadruped of the first two.

Operational: The sea-based element of the Ballistic Missile Defense Programme is known as Aegis BMD. *Lake Erie* has acted as the principal trials platform. Since the first intercept test in January 2002, a total of 20 tests had been conducted by late 2008. Of these, 16 have been successful. Tests involved both the Standard SM-3 (in the target's exo-atmospheric ballistic phase) and Standard SM-2 Block IV in the terminal phase. As of the end of 2006, three cruisers (*Lake Erie*, *Shiloh* and *Port Royal*) were capable of launching Standard Missile-3s (SM-3s) to intercept ballistic missiles. *Shiloh* was forward-deployed to Japan in 2006 to bolster missile defence in the region.



ANZIO

4/2008, B Moutrie / 1353614



MONTEREY

3/2008, US Navy / 1350617



COWPENS

10/2008, Michael Nitz / 1350615



LAKE ERIE

8/2008, Michael Nitz / 1350613



CAPE ST GEORGE

8/2008, Shaun Jones / 1353618



LEYTE GULF

3/2008, US Navy / 1353616



GETTYSBURG

6/2008, Michael Nitz / 1353612

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DESTROYERS

28 ARLEIGH BURKE (FLIGHTS I AND II) CLASS (AEGIS) (DDGHM)

Name	No	Builders	Laid down	Launched	Commissioned	F/S
ARLEIGH BURKE	DDG 51	Bath Iron Works	6 Dec 1988	16 Sep 1989	4 July 1991	AA
BARRY (ex-John Barry)	DDG 52	Ingalls Shipbuilding	26 Feb 1990	10 May 1991	12 Dec 1992	AA
JOHN PAUL JONES	DDG 53	Bath Iron Works	8 Aug 1990	26 Oct 1991	18 Dec 1993	PA
CURTIS WILBUR	DDG 54	Bath Iron Works	12 Mar 1992	16 May 1991	4 Apr 1994	PA
STOUT	DDG 55	Ingalls Shipbuilding	8 Aug 1991	16 Oct 1992	13 Aug 1994	AA
JOHN S McCAIN	DDG 56	Bath Iron Works	3 Sep 1991	26 Sep 1992	2 July 1994	PA
MITSCHER	DDG 57	Ingalls Shipbuilding	12 Feb 1992	7 May 1993	10 Dec 1994	AA
LABOON	DDG 58	Bath Iron Works	23 Mar 1992	20 Feb 1993	18 Mar 1995	AA
RUSSELL	DDG 59	Ingalls Shipbuilding	24 July 1992	20 Oct 1993	20 May 1995	PA
PAUL HAMILTON	DDG 60	Bath Iron Works	24 Aug 1992	24 July 1993	27 May 1995	PA
RAMAGE	DDG 61	Ingalls Shipbuilding	4 Jan 1993	11 Feb 1994	22 July 1995	AA
FITZGERALD	DDG 62	Bath Iron Works	9 Feb 1993	29 Jan 1994	14 Oct 1995	PA
STETHEM	DDG 63	Ingalls Shipbuilding	11 May 1993	17 June 1994	21 Oct 1995	PA
CARNEY	DDG 64	Bath Iron Works	3 Aug 1993	23 July 1994	13 Apr 1996	AA
BENFOLD	DDG 65	Ingalls Shipbuilding	27 Sep 1993	9 Nov 1994	30 Mar 1996	PA
GONZALEZ	DDG 66	Bath Iron Works	3 Feb 1994	18 Feb 1995	12 Oct 1996	AA
COLE	DDG 67	Ingalls Shipbuilding	28 Feb 1994	10 Feb 1995	8 June 1996	AA
THE SULLIVANS	DDG 68	Bath Iron Works	27 July 1994	12 Aug 1995	19 Apr 1997	AA
MILIUS	DDG 69	Ingalls Shipbuilding	8 Aug 1994	1 Aug 1995	23 Nov 1996	PA
HOPPER	DDG 70	Bath Iron Works	23 Feb 1995	6 Jan 1996	6 Sep 1997	PA
ROSS	DDG 71	Ingalls Shipbuilding	10 Apr 1995	23 Mar 1996	28 June 1997	AA
MAHAN	DDG 72	Bath Iron Works	17 Aug 1995	29 June 1996	14 Feb 1998	AA
DECATUR	DDG 73	Bath Iron Works	11 Jan 1996	10 Nov 1996	29 Aug 1998	PA
McFAUL	DDG 74	Ingalls Shipbuilding	26 Jan 1996	18 Jan 1997	25 Apr 1998	AA
DONALD COOK	DDG 75	Bath Iron Works	9 July 1996	9 July 1997	4 Dec 1998	AA
HIGGINS	DDG 76	Bath Iron Works	14 Nov 1996	4 Oct 1997	24 Apr 1999	PA
O'KANE	DDG 77	Bath Iron Works	5 May 1997	28 Mar 1998	23 Oct 1999	PA
PORTER	DDG 78	Ingalls Shipbuilding	2 Dec 1996	12 Nov 1997	20 Mar 1999	AA

Displacement, tons: 8,950 (DDG 51-71), 8,946 (DDG 72-78)
 Dimensions, feet (metres): 504.5 oa; 466 wl x 66.6 x 22 0;
 32 1 (sonar)

(153.8; 142 x 20.3 x 6.7; 9.8)

Main machinery: 4 GE LM 2500 gas turbines; 105,000 hp
 (78.33 MW) sustained; 2 shafts, cp props

Speed, knots: 32

Range, n miles: 4,400 at 20 kt

Complement: 346 (DDG 51-71); 352 (DDG 72-78) (22 officers)

Missiles: SLCM. 66 Raytheon Tomahawk Block III and IV;
 TERCOM and GPS aided navigation with DSMAC to
 1,600+ km (865+ n miles) at 0.7 Mach; warhead (WDU
 368) 454 kg.

SSM: 8 McDonnell Douglas Harpoon (2 quad) ●; active
 radar homing to 240 km (130 n miles) at 0.9 Mach;
 warhead 227 kg

SAM: Raytheon Standard SM-2 Block III and IVA; command/
 inertial guidance; semi-active radar and IR homing to
 167 km (90 n miles) at 2.5 Mach. Standard SM-3 Block 1A
 (in designated ships); command/inertial/GPS guidance
 and IR homing to 650 n miles (1,200 km) at 3 Mach
 2 Martin Manette Mk 41 (Mod 0 forward, Mod 1 aft)
 Vertical Launch Systems (VLS) for Tomahawk, Standard
 and ASROC VLA ●; 2 magazines; 29 missiles forward,
 61 aft. Mod 2 from DDG 59 onwards.

A/S: Loral ASROC VLA; inertial guidance to 1.6-16.6 km
 (1-9 n miles); payload Mk 46 Mod 5 Nearthp.

Guns: 1 FMC/UDLP 5 in (127 mm)/54 Mk 45 Mod 1 or 2 ●;
 20 rds/min to 23 km (12.6 n miles); weight of shell 32 kg.
 2 General Electric/General Dynamics 20 mm Vulcan
 Phalanx 6-barrelled Mk 15 ●; 3,000 rds/min (4,500 in
 Block 1) combined to 1.5 km. Being fitted with IR detectors
 for tracking small craft.

Torpedoes. 6-324 mm Mk 32 Mod 14 (2 triple) tubes ●.
 Alliant Mk 46 Mod 5; anti-submarine; active/passive
 homing to 11 km (5.9 n miles) at 40 kt; warhead 44 kg
 or Alliant/Westinghouse Mk 50; active/passive homing
 to 15 km (8.1 n miles) at 50 kt; warhead 45 kg shaped
 charge

Countermeasures: Decoys: 2 Loral Hycor SRBOC
 6-barrelled fixed Mk 36 Mod 12 ●; IR flares and chaff to
 4 km (2.2 n miles). SLQ-25 Nixie; torpedo decoy. NATO
 Sea Gnat. SLQ-96 AEB. SLQ-39 chaff buoy. Nulka being
 acquired

ESM/ECM: Raytheon SLQ-32A(V)2 (DDG 51-67) ● or SLQ-
 32A(V)3/SLY-2 (DDG 68-78); radar warning. Sidekick
 modification adds jammer and deception system to (V)2.
 SRS-1 DF (from DDG 72).

CESM: AN/SRS-1A(V) Combat Direction Finding System
 (CDF)

Combat data systems: CEC being fitted. NTDS Mod 5 with
 Links 4A, 11, 14 and 16 (from DDG 72) and being back



ARLEIGH BURKE

(Scale 1 : 1,500, Ian Sturton / 0050371)

fitted. SATCOM SRR-1, WSC-3 (UHF), USC-38 (EHF)
 SQQ-28 for LAMPS processor datalink. TADIX B Tactical
 Information Exchange System (from DDG 72). Link 22 in
 due course (see Data Systems at front of section). Naval
 Fires Combat System (NFCS)

Weapons control: SWG-4 or SWG-5 Tomahawk WCS.
 SWG-1A Harpoon LCS. Aegis multitarget tracking with
 Mk 99 Mod 3 MFCS and three Mk 80 illuminators. Mk 34
 GWS (includes Mk 180 computing system and Kollmorgen
 Mk 46 Mod 0/1 optronic sight). Singer Librascope Mk 116
 Mod 7 FCS for ASW

Radars: Air search/fire control: RCA SPY-1D phased arrays
 ●; 3D; E/F-band

Surface search: Norden/DRS SPS-67(V)3 ●; G-band.

Navigation: Raytheon SPS-64(V)9; I-band

Fire control: Three Raytheon/RCA SPG-62 ●; I/J-band.

Tacan: URN 25 ● IFF Mk XII AIMS UFX-29.

Sonars: Gould/Raytheon/GE SQQ-89(V)4 (DDG 51), SQQ-
 89(V)6 (DDG 52-78); combines SQS-53C; bow-mounted;
 active search and attack with SQR-198 passive towed
 array (TACTAS) low frequency.

Helicopters: Platform and facilities to fuel and rearm
 LAMPS III SH-60B/F helicopters ●. UAV in due course.

Programmes: First ship authorised in FY85, last pair in FY94.
 The first 21 are Flight I and the next seven are Flight II.

Modernisation: A mid-life modernisation program is
 planned. The scope of the upgrade is to be included
 initially during the construction of Flight IIA DDGs 111
 and 112 and then retrofitted into DDG Flight I and II
 ships during two separate overhaul periods: the first for
 engineering control system upgrades and the second for
 combat system upgrades. Fifteen ships are modified
 to undertake the BMD mission. Aegis has been upgraded to
 BMD Version 3.6 in DDG 63. This is a tactical version
 which adds BMD capability to the other multimission
 capabilities of the Aegis system. DDGs 53, 54, 55, 56, 58,
 60, 61, 62, 65, 69, 70, 73, 76 and 77 are currently equipped

with Version 3.0 which is to be upgraded to Version 3.6
 by 2009. Designated ships are equipped with Standard
 SM 3 Block 1A. This is to be upgraded to Block 1B from
 2010. Following the identification of structural defects to
 the entire DDG 51 class, a bow-strengthening programme
 has been initiated. Repairs are to be carried out during
 planned docking periods.

Structure: The ship, except for the aluminium mast, is
 constructed of steel. 70 tons of armour provided to
 protect vital spaces. This is the first class of US Navy
 warship designed with a 'collective protection system'
 for defense against the fallout associated with NBC
 warfare. The ship's crew are protected by double air-
 locked hatches, fewer accesses to the weatherdecks
 and positive pressurisation of the interior of the ship
 to keep out contaminants. All incoming air is filtered
 and more reliance placed on recirculating air inside the
 ship. All accommodation compartments have sprinkler
 systems. Stealth technology includes angled surfaces
 and rounded edges to reduce radar signature and IR
 signature suppression plus Prairie Masker hull/blade
 rate suppression. The CIC room is below the waterline
 and electronics are EMP hardened. The original upright
 mast design has been changed to increase separation
 between electronic systems and the forward funnel.
 Differences in Flight II starting with DDG 72 include
 Link 16, SLQ-32(V)3 EW suite, extended-range SAM
 missiles and improved tactical information exchange
 systems. The topmast is vertical to take the SRS-1. There
 is also an increase in displacement caused by using
 more space to carry fuel

Operational: Two of the class are based at Yokosuka
 in Japan. Repairs to Cole, damaged by a terrorist
 attack at Aden on 12 October 2000, began in January
 2001 at Ingalls and completed on 19 April 2002 when
 she returned to the fleet. Curtis Wilbur began missile-
 defence patrols in the Sea of Japan in October 2004.
 Milius successfully fired a Tomahawk Block IV missile
 on 6 December 2006.



DONALD COOK

4/2008*, B Moutrie / 1353610



JOHN S McCAIN

10/2008*, Michael Nitz / 1353608



RAMAGE

11/2008*, Guy Toremans / 1353609

27 + 7 (8) ARLEIGH BURKE (FLIGHT IIA) CLASS

Name	No	Builders	Laid down	Launched	Commissioned	F/S
OSCAR AUSTIN	DDG 79	Bath Iron Works	9 Oct 1997	7 Nov 1998	19 Aug 2000	AA
ROOSEVELT	DDG 80	Ingalls Shipbuilding	15 Dec 1997	10 Jan 1999	14 Oct 2000	AA
WINSTON S CHURCHILL	DDG 81	Bath Iron Works	7 May 1998	17 Apr 1999	10 Mar 2001	AA
LASSEN	DDG 82	Ingalls Shipbuilding	24 Aug 1998	16 Oct 1999	21 Apr 2001	PA
HOWARD	DDG 83	Bath Iron Works	9 Dec 1998	20 Nov 1999	20 Oct 2001	PA
BULKELEY	DDG 84	Ingalls Shipbuilding	10 May 1999	21 June 2000	8 Dec 2001	AA
McCAMPBELL	DDG 85	Bath Iron Works	16 July 1999	2 July 2000	17 Aug 2002	PA
SHOUP	DDG 86	Ingalls Shipbuilding	13 Dec 1999	22 June 2000	22 June 2002	PA
MASON	DDG 87	Bath Iron Works	20 Jan 2000	23 June 2001	12 Apr 2003	AA
PREBLE	DDG 88	Ingalls Shipbuilding	22 June 2000	1 June 2001	9 Nov 2002	PA
MUSTIN	DDG 89	Ingalls Shipbuilding	15 Jan 2001	12 Dec 2001	26 July 2003	PA
CHAFFEE	DDG 90	Bath Iron Works	12 Apr 2001	2 Nov 2002	18 Oct 2003	PA
PINCKNEY	DDG 91	Ingalls Shipbuilding	16 July 2001	26 June 2002	29 May 2004	PA
MOMSEN	DDG 92	Bath Iron Works	16 Nov 2001	19 July 2003	28 Aug 2004	PA
CHUNG-HOON	DDG 93	Ingalls, Shipbuilding	14 Jan 2002	15 Dec 2002	18 Sep 2004	PA
NITZE	DDG 94	Bath Iron Works	17 Sep 2002	3 Apr 2004	6 Mar 2005	AA
JAMES E WILLIAMS	DDG 95	Ingalls Shipbuilding	15 July 2002	25 June 2003	11 Dec 2004	AA
BAINBRIDGE	DDG 96	Bath Iron Works	7 May 2003	30 Oct 2004	12 Nov 2005	AA
HALSEY	DDG 97	Ingalls Shipbuilding	5 Feb 2003	9 Jan 2004	30 July 2005	PA
FORREST SHERMAN	DDG 98	Ingalls Shipbuilding	12 Aug 2003	30 June 2004	28 Jan 2006	AA
FARRAGUT	DDG 99	Bath Iron Works	7 Jan 2004	9 July 2005	10 June 2006	AA
KIDD	DDG 100	Ingalls Shipbuilding	1 Mar 2004	15 Dec 2004	9 June 2007	PA
GRIDLEY	DDG 101	Bath Iron Works	30 July 2004	28 Dec 2005	10 Feb 2007	PA
SAMPSON	DDG 102	Bath Iron Works	14 Mar 2005	17 Sep 2006	3 Nov 2007	PA
TRUXTON	DDG 103	Northrop Grumman Ship Systems	11 Apr 2005	2 June 2007	25 Apr 2009	AA
STERETT	DDG 104	Bath Iron Works	17 Nov 2005	20 May 2007	9 Aug 2008	PA
DEWEY	DDG 105	Northrop Grumman Ship Systems	3 Oct 2006	26 Jan 2008	Nov 2009	Bldg/PA
STOCKDALE	DDG 106	Bath Iron Works	10 Aug 2006	10 May 2008	18 Apr 2009	PA
GRAVELY	DDG 107	Northrop Grumman Ship Systems	28 Nov 2007	16 May 2009	Aug 2010	Bldg/AA
WAYNE E MEYER	DDG 108	Bath Iron Works	18 May 2007	18 Oct 2008	Oct 2009	Bldg/PA
JASON DUNHAM	DDG 109	Bath Iron Works	11 Apr 2008	July 2009	July 2010	Bldg/PA
WILLIAM P LAWRENCE	DDG 110	Northrop Grumman Ship Systems	8 Sep 2008	Feb 2010	Mar 2011	Bldg/PA
SPRUANCE	DDG 111	Bath Iron Works	12 Apr 2009	Jan 2010	Feb 2011	Bldg/PA
MICHAEL MURPHY	DDG 112	Bath Iron Works	28 June 2009	Sep 2010	Oct 2011	Bldg/PA

Displacement, tons: 9,155 full load
Dimensions, feet (metres): 509.5 oa; 471 wl x 66.6 x 22.0;
 32.1 (sonar)
 (155.3, 143.6 x 20.3 x 6.7; 9.8)
Main machinery: 4 GE LM 2500 30 gas turbines, 100,000 hp
 (74.6 MW) sustained; 2 shafts; cp props
Speed, knots: 31
Range, n miles: 4,300 at 20 kt
Complement: 278 (24 officers) (DDG 79-84), 276 (24 officers)
 (DDG 85-102)

Missiles: SLCM: Raytheon Tomahawk Block III and Block IV;
 TERCOM and GPS aided navigation with DSMAC to
 1,800+ km (865+ n miles) at 0.7 Mach; warhead (WDU
 36B) 454 kg.

SAM: Raytheon Standard SM-2 Block III and IVA; command/
 inertial guidance; semi-active radar and IR homing
 to 167 km (90 n miles) at 2 Mach, 2 Lockheed Martin
 Mk 41 Vertical Launch Systems (VLS) for Tomahawk,
 Standard and ASROC VLS; 2 magazines; 32 missile
 tubes forward, 64 aft. 32 Raytheon RIM-162 ESSM
 (4 quad forward, 4 quad aft); semi-active radar
 homing to 18.5 km (10 n miles) at 3.8 Mach,
 warhead 38 kg.

A/S: Loral ASROC VLA; inertial guidance to 1.6-16.6 km
 (1-9 n miles); payload Mk 46 Mod 5 Neartip.

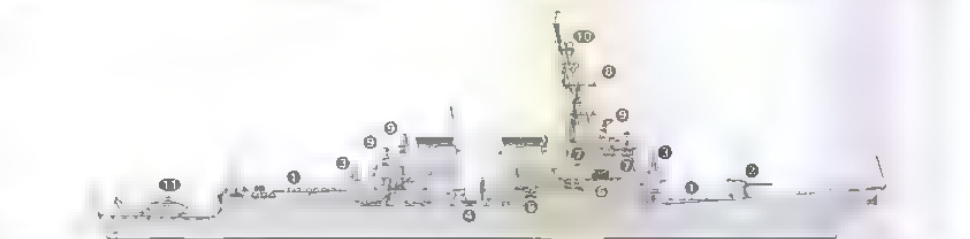
Guns: 1 BAE Systems 5 in (127 mm)/54 Mk 45 Mod 2 (DDG
 79-80); 20 rds/min to 23 km (12.6 n miles); weight of
 shell 32 kg.

**BAE Systems 5 in (127 mm)/52 (DDG 81 onwards); 20
 or 10 rds/min; GPS guidance to 116.7 km (63 n miles);
 warhead 72 bomblets; cap 10 m.**

**2 General Electric/General Dynamics 20 mm/76
 Vulcan Phalanx Mk 15 6-barrelled; 4,500 rds/min
 combined to 1.5 km (DDG 79-84; to be fitted in all other
 units)**

Torpedoes: 6-324 mm Mk 32 Mod 14 (2 triple) tubes
 Alliant Mk 46 Mod 5; anti-submarine; active/passive
 homing to 11 km (5.9 n miles) at 40 kt; warhead 44 kg
 or Alliant/Westinghouse Mk 50; active/passive homing
 to 15 km (8.1 n miles) at 50 kt; warhead 45 kg shaped
 charge

Countermeasures: Decoys: 2 Loral Hyco SRBOC
 6-barrelled fixed Mk 36 Mod 12; Nulka decoy (DDG 91
 onwards); IR flares and chaff to 4 km (2.2 n miles) SLQ-
 25A Nixie; torpedo decoy, NATO Sea Gnat. SLQ-95 AEB.
 SLQ-39 chaff buoy.



ROOSEVELT

(Scale 1 : 1,500), Ian Sturton / 1167179

ESM/ECM: Raytheon SLO-32(V)3/SLY-2; intercept and
 jammer.

CESM: AN/SRS-1A(V) CDF (DDG 79-95), COBLU (DDG 96-
 104), SSEE Increment E (DDG 105).

Combat data systems: TADIX B and TADIL-J. CEC. Links 4A,
 11 and 16. (See Data Systems at front of section.) Link
 22 in due course. Command and Decision (upgrade for
 DDG 91 and following ships)

Weapons control: SWG-4 or SWG-5 Tomahawk WCS Aegis
 multitarget tracking with Mk 99 Mod 3 MFCS and three
 Mk 80 illuminators. Mk 34 GWS (consisting of Mk 160
 computing system and Kollmorgen Mk 46 optronic
 sight), AWCS Mk 116 Mod 7 NFCS.

Radars: Air search/fire control: Lockheed Martin SPY-1D
 (SPY-1D(V) DDG 91 onwards) phased arrays; 3D;
 E/F-band.

Surface search: DRS SPS-67(V)3 (DDG 79-102), SPS-67(V)5
 (DDG 103); G-band.

Navigation: Raytheon SPS-64(V)9 (DDG 79-86, 88), Sperry-
 Marine BME 740 (DDG 87, 89, 112); I-band

Fire control: Three Raytheon AN/SPG-62; I/J-band.

Tacan: AN/URN 25; IFF AIMS Mk XII with AN/LPX-29.

Sonars: Lockheed Martin SQQ-89(V)10 (DDG 79-84);
 SQQ-89(V)14 (DDG 85-90), SQQ-89(V)15 (DDG 91 and
 following); underwater combat system with SQS-53C,
 bow-mounted; active search and attack.

Remote Minehunting System (DDG 91-96).

Helicopters: 2 LAMPS III SH-60R helicopters

Programmes: DDG 79 was authorised in the FY94 budget
 Funding for DDG 80-82 provided in FY95 and DDG 83-84

in FY96 plus partial funding for a third. Balance for DDG
 85 plus DDG 86-88 in FY97 and DDG 89-101 in FY98. On
 6 March 1998, multi-year contract for six ships and one
 option (DDG 89) awarded to Ingalls Shipbuilding and
 contract for six ships awarded to Bath Iron Works. On
 1 August 2002, contract awarded to Bath Iron Works for
 the construction of DDG 102 and on 13 September 2002
 a fixed-price multi-year contract awarded to Bath Iron
 Works (DDGs 104, 106, 108, 109, 111 and 112) and Northrop
 Grumman Ship Systems (DDGs 103, 105, 107, 110) for the
 construction of ten ships. Following the curtailment of
 the DDG 1000 programme on 23 July 2008, an order for
 a further eight DDGs is under consideration.

Modernisation: A mid-life upgrade program is planned.
 The scope of the upgrade is to be included during the
 construction of DDGs 111 and 112 and then retrofitted into
 other DDG Flight IIA ships during two separate overhaul
 periods: the first for engineering control system and the
 second for combat system upgrades.

Structure: The upgrade from Flight II includes two
 hangars for embarked helicopters and an extended fitted
 flight deck at the expense of SQR-19 TACTAS. Vertical
 launchers are increased at each end by three cells. Other
 changes include the Kingfisher minehunting sonar; a
 reconfiguration of the SPY-1D arrays and the inclusion
 of a Track Initiation Processor in the Aegis radar system.
 Use of fibre optic technology should reduce weight and
 improve reliability.

Operational: The helicopter carries Penguin and Hellfire
 missiles. ESSM fired from DDG 86 on 24 July 2002, the
 first to be fired from a USN ship.



McCAMPBELL

10/2008*, Michael Nitz / 1350607



SHOUP

9/2008, Chris Sattler / 1353605



HALSEY

10/2008, Chris Sattler / 1353604



BULKELEY

2/2008, US Navy / 1353604

0 + 2 (1) ZUMWALT (DDG 1000) CLASS (DDGH)

Name	No	Builders	Laid down	Launched	Commissioned
ZUMWALT	DDG 1000	General Dynamics Bath Iron Works	Nov 2010	May 2012	Mar 2014
MICHAEL MANSOOR	DDG 1001	Northrop Grumman Ship Systems	Nov 2011	May 2013	Apr 2015
–	DDG 1002	–	Apr 2012	2013	2015

Displacement, tons: 14,564

Dimensions, feet (metres): 600.0 × 80.7 × 27.5
(182.8 × 24.6 × 8.4)

Main machinery: Integrated Power System (IPS); 2 Main Turbine Generators (MTG); 2 Auxiliary Turbine Generators (ATG); 2 propulsion motors; 104,000 hp (77.5 MW); 2 shafts

Speed, knots: 30

Range, n miles: To be announced

Complement: 142

Missiles: 80 peripheral VLS cells

SLCM: Raytheon Tomahawk Block IV; land attack, TERCOM and GPS aided inertial navigation system with DSMAC to 1,600+ km (865+ n miles) at 0.7 Mach; warhead (WDU-36B) 454 kg.

SAM: Standard SM-2 and Evolved Sea Sparrow.

A/S: Vertical launched ASROC.

Guns: 2–155 mm advanced gun systems capable of firing Long Range Land Attack Projectiles (LRLAP) at ranges over 66 n miles. 2–57 mm close-in guns.

Torpedoes: To be announced.

Countermeasures: ESM, ECM, Torpedo decoys.

Combat data systems: To be announced.

Weapons control: To be announced

Radars: Air/surface search: Dual Band Radar (DBR); Raytheon SPY-3; 3D; I-band; Lockheed Volume Search Radar (VSR); 3D; E/F-band.

Navigation: To be announced.

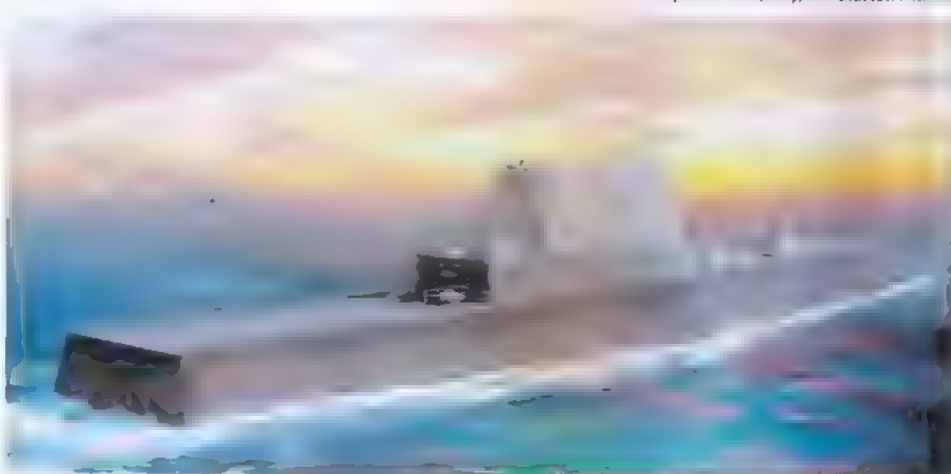
Sonars: Bow-mounted active search and attack. Passive towed array. In Stride Mine Avoidance Sonar (ISMA)

Helicopters: 2 MH-60R or 1 MH-60R and 3 UAVs.

Programmes. The DDG 1000 (formerly DD(X)) programme was initiated in November 2001. Principal roles are sustained operations in the littorals and land-attack. Ten Engineering Development Models (EDMs) have passed Critical Design Review (CDR). Ship design completed CDR in September 2005 and received approval to proceed with Milestone B on 23 November 2005. This authorised commencement of detailed design and construction of the DDG 1000 class. Under the Dual Lead Ships acquisition strategy, detailed design contracts were awarded in August 2006 to Northrop Grumman Ship Systems and General Dynamics Bath Iron Works. Raytheon is the Mission Systems Integrator and BAE Systems provides the gun systems. Construction contracts were awarded

ZUMWALT

(Scale 1 : 1,500), Ian Sturton / 13



ZUMWALT

12/2005, US Navy / 1154036

to the shipyards on 14 February 2008. It was announced on 23 July 2008 that the DDG1000 programme was to be curtailed and confirmed on 18 August 2008 that only three ships are to be built.

Structure: Features of the ship include a wave-piercing 'tumblehome' hull, optimised for stealth. Hull structure and missile cells spread impacts outward to increase survivability and reduce risk of single-hit ship loss. Integrated deckhouse and composite superstructure

encloses masts, sensors and antennas, bridge and exhaust silos. There are two shielded 155 mm Advanced Gun Systems (AGS) and an 80-cell peripheral (port and starboard) Vertical Launch System for both land attack and air defense missiles. An Integrated Power System (IPS), enables power to be distributed to any system as the tactical situation demands. IPS is designed to create sufficient reserve energy to power energy weapons in the future.

FRIGATES

1 + 1 FREEDOM CLASS LITTORAL COMBAT SHIP FLIGHT 0

Name	No	Builders	Laid down	Launched	Commissioned	FS/PA
FREEDOM	LCS 1	Marinette Marine, Wisconsin	2 June 2005	23 Sep 2006	8 Nov 2008	
FORT WORTH	LCS 3	–	2009	2012	2013	PA

Displacement, tons: 3,089 full load

Dimensions, feet (metres): 378.2 × 43.0 × 12.8
(115.3 × 13.1 × 3.9)

Main machinery: CODAG, 2 Rolls Royce MT-30 gas turbines, 96,550 hp (72 MW); 2 Fairbanks Morse Colt-Pielstick 16PA6B diesels; 17,160 hp (12.8 MW); 4 Rolls Royce Kamewa 153SII waterjets

Speed, knots: 45. Range, n miles: 3,500 at 18 kt

Complement: 50

Missiles: 1 Raytheon RAM RIM-116 21-cell Mk 99 launcher; passive IR/anti-radiation homing to 9.6 km (5.2 n miles) at 2.5 Mach; warhead 9.1 kg

Guns: 1 BAE Systems 57 mm/70 Mk 2; 220 rds/min to 17 km (9 n miles); weight of shell 2.4 kg. 4–12.7 mm MGs.

Countermeasures: 2 SKWS/SRBOC decoy launching systems. ESM/ECM.

Combat data systems: COMBATSS-21.

Weapons control: FABADORNA TV/IR tracker and laser range-finder

Radars: Air/surface search. EADS TRS-3D; C-band.

Navigation: I-band.

Fire control: FABADORNA; I-band.

Sonars: To be announced

Helicopters: 2 MH-60 R/S helicopters or 1 MH-60 R/S and 3 Fire Scout VTUAVs.

Programmes: Two industry teams, one led by Lockheed Martin and the other by General Dynamics, were contracted in 2004 to develop designs for a fast, agile and networked surface combatant. In the original procurement programme, it was planned to build a number of each design and left open the option that both designs could proceed into series production. The keys to this approach were a fast building time of two years per ship and a relatively inexpensive cost. A total of 55 ships was proposed. In April 2007, the Navy cancelled its contract with Lockheed Martin for the construction of LCS 3 after negotiations to control cost overruns failed. The second General Dynamics ship (LCS 4) was also cancelled, in November 2007, after similar cost overruns. The funding of three further ships has also been cancelled or re-allocated. In March 2009, the decision to proceed with the construction of one of each LCS variant, re-using previous hull numbers, was announced. Seven mission modules (three mine warfare, two ASW and two ASUW) are being designed/fabricated to be interchangeable on LCS ships.

FREEDOM

(Scale 1 : 1,200), Ian Sturton / 1335278



FREEDOM

7/2006, Lockheed Martin / 1335209

Structure: Semi-planing steel monohull design. Steel hull and aluminium superstructure. The design incorporates a large reconfigurable seaframe to allow rapidly interchangeable mission modules, a flight deck with integrated helicopter launch, recovery and handling system and the capability to launch and recover boats (manned and unmanned) from both the stern and side.

Operational: Concept of operations for LCS includes deployment of two or three-ship team to operate

near shore in support of surface strike groups. Role in homeland defense also likely. Principal capabilities to include shallow-water ASW, mine countermeasures and defence against attacking small boats. LCS ships are to be networked to share tactical information with other units. Freedom began sea trials on 28 July 2008. The trials of ship systems and weapons are to be conducted from Little Creek, VA, during 2009 before deploying to its homeport of San Diego in 2010.



FREEDOM

7/2008*, Lockheed Martin / 1335207



FREEDOM

7/2008*, Lockheed Martin / 1335208

30 OLIVER HAZARD PERRY CLASS (FFH)

Name	No	Builders	Laid down	Launched	Commissioned	F/S
McINERNEY	FFG 8	Bath Iron Works	7 Nov 1977	4 Nov 1978	15 Dec 1979	AA
BOONE	FFG 28	Todd Shipyards, Seattle	27 Mar 1979	16 Jan 1980	15 May 1982	NRF
STEPHEN W GROVES	FFG 29	Bath Iron Works	16 Sep 1980	4 Apr 1981	17 Apr 1982	NRF
JOHN L HALL	FFG 32	Bath Iron Works	5 Jan 1981	24 July 1981	26 June 1982	AA
JARRETT	FFG 33	Todd Shipyards, San Pedro	11 Feb 1981	17 Oct 1981	2 July 1983	PA
UNDERWOOD	FFG 36	Bath Iron Works	3 Aug 1981	6 Feb 1982	29 Jan 1983	AA
CROMMELIN	FFG 37	Todd Shipyards, Seattle	30 May 1980	1 July 1981	18 June 1983	NRF
CURTS	FFG 38	Todd Shipyards, San Pedro	1 July 1981	6 Mar 1982	8 Oct 1983	NRF
DOYLE	FFG 39	Bath Iron Works	16 Nov 1981	22 May 1982	21 May 1983	NRF
HALYBURTON	FFG 40	Todd Shipyards, Seattle	26 Sep 1980	15 Oct 1981	7 Jan 1984	AA
McCLUSKY	FFG 41	Todd Shipyards, San Pedro	21 Oct 1981	18 Sep 1982	10 Dec 1983	NRF
KLAKRING	FFG 42	Bath Iron Works	19 Feb 1982	18 Sep 1982	20 Aug 1983	NRF
THACH	FFG 43	Todd Shipyards, San Pedro	10 Mar 1982	18 Dec 1982	17 Mar 1984	PA
De WERT	FFG 45	Bath Iron Works	14 June 1982	18 Dec 1982	19 Nov 1983	AA
RENTZ	FFG 46	Todd Shipyards, San Pedro	18 Sep 1982	16 July 1983	30 June 1984	PA
NICHOLAS	FFG 47	Bath Iron Works	27 Sep 1982	23 Apr 1983	10 Mar 1984	AA
VANDEGRIFT	FFG 48	Todd Shipyards, Seattle	13 Oct 1981	15 Oct 1982	24 Nov 1984	PA
ROBERT G BRADLEY	FFG 49	Bath Iron Works	28 Dec 1982	13 Aug 1983	11 Aug 1984	AA
TAYLOR	FFG 50	Bath Iron Works	5 May 1983	5 Nov 1983	1 Dec 1984	AA
GARY	FFG 51	Todd Shipyards, San Pedro	18 Dec 1982	19 Nov 1983	17 Nov 1984	PA
CARR	FFG 52	Todd Shipyards, Seattle	26 Mar 1982	26 Feb 1983	27 July 1985	AA
HAWES	FFG 53	Bath Iron Works	22 Aug 1983	18 Feb 1984	9 Feb 1985	AA
FORD	FFG 54	Todd Shipyards, San Pedro	16 July 1983	23 June 1984	29 June 1985	PA
ELROD	FFG 55	Bath Iron Works	21 Nov 1983	12 May 1984	8 June 1985	AA
SIMPSON	FFG 56	Bath Iron Works	27 Feb 1984	21 Aug 1984	8 Nov 1985	NRF
REUBEN JAMES	FFG 57	Todd Shipyards, San Pedro	19 Nov 1983	8 Feb 1985	22 Mar 1986	PA
SAMUEL B ROBERTS	FFG 58	Bath Iron Works	21 May 1984	8 Dec 1984	12 Apr 1986	AA
KAUFFMAN	FFG 59	Bath Iron Works	8 Apr 1985	29 Mar 1986	21 Feb 1987	AA
RODNEY M DAVIS	FFG 60	Todd Shipyards, San Pedro	8 Feb 1985	11 Jan 1986	9 May 1987	NRF
INGRAHAM	FFG 61	Todd Shipyards, San Pedro	30 Mar 1987	25 June 1988	5 Aug 1989	PA

Displacement, tons: 2,750 light; 3,638 (FFG 33), 4,100 full load
 Dimensions, feet (metres): 445 (FFG 33), 463 x 45 x 14.8;
 24.5 (sonar)
 (135.6; 138.1 x 13.7 x 4.5; 7.5)

Main machinery: 2 GE LM 2500 gas turbines; 41,000 hp
 (30.59 MW) sustained; 1 shaft; cp prop
 2 auxiliary retractable props; 650 hp (484 kW)
 Speed, knots: 29 Range, n miles, 4,500 at 20 kt
 Complement: 200 (15 officers) including 19 aircrew

Guns: 1 OTO Melara 3 in (76 mm)/62 Mk 75 ●; 85 rds/min to
 16 km (8.7 n miles) anti-surface; 12 km (6.6 n miles) anti-
 aircraft; weight of shell 6 kg

1 General Electric/General Dynamics 20 mm/76
 6-barrelled Mk 15 Block 1B Vulcan Phalanx ●; 4,500 rds/min
 combined to 15 km
 2 Boeing 25 mm Mk 38 guns can be fitted amidships.
 4-12 7 mm MGs.

Torpedoes: 6 324 mm Mk 32 (2 triple) tubes ●; 24 Honeywell
 Mk 46 Mod 5; anti-submarine; active/passive homing
 to 11 km (5.9 n miles); at 40 kt; warhead 44 kg or Allied/
 Westinghouse Mk 50; active/passive homing to 15 km
 (8.1 n miles) at 50 kt; warhead 45 kg shaped charge.

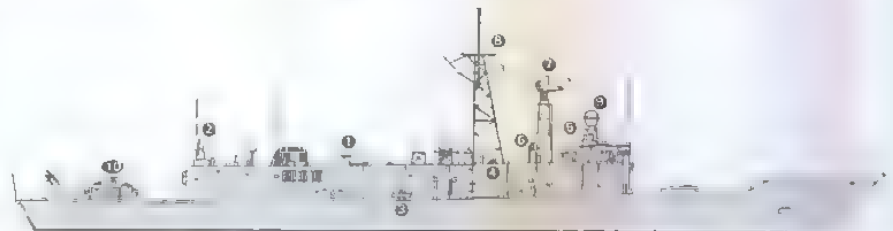
Countermeasures: Decoys: 2 Loral Hycor SRBOC 6-barrelled
 fixed Mk 36 ●; IR flares and chaff to 4 km (2.2 n miles).
 Mk 34 launcher for Mk 53 Nulka decoys.

T-Mk 6 Fanfare/SLQ-25 Nixie; torpedo decoy.
 ESM/ECM: SLQ-32(V)2 ●; radar warning. Sidekick
 modification adds jammer and deception system.

Combat data systems: NTDS with Link 11 and 14. Link
 14 only (NRF ships). SATCOM ● SRR-1, WSC-3 (UHF)
 SQO-28 for LAMPS III data link.

Weapons control: Mk 92 (Mod 4 or Mod 6 (FFG 61 and
 during modernisation in 11 others of the class)), WCS
 with CAS (Combined Antenna System). The Mk 92 is the
 US version of the Signaal WM28 system. SYS 2(V)2 IADT
 (FFG 61 and in 11 others of the class - see Modernisation).
 SRQ-4 for LAMPS III.

Radars: Air search: Raytheon SPS 49(V)4 or 5 (FFG 61 and
 during modernisation of others) ●; C/D-band; range
 457 km (250 n miles).



RENTZ

(Scale 1 : 1,200, Ian Sturton / Osprey)

Surface search: ISC Cardion SPS-55 ●; I-band.

Fire control: Sperry Mk 92 (Signaal WM28) ●; I/J-band.

Navigation: Furuno; I-band.

Tacan: URN 25. IFF Mk XII AIMS UPX-29.

Sonars: SQO 89(V)2 (Raytheon SQS 56 and Gould SQR 19),
 hull-mounted active search and attack; medium frequency
 and passive towed array; very low frequency.

Helicopters: 2 SH-60B LAMPS III ● in Flight III/IV and
 certified ships

Programmes: The lead ship was authorised in FY73.

Modernisation: To accommodate the helicopter landing
 system (RAST), the overall length of the ship was
 increased by 8 ft (2.4 m) by increasing the angle of the
 ship's transom, between the waterline and the fantail,
 from virtually straight up to a 45° angle outwards.
 LAMPS III support facilities and RAST were fitted in
 all ships authorised from FFG 36 onwards, during
 construction and have been backfitted to all. FFG 61
 has much improved Combat Data and Fire-Control
 equipment which has been retrofitted in FFG 36, 47,
 48, 50-56, 57 and 59 SQS-56 is modified for mine
 detection. Block 1B Phalanx fitted first in FFG 36 in
 October 1999 Engineering and platform improvements
 programme initiated in 2003. Upgrades include new

diesel generators, the addition of reverse osmosis
 plants, COTS slewing arm davits, and self-contained
 breathing apparatus. Mk 13 launchers for Standard SM 1
 and Harpoon missiles have been removed. Combat
 system improvements include the installation of Mk 53
 Nulka decoys and Mk 15 Block 1B gun with surface mode
 capability.

Structure: The original single hangar has been changed to
 two adjacent hangars. Provided with 19 mm Kevlar
 armour protection over vital spaces. 25 mm guns can be
 fitted for some operational deployments.

Operational: Ships of this class were the first Navy
 experience in implementing a design-to-cost acquisition
 concept. On 14 April 1988, Samuel B Roberts (FFG 58),
 was mined in the Gulf but was subsequently repaired.
 One of the class is based at Yokosuka. Nine ships are
 assigned to the Combatant Naval Reserve Force. FFGs
 28, 29 and 38 are commanded by full-time reserve
 officers. SAM and SSM systems removed by the end of
 FY04.

Sales: Australia bought four (FFG 17, 18, 35 and 44) of
 the class and has built two more. Spain has six and
 Taiwan eight. Transfers include eight to Turkey plus one
 for spares, four to Egypt, one to Bahrain and two to
 Poland.



RODNEY M DAVIS

8/2008*, Michael Nitz, 1353603



CURTS

8/2008*, Shaun Jones / 1353502



NICHOLAS

5/2008*, Derek Fox / 1353565



THACH

10/2007, Michael Nitz / 1353601

0 + 2 INDEPENDENCE CLASS LITTORAL COMBAT SHIP FLIGHT 0

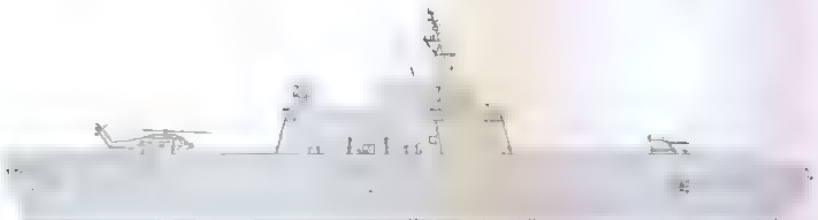
Name	No	Builders	Laid down	Launched	Commissioned	F/S
INDEPENDENCE	LCS 2	Austal USA, Mobile, Alabama	19 Jan 2006	4 Oct 2008	2009	Bld/PA
CORONADO	LCS 4	-	2009	2012	2013	

Displacement, tons: 2,790 full load
Dimensions, feet (metres): 417.3 x 103.8 x 14.8
 (127.2 x 31.6 x 4.5)
Main machinery: CODAG: 2 gas turbines, 2 diesels;
 4 steerable waterjets; 1 steerable thruster
Speed, knots: 40
Range, n miles: 3,500 at 18 kt
Complement: 40

Missiles: 1 Raytheon RAM RIM-116 21-cell Mk 49 launcher; passive IR/anti-radiation homing to 9.6 km (5.2 n miles) at 2.5 Mach; warhead 9.1 kg.
Guns: 1 BAE Systems 57 mm/70 Mk 2, 220 rds/min to 17 km (9 n miles); weight of shell 2.4 kg. 4-12.7mm MGs
Countermeasures: Decoys: 4 Loral/Hycor SRBOC 6-barrelled fixed launchers. ESM/ECM
Combat data systems: Northrop Grumman Electronic Systems Integrated Combat Management System (ICMS).
Weapons control: Seastar Safire III optronic director.
Raders: Air/surface search; Ericson Sea Giraffe; G/H-band.
Navigation: Sperry Bridgemaster; I-band.
Fire control: To be announced.
Sonars: To be announced.

Helicopters: 1 MH-60R/S and 3 VTUAV

Programmes: Two industry teams, one led by Lockheed Martin and the other by General Dynamics, were contracted in 2004 to develop designs for a fast, agile



LCS 2

(Scale 1 : 1,200), Ian Sturton / 112385

and networked surface combatant. In the original procurement programme, it was planned to build a number of each design and left open the option that both designs could proceed into series production. The keys to this approach were a fast building time of two years per ship and a relatively inexpensive cost. A total of 55 ships was proposed. In April 2007, the Navy cancelled its contract with Lockheed Martin for the construction of LCS 3 after negotiations to control cost overruns failed. The second General Dynamics ship (LCS 4) was also cancelled, in November 2007, after similar cost overruns. The funding of three further ships has been cancelled or re-allocated. In March 2009, the decision to proceed with the construction of one of each LCS variant, re-using previous hull numbers, was announced. Seven mission modules (three mine warfare, two ASW and two ASUW)

are being designed/fabricated to be interchangeable on LCS ships.
Structure: Trimaran hullform based on fast commercial ferry design for Fred Olsen Lines. Aluminium construction. Large flight deck capable of operating heavy-lift helicopter. Stern launch of boats (manned and unmanned). Side-ramp Ro-Ro capability. Reconfigurable seaframe to allow rapidly interchangeable mission modules.
Operational: Concept of operations for LCS includes deployment of two or three-ship team to operate near shore in support of surface strike groups. Role in homeland defense also likely. Principal capabilities to include shallow-water ASW, mine countermeasures and defence against attacking small boats. To be based in San Diego.



INDEPENDENCE

10/2008*, Austal Ships / 1298740

SHIPBORNE AIRCRAFT

Notes: (1) Numbers given are for 1 January 2009.

(2) **Joint Strike Fighter:** The JSF F-35 Lightning II is a family of next-generation strike aircraft combining stealth and enhanced sensors. The F-35C Carrier Variant (CV) will replace F/A-18A/C and complement the F/A-18E/F fleet. Marine Corps F-35B Short Take Off and Vertical Landing (STOVL) variant are to replace USMC AV-8B and F/A-18A/C/D. F-35 variants will share a high level of commonality. Mission systems avionics suite designed for interoperability with coalition partners. The contract for the Systems Development and Demonstration (SDD) phase was awarded on 26 October 2001 to the industry team of Lockheed Martin, Northrop Grumman and BAE Systems. International participants in the SDD phase were Australia, Canada, Denmark, Italy, Netherlands, Norway, Turkey and the UK. All of these had, by early 2007, signed MOUs for the subsequent Production, Sustainment, and Follow-on Development (PSFD) phase. Security Cooperation Partnership MOUs have been established with Israel and Singapore. Engine development is being undertaken by Pratt and Whitney and General Electric/Rolls Royce.

(3) **Tacair Integration:** Navy/Marine Corps Tactical Aviation Integration (TAI) plan was approved in 2002 to optimize combat capability and efficiencies by relying on fewer but more capable aircraft. As part of the TAI, the Navy/Marine Corps began integrating Marine Corps squadrons into carrier air wings and Navy squadrons into the Marine Corps' Unit Deployment Plan (UDP).

(4) **Capabilities Based Scheduling (CBS):** This scheduling mechanism is designed to source tactical aviation (TACAIR) requirements while promoting goals of TAI. Under CBS, all Department of the Navy (DON) TACAIR squadrons are available to fill land or sea-based requirements. Objective is to fill all operational and training requirements with the most appropriate unit while balancing operational tempo across the force. CBS furthers integration to a fully interdependent DON TACAIR force in which VMFA and VFA squadrons routinely deploy as part of carrier wings and land-based expeditionary operations. CBS flexes TACAIR response to global sourcing requirements.

(5) **Global Force Management (GFM):** This scheduling management process is designed to fill tactical aviation (TACAIR) operational and training requirements with the most appropriate unit while balancing unit operational tempo across the force. This process furthers TACAIR integration, leading to a fully independent DON TACAIR force in which VMFA and VFA Squadrons routinely deploy as part of CVW and land-based expeditionary operations.

(6) **CH-53K:** A contract for the System Development and Demonstration of the CH-53K helicopter was awarded to Sikorsky on 3 January 2006. The aircraft is to replace the CH-53E helicopter, currently in service, and the USMC expects to buy 200 aircraft. The first test aircraft is scheduled to be delivered in 2012 with a view to achieving an initial operating capability in 2016.

Numbers/Type: 103/26/363/135 McDonnell Douglas F/A-18A/F/A-18B/F/A-18C/F/A-18D Hornet.
Operational speed: 1,032 kt (1,910 km/h).
Service ceiling: 50,000 ft (15,240 m).
Range: 1,000 n miles (1,850 km).

Role/Weapon systems: Single-seat (F/A-18A/C) and two-seat (F/A-18B/D) strike interdictor (VFA) for USN/USMC air groups. Some are used for EW support with ALQ-167 jammers. Sensors: ESM; Litton ALR 67(V)2, ALQ 165 ASPJ jammer (18C/D), ALQ-126B jammer, APG-65 or APG-73 radar, AAS-38 FLIR, ASQ 228 ATFLIR, AN/AAQ-28 Litening FLIR (USMC only), AAR-50 Nav FLIR, ASQ-173 tracker. Weapons: ASV: four Harpoon or SLAM (ER) or AGM-88 HARM missiles. AGM-65 Maverick. Strike; up to 7.7 tons of bombs (or LGM). AD; one 20 mm Vulcan cannon, nine AIM-120/AIM-7/AIM-9 missiles. Typical ASV load might include 20 mm gun, 7.7 ton bombs including AGM 154A JSOW, two AIM-9 missiles. Typical AAW load might include 20 mm gun, four AIM-7 or AIM-120, two AIM 9 missiles



F/A-18C

11/2008*, US Navy / 1353600

Numbers/Type: 159/196 Boeing F/A-18E/F/A-18F Super Hornet.

Operational speed: 930 kt (1,721 km/h).

Service ceiling: 50,000 ft (15,240 m).

Range: 1,320 n miles (2,376 km).

Role/Weapon systems: Single-seat (F/A-18E) and two-seat (F/A-18F) strike interdictor for USN. First one rolled out in September 1995. First 12 production aircraft ordered in FY97. First sea trials January 1997. Entered operational service November 1999. Initial deployment to CVN 72 in July 2002. 200th aircraft delivered in August 2004. The balance of 506 aircraft to be delivered by 2014. Sensors: APG-73 radar, APG-79 AESA radar, ALR-67(V)3 RWR. ECM: ALQ-165 ASPJ, ALQ-214 RFCM, towed decoys. Weapons: 11 wing stations for 8,680 kg of weapons (same armament as C/D) plus 20 mm guns.



F/A-18F

10/2007, Michael Nitz / 1353599

Numbers/Type: 41/89/16 Boeing/British Aerospace AV-8B Harrier II/AV-8B II Plus Harrier II/TAV 8B Harrier II.

Operational speed: 585 kt (1,083 km/h).

Service ceiling: 50,000 ft (15,240 m).

Range: 800 n miles (1,480 km).

Role/Weapon systems: Attack and destroy surface and air targets in support of USMC. Operational since 1985, a total of 91 AV-8B II Plus conversions completed in 2003. Sensors: Litening II targeting pod, Navigation FLIR, moving map, AN/AVS-9 night vision goggles, laser spot tracker and ECM, Litton ALR-67 ESM, APG 65 radar (AV-8B II Plus). Weapons: Strike; 500 and 1,000 lb general purpose bombs, Paveway II LGB, Joint Direct Attack Munition, Dual Mode Guide Bomb, AGM-65 Maverick, Cluster Bomb Units, 300—25 mm rounds, 2.75 in and 5.00 in rockets. Self-defence: one GAU-12/U 25 mm cannon and four AIM-9M Sidewinder



AV-8B

4/2005, US Navy / 1154041

Numbers/Type: 92 Grumman EA-6B Prowler

Operational speed: 566 kt (1,048 km/h).

Service ceiling: 41,200 ft (12,550 m).

Range: 955 n miles (1,769 km).

Role/Weapon systems: EW and jamming aircraft (VAQ) to provide electronic attack in support of strikes and armed reconnaissance. Block 89A avionics/computer upgrades first delivered 2001. ICAP III receiver system upgrade first delivered in 2005. Sensors: APS-130 radar, ALQ-99, ALQ-218 (ICAP III), USQ-113 communication jammer. Weapons: AGM-88 HARM anti-radiation missile capable.



EA-6B

12/2008*, US Navy / 1353598

Numbers/Type: 66 Grumman E-2C Hawkeye

Operational speed: 323 kt (598 km/h).

Service ceiling: 37,000 ft (11,278 m).

Range: 1,540 n miles (2,852 km).

Role/Weapon systems: Carrier-borne multimission aircraft with primary AEW role and additional strike control, area surveillance, SAR and battle-management roles. Current configurations include 14 Group II aircraft, 23 Group II NAV upgrades, five Group II MCS/ACIS and 24 HE2000. All variants have APS-145 radar and Link 16. Sensors: ESM. ALR-73 or ALQ-217 PDS; Airborne tactical data system with Links 4A, 11 or 16; CEC from 2000. APS-145 radar; Mk XII IFF. Weapons: Unarmed.



E-2C

9/2008*, Hachiro Nakai / 1353565

934 US/Shipborne aircraft

Numbers/Type: 84/9 Boeing MV-22/CV-22 Osprey.
Operational speed: 255 kt (472 km/h).
Service ceiling: 25,000 ft (7,620 m).
Range: 400 n miles (740 km).

Role/Weapon systems: Replacement for legacy assault/support helicopter (CH-46E) for Marines (MV), projected rescue and resupply for the Navy (Navy MV), and special operations for USAF SOCOM (CV). Three active MV-22 squadrons: VMM-263, 162 and 265. In addition, one squadron is used for testing and evaluation: VMX 22 and one FRS: VMMT-204. Final operational evaluation led to full rate production decision in September 2005. There were 16 aircraft procured in FY07. Annual production expected to increase to 36. MV-22 IOC was in July 2007. CV-22 IOC in 2009. Full fleet of 360 MV, 50 CV and 48 Navy MV projected. Sensors: AAR-47 ESM; AN/ALQ-211 Suite of Integrated RF CounterMeasures (SIRFC) (CV-22 only), AN/AAQ-24(V) Nemesis Directional Infra-Red CounterMeasures (DIRCM) (CV-22 only); AN/AAQ-27 FLIR; APR 39A(V)2 (MV-22 only) Weapons: M-240D 7.62 mm machine gun.



MV-22B

10/2006, US Navy / 116/811

Numbers/Type: 147 Sikorsky SH-60B Seahawk (LAMPS Mk III).
Operational speed: 145 kt (268 km/h).
Service ceiling: 10,000 ft (3,050 m).
Range: 450 n miles (833 km).

Role/Weapon systems: LAMPS Mk III is airborne platform for ASW and ASUW: operated from cruisers, destroyers and frigates. First deployed in 1984. To be replaced by MH-60R. Sensors: APS-124 search radar, AAS-44 FLIR with laser designator, ASQ-81(V) MAD, 25 sonobuoys, ALQ-142 ESM, AAR-47 MWR, ALQ-144 IRCM suppressor and ALE-39 CMDS. UYS-1 Acoustic processor. Weapons: ASW: three Mk 46 or Mk 50 torpedoes. ASUW: one 7.62 mm MG or 12.7 mm MG, four AGM-114B/K Hellfire missile.



SH-60B

9/2006, US Navy / 1353596

Numbers/Type: 23 Sikorsky MH-60R Seahawk.
Operational speed: 145 kt (268 km/h).
Service ceiling: 10,000 ft (3,050 m).
Range: 450 n miles (833 km).

Role/Weapon systems: The plan is to replace the SH-60B/F fleet with the MH-60R which is to be the future tactical helicopter operated from carriers, cruisers, destroyers and frigates. The first production aircraft was flown on 28 July 2005 and the MH-60R entered front-line service in 2006. Sensors: APS-147 long-range search radar with ISAR, ALQ-210 ESM, AQS-22 dipping sonar, acoustic processor, Raytheon AAS-44 FLIR with laser designator, Hawklark sensor datalink, AAR-47 MWR, ALE-47 CMDS, and ALQ-144 IRCM Weapons: ASW: three Mk 46/50 torpedoes. ASUW: four AGM-114B/K Hellfire missiles, one 7.62 mm MG or 12.7 mm MG. Pre-planned Product Improvements which are scheduled to be fielded incrementally from 2006 to 2009, will upgrade the aircraft with the AAS-44 3rd Gen multi-spectral FLIR, including Low Light Camera, CDL-N Ku-band sensor datalink, Link 16, fourth weapons station for eight AGM-114s or four torpedoes and ability to fire Mk 54 torpedoes.



MH-60R

10/2007, Michael Nitz / 1353595

Numbers/Type: 70 Sikorsky SH-60F Seahawk (CV).
Operational speed: 145 kt (268 km/h).
Service ceiling: 10,000 ft (3,050 m).
Range: 600 n miles (1,111 km).

Role/Weapon systems: Derivation of SH-60B that replaced SH-3H Sea King to provide close-in ASW protection to Carrier Battle Groups. First deployed in *Nimitz* 1991 To be replaced by MH-60R. Sonar: AQS-13F dipping sonar; ASQ-81 (V) MAD; UYS-2 acoustic processor; 14 sonobuoys. Weapons: ASW: three Mk 46/54 torpedoes. ASUW: One GAU 16 12.7 mm MG or one M 240 7.62 mm MG



SH-60F

10/2006, Michael Nitz / 130199

Numbers/Type: 36 Sikorsky HH-60H Seahawk.
Operational speed: 147 kt (272 km/h).
Service ceiling: 10,000 ft (3,050 m).
Range: 500 n miles (926 km).

Role/Weapon systems: Strike, special warfare support and SAR derivative (HCS) of the SH-60F To be replaced by MH-60S. Sensors: AAS-44 FLIR with laser designator, APR 39A RWR, AVR-2 LWR and AAR 47 MWR, ALE-47 CMDS, ALQ-144 IRCM Weapons: ASW: Hellfire AGM-114B/K; one GAU-16 12.7 mm MG or one M-240 7.62 mm MG. Can deploy eight SEAL to a range of 200 n miles.



HH-60H

7/2007, Mick Prandergast / 130199

Numbers/Type: 123 Sikorsky MH-60S Seahawk
Operational speed: 154 kt (284 km/h).
Service ceiling: 10,000 ft (3,050 m).
Range: 420 n miles (777 km).

Role/Weapon systems: The MH-60S replaced the CH-46D in the Combat Support (HC) mission. Mission areas include vertical replenishment, vertical onboard delivery, day-night amphibious search and rescue, and special warfare support. Sensors: AAS 44 FLIR with laser designator, AAR-47 MWR, APR-39 RWR, ALE-47 CMDS, and ALQ-144 IRCM Weapons: eight AGM-114B/K Hellfire missiles, two 7.62 mm or two 12.7 mm MGs Organic Airborne Mine Countermeasures capabilities are scheduled for introduction by September 2010. Sensors: AN/AQS-20A Sonar Mine Detection Set, AN/AES 1 Airborne Laser Mine Detection System, Mine Neutralization Systems: Airborne Mine Neutralization System, AN/ALQ-220 Organic & Surface Influence Sweep, and AN/AWS 2 Rapid Airborne Mine Clearance System.



MH-60S

10/2007, Michael Nitz / 135194

Numbers/Type: 200 Boeing CH-46F Sea Knight.
Operational speed: 137 kt (254 km/h).
Service ceiling: 8,500 ft (2,590 m).
Range: 180 n miles (338 km).

Role/Weapon systems: Support/assault (HMM) for 18 Marines. To be replaced by V-22 in due course. Can lift 1.3 or 4.5 tons in a cargo net or sling. Sensors: None. Weapons: Unarmed.



CH-46E

10/2006, US Navy / 135383

Numbers/Type: 34 Sikorsky CH-53D Sea Stallion.

Operational speed: 130 kt (240 km/h).

Service ceiling: 12,540 ft (3,822 m).

Range: 578 n miles (1,070 km).

Role/Weapon systems: Assault, support and transport helicopter; can carry 32 Marines, 24 litters or 8,000 lb (3,570 kg). Sensors: None. Weapons: Up to three 12.7 mm machine guns.



CH-53D

8/2008*, Michael Nitz / 135358/

Numbers/Type: 152 Sikorsky CH-53E Super Stallion

Operational speed: 150 kt (278 km/h).

Service ceiling: 18,500 ft (5,638 m).

Range: 480 n miles (888 km).

Role/Weapon systems: Upgraded, three-engined version of Sea Stallion for USMC heavy lift mission. Carries up to 32 Marines, 24 litters or 36,000 lb (16,329 kg). Sensors: AN/AAQ-29A FLIR. Weapons: Up to three 12.7 mm machine guns.



CH-53E

11/2008*, US Navy / 135359/

Numbers/Type: 28 Sikorsky MH-53E Sea Dragon

Operational speed: 150 kt (278 km/h).

Service ceiling: 10,000 ft (3,048 m).

Range: 1,000 n miles (1,850 km).

Role/Weapon systems: Three-engined AMCM helicopter (HM) similar to Super Stallion; tows ALQ-166 Mod 4 MCM sweep equipment; self-deployed if necessary. Sensors: Northrop Grumman 24A side-scan sonar. Weapons: Two 12.7 mm guns for self-defence.



MH-53E

5/2006, Guy Toremans / 1167614

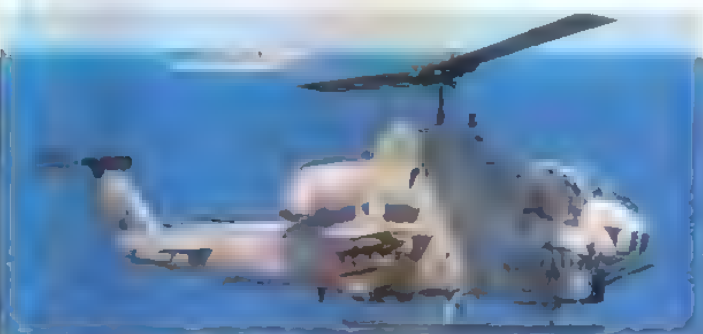
Numbers/Type: 163/6 Bell AH-1W/AH-1Z Super Cobra

Operational speed: 135 kt (250 km/h).

Service ceiling: 10,000 ft (3,048 m).

Range: 260 n miles (AH-1W); 360 n miles (AH-1Z) (481; 666 km).

Role/Weapon systems: Close air support helicopter (HMLA) with own air-to-air capability. AH-1Z is four-bladed rotor upgrade to improve speed, range and lift. Remanufacture of AH-1W features glass cockpit, composite blades, new engines and gearboxes. To enter service in 2011. Sensors: Target Sight System (laser and FLIR targeting sensor). Weapons: Strike/assault; one triple 20 mm cannon, 16 Hellfire missiles and gun. AAW: two AIM-9M Sidewinder missiles.



AH-1W

8/2005, US Navy / 1154063

Numbers/Type: 12/86/15 Bell, HH-1N/UH-1N/UH-1Y Huey.

Operational speed: 107 kt (1N); 153 kt (1Y) (198, 283 km/h).

Service ceiling: 10,000 ft (3,048 m).

Range: 150 n miles (1N), 308 n miles (1Y) (278; 567 km).

Role/Weapon systems: HH-1N is SAR, training, support and logistics helicopter for USN/USMC operations ashore. Can carry eight Marines. UH-1N is USMC Light Utility platform for all-weather assault, transport, airborne command and control, armed reconnaissance and SAR. Can carry eight marines. Four-bladed upgrade being fitted from 2004 to improve speed, range and lift. UH-1Y features glass cockpit, composite blades and new engines gearboxes. Initial operating capability achieved in August 2008. Sensors: BRITE Star FLIR. Weapons: Can be armed with 12.7 mm or 7.62 mm machine guns and 2.75 in rockets.



UH-1N

5/1999, A Sharma / 0084120

Numbers/Type: 16 EA-18G Growler.

Operational speed: 930 kt (1,721 km/h).

Service ceiling: 50,000 ft (15,240 m)

Range: 1,320 n miles (2,376 km).

Role/Weapon systems: Electronic Attack (EA) and Suppression of Enemy Air Defences (SEAD) aircraft to start replacing the EA-6B Prowler from 2009. First production aircraft based on F/A-18E/F handed over on 24 September 2007. All 10 EA-6B Prowler squadrons to be converted to EA-18G by 2013. Sensors: APG-79 AESA radar; ALQ-99 jamming pods; ALQ-218 receivers; ALQ-227 communication countermeasures. Weapons: AGM-88 HARM, AIM-120C AMRAAM



EA-18G

10/2008*, US Navy / 135359/

Numbers/Type: 2 Northrop Grumman E-2D Advanced Hawkeye

Operational speed: 323 kt (598 km/h).

Service ceiling: 37,000 ft (11,278 m).

Range: 1,540 n miles (2,852 km).

Role/Weapon systems: Advanced Hawkeye uses E-2C 2000 configuration as a baseline but features a new radar and upgraded systems. Key objectives are to improve battle space target detection and situational awareness, support of Theatre Air and Missile Defense (TAMD) operations, and improved operational availability. Pilot production began in 2008 and low-rate initial production in 2009. Production deliveries are to begin in 2010 and a total of 75 aircraft is planned by 2022. Sensors: ADS-18 ESA radar. ESM ALQ-217 PDS; airborne tactical data system with Links 11 and 16 and CEC, IFF Mark XII. Weapons: unarmed.



E-2D

8/2007, Northrop Grumman / 1336041

Numbers/Type: 35 Northrop Grumman C-2A Greyhound

Operational speed: 300 kt (555 km/h).

Service ceiling: 31,000 ft (948 m).

Range: 1,400 n miles (2,592 km).

Role/Weapon systems: Twin turbo-prop COD (Carrier Onboard Delivery) transport for high-priority cargo and passengers to and from aircraft carriers. Mission includes airlift and airdrop of special operating forces and airdrops for search and rescue. Maximum weight for payload and route support equipment is 10,000 lb and 26 passengers. First of C-2A follow-on aircraft planned to be delivered in 2020 and the fleet to be replaced by 2030. Weapons: unarmed.



C-2A

9/2008*, Hachiro Nakai / 135356/

LAND-BASED MARITIME AIRCRAFT

Notes: (1) There are also 32/12 Lockheed KC-130F/R Hercules tankers. (2) Replacement of the EP-3Aries fleet is under consideration. The EPX programme is for a replacement capability to enter service in about 2019. Contract refinement contracts were awarded to Boeing, Lockheed Martin and Northrop Grumman on 6 February 2008. A contractor for the Development and Demonstration phase is expected to be selected in 2012.

Numbers/Type: 12 Lockheed EP-3E Aries.
Operational speed: 411 kt (761 km/h).
Service ceiling: 28,300 ft (8,625 m).
Range: 2,380 n miles (4,407 km).

Role/Weapon systems: Multi-intelligence, electronic warfare and signals intelligence gathering aircraft (VQ). A package of airframe and sensor upgrades is to be implemented from 2010 to extend life to about 2020. Sensors: EW equipment including AN/ALR-60, AN/ALQ-76, AN/A-Q-78, AN/ALQ-108, AN/ASQ-114 and AN/AAS-52. Weapons: Unarmed.



EP-3E 10/2003, Paul Jackson / 0110197

Numbers/Type: 161 Lockheed P-3C Orion.
Operational speed: 411 kt (761 km/h).
Service ceiling: 28,300 ft (8,625 m).
Range: 2,380 n miles (4,407 km).

Role/Weapon systems: Of 161 total aircraft, 39 grounded in 2007 due to structural fatigue problems. Repairs likely to take 2 years. Twelve active squadrons. Other variants include NP-3C and NP-3D research and development aircraft. Primary ASW/ASUW; mission aircraft include Update III, Block Mod Upgrade (BMUP) and ASuW Improvement Program (AIP) configurations. Sensors (Update III/BMUP): APS-115 radar, ASQ-81 MAD, USQ-78/USQ-78B acoustic suite, 84 sonobuoys, AAS-36 FLIR and ALR-66B ESM. ASUW Improvement Program (AIP) aircraft employ the APS-137DIV15 ISAR/SAR radar, ASQ-81 MAD, ASX-4 Electro-Optics, ALR-95 ESM, USQ-78/78A/78B acoustics suite, OASIS III/OTCIXS communications suite, SATCOM and AAR 47 and ALE 47 chaff/IR dispenser. Weapons: ASW; Mk 46/50 torpedoes or depth bombs, ASUW; AGM-84C Harpoon, AGM-65F Maverick, AGM-84E SLAM-ER, Mk 52/56/62/63/85 mines, Mk 82 series bombs, and Mk 20 Rockeyes. Counter-Drug Upgrade (CDU) aircraft employ APG-66 air-to-air radar and AVX-1 Electro-Optics.



P-3C 10/2007, Michael Nitz / 1353580

Numbers/Type: Boeing P-8A Poseidon.
Operational speed: 490 kt (907 km/h).
Service ceiling: 41,000 ft (12,500 m).
Range: 1,380 n miles (2,555 km).

Role/Weapon systems: Contract for MMA System Development and Demonstration (SDD) awarded 14 June 2004. To replace fleet of P-3C aircraft. Design based on Boeing 737-800ERX. Crew of nine. First delivery in April 2009. To enter operational service in 2013. A total of 117 aircraft is planned. Sensors: To be equipped with modern ASW, ASUW and intelligence, surveillance and reconnaissance (ISR) sensors. Weapons: To be announced.



BOEING P-8A Poseidon 6/2004, US Navy / 1043653

Numbers/Type: 16 Boeing E-6B Mercury.
Operational speed: 455 kt (842 km/h).
Service ceiling: 42,000 ft (12,800 m).
Range: 6,350 n miles (11,760 km/h).

Role/Weapon systems: Derived from Boeing's 707 aircraft, the E-6B provides Commander US Strategic Command with the command, control and communications capability to direct and employ strategic forces. Designed to support a flexible nuclear deterrent posture with VLF emergency communications and Airborne National Command Post (ABNCP) missions. Sensors: Radar Bendix APS-133; ALR-68(V)4 ESM, supports Trident Fleet radio communications with up to 28,000 ft of VLF trailing wire antenna. Weapons: Unarmed.



E-6B 6/2005, Paul Jackson / 1154051

UNMANNED AIR VEHICLES

Notes: (1) The US Navy continues to refine its path to the full integration of UAV systems into its concepts of operations and warfighting philosophy. The aim is to develop and employ a family of systems which includes both small, longer range tactical systems and large, high-altitude long-endurance systems. Interoperability, affordability and commonality are to be key parameters of all systems. Other important technology areas include miniaturised and low-cost payloads, vehicle survivability, shipboard operations, jam resistant links, reduced data redundancy, and autonomous and collaborative technologies.

(2) The UAV strategy was given increased impetus following Operation Desert Storm and operations in Afghanistan in 2001. The family of UAVs are seen meeting three principal capability requirements:

(a) Tactical Surveillance and Targeting: The USMC is transferring to the Shadow 200 UAV system. Pioneer has been retired. Fire Scout is to provide an organic UAV capability for the Littoral Combat Ship (LCS) in 2008. The US Navy also operates a Reaper system for US Joint Forces Command's Joint Operational Test Bed System (JOTBS) to examine UAV interoperability and to test war fighting concepts.

(b) Long Dwell/Stand-off Intelligence Surveillance and Reconnaissance (ISR): A Broad Area Maritime Surveillance (BAMS) UAV is sought for worldwide access and persistent maritime ISR. It is planned to achieve initial Operational Capability of one base unit with sufficient assets, technical data, training systems, and enough spares and support equipment to operationally support one persistent ISR orbit by FY14. Full operational capability is to be achieved with up to five simultaneous orbits worldwide. For maritime demonstration, the Navy completed source selection in April 2008 and chose the RQ-4N Global Hawk (navy variant).

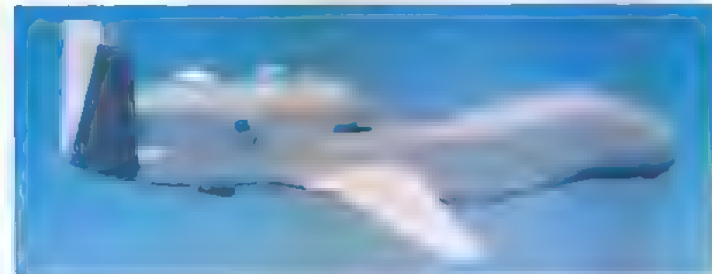
(c) Penetrating Surveillance/Suppression of Enemy Air Defences: Navy Unmanned Combat Air Systems (UCAS) program is intended to develop and mature technologies for carrier operation. Northrop Grumman X-47B selected on 1 August 2007 as potential carrier-launched unmanned system. Two prototype aircraft are to be built, test flights are to begin in 2009 and carrier-deck landing in 2011. The demonstrator aircraft are a precursor to a complement of unmanned carrier-deployed aircraft planned for about 2020.



X-47B 8/2007, Northrop Grumman / 1167001

Numbers/Type: 2 Northrop Grumman RQ-4A Global Hawk.
Operational speed: 343 kt (635 km/h).
Service ceiling: 65,000 ft (19,810 m).
Range: 12,000 n miles (22,224 km).

Role/Weapon systems: Two RQ-4A acquired for evaluation in 2005. Early flights were made from Edwards AFB, California. One took part in Exercise Trident Warrior in 2005 and later deployed to NAS Patuxent River for operation by US Navy test squadron VX-20 for participation in the Joint Expeditionary Force Experiment 2006 and also to develop ISR tactics and operational techniques. An aircraft also took part in Exercise RIMPAC 2006. The aircraft is being used to develop tactics, techniques and procedures and to refine CONOPS for the BAMS programme.



RQ-4A 6/2005, Northrop Grumman / 1127583

PATROL FORCES

Numbers/Type: 6 Northrop Grumman MQ-8B Fire Scout UAV
Operational speed: 110 kt (203 km/h).
Service ceiling: 20,000 ft (6,094 m).
Range: 110 n miles (205 km).

Role/Weapon systems: Vertical Take Off and Landing Tactical Unmanned Air Vehicle (VTUAV). Design based on the Schweizer Aircraft model 330 helicopter. No systems currently operational. Five RQ-8A versions were first procured, before evaluation to multifunction role with MQ-8B in mid 2005. Improvements included increased power, fuel and payload capacity to achieve more than double mission radius and time on station than in previous version. MQ variant completed first flight in December 2006. EMD completion and low-rate initial production began in 2007 with five MQ-8Bs delivered by May 2008. Operational evaluation to start in early 2009 with fleet introduction later that year. It is planned to acquire 131 VTUAV aircraft to meet LCS requirements. A VTUAV system is composed of three air vehicles, three mission sensor package payloads, two Ground Control Stations, Tactical Common Data Link, one UAV Common Automatic Recovery System for automatic take-off and landing, and shipboard grid and harpoon capture. When operational, Fire Scout will provide critical situational awareness, intelligence, surveillance, reconnaissance, and targeting data to forward deployed war fighters. Arming of MQ-8B with an air-to-surface missile system is under consideration.



MQ-8B 7/2005, US Navy / 116/616

Numbers/Type: 16 AAI RQ-7 Shadow
Operational speed: 110 kt (195 km/h).
Service ceiling: 14,000 ft (4,267 m).
Range: 67 n miles (124 km).

Role/Weapon systems: The Shadow UAV system provides Reconnaissance, Surveillance and Target Acquisition (RSTA) as well as Battle Management and Battle Damage Assessment (BDA) capabilities. Three squadrons use the system. Each system is comprised of two Ground Control Stations and four Air Vehicles. Sensors: electro-optic/FLIR/infra-red imaging sensor.



SHADOW 200 10/2006, US Army / 112581

Numbers/Type: 5 Northrop Grumman MQ-9 Reaper.
Operational speed: 260 kt (481 km/h).
Service ceiling: 50,000 ft (15,240 m).
Range: 400 n miles (740 km).

Role/Weapon systems: The MQ-9 Reaper is a medium-to-high altitude, long-endurance unmanned aircraft system. These UAVs support a Navy requirement for test-bed sensor-suite integration, test and concept development for expeditionary ISR. Four Reapers were acquired 2005-07 and a fifth by 2008. A further three airframes have been ordered after which no further procurement of MQ-9 is planned.



MQ-9 11/2006, Empics / 1165386

Notes: 'Spartan' is a technology demonstrator programme to prove utility of unmanned surface craft. It is envisaged that such craft will be capable of conducting mine warfare, force protection (including surveillance and reconnaissance) and anti-surface warfare. A prototype, a 7 m RHIB installed with navigation, communications and remote control equipment, underwent sea trials in 2003 which included embarkation in USS *Gettysburg* as part of the *Enterprise* carrier strike group.

8 CYCLONE CLASS (PATROL COASTAL SHIPS) (PBFM)

Name	No	Builders	Commissioned	F/S
HURRICANE	PC 3	Bollinger, Lockport	15 Oct 1993	PA
TYPHOON	PC 5	Bollinger, Lockport	12 Feb 1994	AA
SIROCCO	PC 6	Bollinger, Lockport	11 June 1994	AA
SQUALL	PC 7	Bollinger, Lockport	4 July 1994	PA
CHINOOK	PC 9	Bollinger, Lockport	28 Jan 1995	AA
FIREBOLT	PC 10	Bollinger, Lockport	10 June 1995	AA
WHIRLWIND	PC 11	Bollinger, Lockport	1 July 1995	AA
THUNDERBOLT	PC 12	Bollinger, Lockport	7 Oct 1995	AA

Displacement, tons: 354 full load
Dimensions, feet (metres): 170.3 x 25.9 x 7.9 (51.9 x 7.9 x 2.4)
Main machinery: 4 Paxman Valenta 16RP200CM diesels; 13,400 hp (10 MW) sustained; 4 shafts
Speed, knots: 35
Range, n miles: 2,500 at 12 kt
Complement: 39 (4 officers) plus 9 SEALs or law enforcement detachment
Missiles: SAM: 1 Stinger MANPAD system (6 missiles)
Guns: 1 Bushmaster 25 mm Mk 38, 1 Bushmaster 25 mm Mk 96 (aft), 8—12.7 mm MGs (4 twin), 2—7.62 mm MGs, 2—40 mm Mk 19 grenade launchers (MGs and grenade launchers are interchangeable).
Countermeasures: Decoys: 2 Mk 52 sextuple.
ESM: Privateer APR-39; radar warning, Sensytech Bobcat.
Weapons control: FLIR systems AN/KAX-1 Merflir.
Radars: Surface search: 2 Sperry RASCAR; E/F/I/J-band.
Sonars: Wesmar; hull-mounted; active scanning sonar; high frequency.

Programmes: Contract awarded for eight in August 1990, five in July 1991 and one in August 1997.

Structure: Design based on Vosper Thornycroft Ramadan class modified for USN requirements including ballistic plating to protect electronics, communications and the pilot house. The craft have a slow speed loiter capability. Swimmers can be launched from a platform at the stern.

Modernisation: The ships have been modernised to incorporate advanced ESM, an integrated bridge system, a Mk 96 stabilised weapon platform and improved communications.

Operational: The ships perform maritime interdiction, homeland security, law enforcement and SAR missions. Can be operated in pairs with a maintenance team in two vans ashore. Operational control transferred from Special Operations Command to the Atlantic and Pacific Fleets on 1 October 2002. Five stern-ramp fitted ships (PC 2, PC 4, PC 8, PC 13 and PC 14) were transferred to the USCG 2004-05. Of the PCs on loan, two (PC 2, PC 4) are to return to the Navy in FY09 and the other three in FY12. Remaining ships are to be upgraded at one ship per year from FY09. Modernisation work includes communication and radar upgrades and the installation of new diesel generators and air-conditioning units.

Sales: PC 1 (*Cyclone*) transferred to the Philippines Navy for counter-terrorism duties.



CHINOOK 9/2008, Shaun Jones / 1353583



SQUALL 10/2002, M Mazumdar / 0529973

20 MK V CLASS (HSIC)

Displacement, tons: 54 full load
Dimensions, feet (metres): 81.2 x 17.5 x 4.3 (24.7 x 5.3 x 1.3)
Main machinery: 2 MTU 12V 396 TE94 diesels; 4,506 hp (3.36 MW) sustained; 2 Kamewa water-jets
Speed, knots: 45
Range, n miles: 515 at 35 kt
Complement: 5
Military lift: 16 fully equipped troops
Guns: 5 Mk 46 Mod 4 mountings for twin 12.7 mm or 7.6 mm MGs, 1 Mk 19 40 mm grenade launcher.
Countermeasures: ESM: Sensytach Bobcat; radar intercept
Radars: Navigation: Furuno, I-band.
 IFF- APX-100(V)

Comment: This was the winning design of a competition held in 1994 to find a high-speed craft to insert and extract Navy SEAL teams and other special operations forces personnel. Fourteen delivered by mid-1998 and six more by mid-1999. All built at the Halter Marine Equitable Shipyard in New Orleans. The craft has an aluminium hull and is transportable by C-5 aircraft. Stinger missiles may be carried and gun armaments can be varied. A variant with three engines is in service with the Mexican Navy



MK V 3/2007, Paul Daly / 1305198

20 SPECIAL OPERATIONS CRAFT RIVERINE (SOCR)

Displacement, tons: 9.1 full load
Dimensions, feet (metres): 33.0 x 9.0 x 2.0 (10.1 x 2.7 x 0.6)
Main machinery: 2 Yanmar 6LY2M-STE diesels, 440 hp (328 kW); 2 Hamilton HJ292 waterjets
Speed, knots: 40+
Range, n miles: 195
Complement: 4
Military lift: 8 fully equipped troops
Guns: Combination of Mk 19 40 mm, 12.7 mm MG, 762 mm/M60, M240, GAL17 at 5 stations.

Comment: Built by United States Marine, Inc. Aluminium hull.



SOCR 2/2005, US Navy / 1043677

72 NSW 11 METRE RIB (RIGID INFLATABLE BOATS) (PBF)

Displacement, tons: 9 full load
Dimensions, feet (metres): 36.1 x 10.6 x 3 (11 x 3.2 x 0.9)
Main machinery: 2 Caterpillar 3126 diesels, 940 hp (700 kW); 2 Kamewa FF 280 water-jets
Speed, knots: 35
Range, n miles: 200 at 33 kt
Complement: 4 plus 9 SEALs
Guns: 1-12.7 mm MG, 1-762 mm MG or Mk 19 Mod 3 grenade launcher.

Comment: Naval Special Warfare (NSW) RIB capable of carrying nine SEALs at 35 kt. Built by USMI, New Orleans. Entered service from 1998 to 2002.



NSW RIB 1/2002, M Declerck / 0579977



NSW RIB 1/1998, US Navy / 0016419

116 LIGHT PATROL BOATS (PBF)

Displacement, tons: 1.2 full load
Dimensions, feet (metres): 22.3 x 8.6 x 1.5 (6.8 x 2.6 x 0.5)
Main machinery: 2 OMC outboards, 300 hp (224 kW)
Speed, knots: 35
Complement: 3
Guns: 3-12.7 mm MGs, 1-762 mm MG
Radars: Surface search: Furuno 1731; I-band

Comment: Built by Boston Whaler in 1988 for US Special Operations Command. Air transportable. Glass fibre hulls. Replacement began in 2001



PBL-CD 1996, Boston Whaler / 0084191

89 SEA ARK PATROL CRAFT (PBF)

400 series

Displacement, tons: 9.3 full load
Dimensions, feet (metres): 34.0 x 12.0 x 2.7 (10.36 x 3.66 x 0.8)
Main machinery: 2 Cummins QSB5 9-420 GS diesels; 740 hp (550 kW); 2 Konrad 520 drives
Speed, knots: 36
Complement: 6
Guns: 4-12.7 mm MGs
Radars: Navigation: Furuno; I-band

Comment: SeaArk Marine Dauntless RAM design delivered from 2008. Aluminium construction transportable by aircraft. Employed on harbour and offshore installation protection tasks. First deployed with Naval Coastal Warfare Squadron-Five near San Diego



CUTTER 429 9/2008, Shaun Jones / 1353588

COMMAND SHIPS

Notes: Options for replacement of the two in-service command ships remain under consideration. They include new construction ships, service-life extensions of current ships and/or a mix of sea and land-based facilities.

2 BLUE RIDGE CLASS (COMMAND SHIPS) (LCCH/AGFH)

Name	No	Builders	Laid down	Launched	Commissioned	F/S
BLUE RIDGE	LCC 19	Philadelphia Naval Shipyard	27 Feb 1967	4 Jan 1969	14 Nov 1970	PA
MOUNT WHITNEY	LCC 20	Newport News Shipbuilding	8 Jan 1969	8 Jan 1970	16 Jan 1971	AA

Displacement, tons: 13,077 light; 19,648 full load (*Blue Ridge*)
12,435 light; 17,485 full load (*Mount Whitney*)

Dimensions, feet (metres): 634.0 × 107.9 × 24.8
(193.2 × 32.9 × 7.6)

Main machinery: 2 Foster-Wheeler boilers; 600 psi (42.3 kg/cm²); 870°F (467°C); 1 GE turbine; 22,000 hp (16.4 MW); 1 shaft

Speed, knots: 23

Range, n miles: 13,000 at 16 kt

Complement: 786: 637 Flag staff (LCC 19); 303 (157 military, 146 civilian); 582 Flag staff (LCC 20)

Military lift: 700 troops; 3 LCPs; 2 LCVPs; 2–7 m RHIBs

Guns: 2 General Electric/General Dynamics 20 mm/76 6-barrelled Vulcan Phalanx Mk 15; 3,000 rds/min (4,500 in Block 1) combined to 1.5 km
2–25 mm Mk 38
2–12.7 mm MGs.

Countermeasures: Decoys: 4 Loral Hycor SRBOC 6-barrelled fixed Mk 38; IR flares and chaff to 4 km (2.2 n miles).
SLQ-25 Nixie, torpedo decoy.

ESM/ECM: SLQ-32(V)3; combined radar intercept, jammer and deception system.

Combat data systems: GCCS (M) Link 4A, Link 11, Link 14 and JTIDS. Theatre Battle Management Core Systems (TBMCS). Wide band commercial SATCOM, USC-38 SATCOM, WSC-3 EHF SATCOM, WSC-6(V)1 and 6, and WSC-6A(V)4 SHF SATCOM. High Frequency Radio Group (HFRG). Mission Display System (MDS). Demand Assigned Multiple Access (DAMA QUAD). Area Air Defense Commander, Naval Fires Network, Joint Service Imagery Processing System (JSIPS-N), Common High Bandwidth Data Link, Shipboard Terminal (CHBDL-ST), Ring Laser Gyro Network (RLGN), NITES 2000, Joint Tactical Information Distribution System (JTIDS), Navigational Sensor System Interface (NAVSSI) (See Data Systems at front of section.)

Radars: Air search: Lockheed SPS-40E; B-band. Surface search: Lockheed SPS 10B; G-band.
Navigation: Marconi LN66, Raytheon SPS-64(V)9; I-band Tacan. URN 25. IFF Mk XII A/MS UPX-29.

Helicopters: Platform for 1 Sikorsky SH-3H Sea King.

Programmes: Authorised in FY65 and 1966. Originally designated Amphibious Force Flagships (AGCI); redesignated Command Ships (LCC) on 1 January 1969

Modernisation: Modernisation completed FY87. 3 in guns removed in 1996/97 and Sea Sparrow missile launchers have been disembarked. Mk 23 TAS and RAM are not now to be fitted.

Structure: General hull design and machinery arrangement are similar to the two Jims class assault ships. Accommodation for 250 officers and 1,300 enlisted men.

Operational: These are large force command ships of post-Second World War design. They can provide integrated command and control facilities for sea, air and land commanders in all types of operations. *Blue Ridge* is the Seventh Fleet flagship, based at Yokosuka, Japan. *Mount Whitney* served since January 1981 as flagship Second Fleet, based at Norfolk, Virginia except during the period June to November 1999 when she served as Sixth Fleet flagship. In March 2005, *Mount Whitney* became part of MSC Special Mission programme and replaced *La Sella* as flagship Sixth Fleet, based at Gaeta, Italy. *Mount Whitney* retains US Navy status but with a 'hybrid' military/civilian crew



MOUNT WHITNEY

8/2006, Guy Toremans / 1187618



BLUE RIDGE

5/2008, US Navy / 1353587

AMPHIBIOUS FORCES

Notes: (1) Additional capacity is provided by the maritime pre-positioning ships (see listing under *Military Sealift Command* (MSC) section) which are either new construction or conversions of commercial ships. One squadron is maintained on station in the Mediterranean, a second at

Guam, and a third at Diego Garcia. Each squadron carries equipment to support a Marine Expeditionary Brigade.

(2) **Minesweeping:** Several of the larger amphibious ships have been used as operating bases for minesweeping helicopters.

(3) Five decommissioned LKAs and four LSTs are kept in Amphibious Lift Enhancement Program (ALEP) status. These are *Fresno* (LST 1182), *Tuscaloosa* (LST 1187), *Boulder* (LST 1190), *Racine* (LST 1191), *Charleston* (LKA113), *Durham* (LKA 114), *Mobile* (LKA 115), *St Louis* (LKA 116) and *El Paso* (LKA 117).

7 + 1 WASP CLASS (AMPHIBIOUS ASSAULT SHIPS) (LHDM)

Name	No	Builders	Laid down	Launched	Commissioned	F/S
WASP	LHD 1	Ingalls Shipbuilding	30 May 1985	4 Aug 1987	29 July 1989	AA
ESSEX	LHD 2	Ingalls Shipbuilding	16 Feb 1989	4 Jan 1991	17 Oct 1992	PA
KEARSARGE	LHD 3	Ingalls Shipbuilding	8 Feb 1990	26 Mar 1992	16 Oct 1993	AA
BOXER	LHD 4	Ingalls Shipbuilding	26 Mar 1991	13 Aug 1993	11 Feb 1995	PA
BATAAN	LHD 5	Ingalls Shipbuilding	16 Mar 1994	15 Mar 1996	20 Sep 1997	AA
BONHOMME RICHARD	LHD 6	Ingalls Shipbuilding	29 Mar 1995	14 Mar 1997	15 Aug 1998	PA
IWO JIMA	LHD 7	Ingalls Shipbuilding	12 Dec 1997	4 Feb 2000	30 June 2001	AA
MAKIN ISLAND	LHD 8	Northrop Grumman Ship Systems (Ingalls)	14 Feb 2004	22 Sep 2006	Oct 2009	Blgd PA

Displacement, tons: 40,650 (LHD 1-4); 40,358 (LHD 5-7); 41,661 (LHD 8) full load

Dimensions, feet (metres): 847 oa; 788 wl x 140.1 oa; 106 wl x 26.6 (258.2, 240.2 x 42.7, 32.3 x 8.1)

Flight deck, feet (metres): 819 x 118 (249.6 x 36.0)

Main machinery: 2 Combustion Engineering boilers; 600 psi (42.3 kg/cm²); 900°F (482°C); 2 Westinghouse turbines; 70,000 hp (52.2 MW); 2 shafts (LHD 1-7)

2 GE LM 2500+ gas turbines; 70,000 hp (52.2 MW); 2 Alstom variable speed electric motors; 10,000 hp (7.5 MW) (LHD 8)

Speed, knots: 22

Range, n miles: 9,500 at 20 kt

Complement: 1,123 (85 officers)

Military lift: 1,687 (plus 184 surge) troops; 12 LCM 6s or 3 LCACs; 1,232 tons aviation fuel (LHD 1-4); 1,960 tons (LHD 5-8)

Missiles: SAM: 2 Raytheon GMLS Mk 29 octuple launchers ●; 16 Sea Sparrow RIM-7P; semi-active radar homing to 16 km (8.5 n miles) at 2.5 Mach; warhead 38kg. ESSM in due course

2 GDC Mk 49 RAM RIM-116 launchers; 21 rounds per launcher ●; passive IR/anti-radiation homing to 9.6 km (5.2 n miles) at 2.5 Mach; warhead 9.1 kg.

Guns: 2 General Electric/General Dynamics 20 mm 8-barrelled Vulcan Phalanx Mk 15 ●; 3,000 rds/min (4,500 in Batch 1) combined to 1.5 km.

3 Boeing Bushmaster 25 mm Mk 38. 4—12.7 mm MGs

Countermeasures: Decoys: 4 or 6 Loral Hycor SRBOC 6-barrelled fixed Mk 36; IR flares and chaff to 4 km (2.2 n miles).

SLQ-25 Nixie; acoustic torpedo decoy system. NATO Sea Gnat. SLQ-49 chaff buoys. AEB SSO-95

ESM/ECM SLQ-32(V)3/SLY-2; intercept and jammers. Raytheon ULQ-20

Combat data systems: ACDS Block 1 level 2 (LHD 1 and 7) and Block 0 (LHD 2-6). SSDS Mk 2 (LHD 8 on build and LHD 7 in 2007). Marine Tactical Amphibious C² System (MTACCS). Links 4A, 11 (modified), 14 and 16. SATCOMS ● SSR-1, WSC-3 (UHF), USC-38 (EHF), SMO-11 Metsat (see Data Systems at front of section). Advanced Field Artillery TDS (LHD 6-8).

Weapons control: 2 Mk 91 MFCS (LHD 1-6). 2 Mk 9 MFCS (LHD 7-8).

Radars: Air search: ITT SPS-48E ●; 3D, E/F-band.

Raytheon SPS-49(V)9 ●; C/D-band. Hughes Mk 23 TAS ●; D-band. SPQ-9B (LHD 8 on build and LHD 7 in 2007).

Surface search: Norden SPS-67 ●; G-band

Navigation SPS-73; I-band.

CCA: SPN-35B (LHD 1-7), SPN-35C (LHD 8) and SPN-43C.

Fire control: 2 Mk 95; I/J-band. SPQ-9B to be fitted.

Tacan. URN 25. IFF: CIS Mk XV UPX 29.

Fixed-wing aircraft: 6-8 AV-8B Harriers or up to 20 in secondary role. MV-22 Osprey and Joint Strike Fighter in due course.

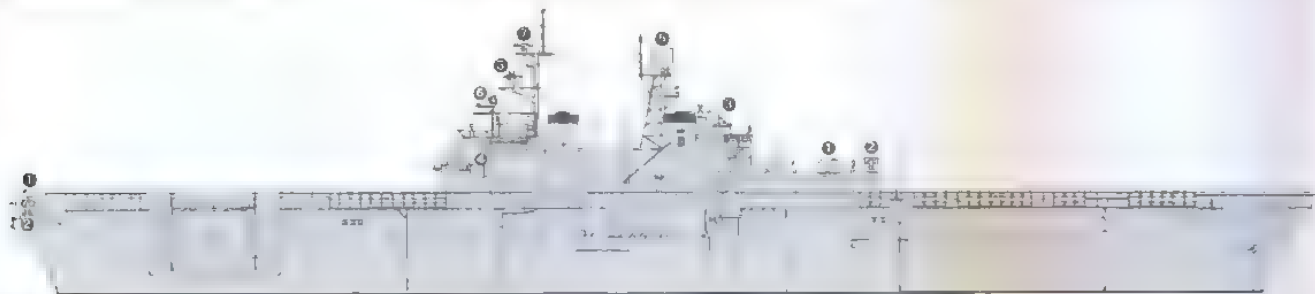
Helicopters: Capacity for 42 CH-46E Sea Knight but has the capability to support: AH-1W Super Cobra, CH-53E Super Stallion, CH-53D Sea Stallion, UH-1N Twin Huey, AH-1T Sea Cobra, and SH-60B Seahawk helicopters. UAV in due course

Programmes: The Wasp class was a follow-on to the Tarawa class and shares the same basic hull and engineering plant. Contract awarded to Ingalls Shipbuilding in February 1984 to build the lead ship. The same shipyard was subsequently contracted to build the other ships of the class.

Modernisation: RAM launchers retrofitted in all. All ships to be modified to accommodate MV-22 Osprey and F-35B operations.

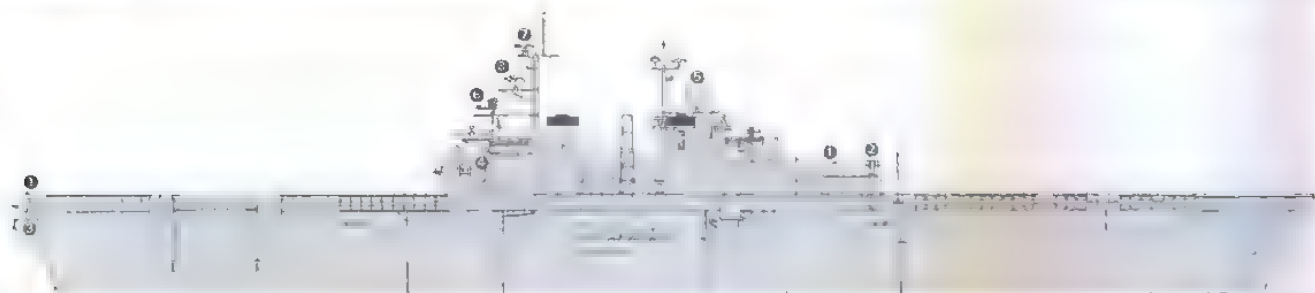
Structure: Two aircraft elevators, one to starboard and aft of the 'island' and one to port amidships. The well deck is 267 x 60 ft and can accommodate up to three LCACs. The flight deck has nine helicopter landing spots. Cargo capacity is 125,000 cu ft total with an additional 20,000 sq ft to accommodate vehicles. Vehicle storages available for five M1 tanks, 25 LAVs, eight M 198 guns, 68 trucks, 10 logistic vehicles and several service vehicles. The bridge is two decks lower than that of an LHA command, control and communication spaces having been moved inside the hull to avoid 'cheap kill' damage. Fitted with a 64 bed capacity hospital and six operating rooms. Three 32 ft monorail trains each carrying 6,000 lbs deliver material to the well deck at 6.8 mph. *Iwo Jima* is likely to be the last oil-fired steam turbine ship. The USN LHD 8 is fitted with gas turbine propulsion electric drive, watermist fire suppression system, fibre-optic machinery control system, SPQ-9B radar and CFC. LHD 3 upgraded in 2008 to accommodate/operate MV 22 Osprey

Operational: A typical complement of aircraft is a mix of 25 helicopters and six to eight Harriers (AV-8B). In the secondary role as a sea control ship the most likely mix is 20 AV-8B Harriers and four to six SH-60B Seahawk helicopters. LHD 3 modified to provide interim Mine Countermeasures Command (MCS) capability following decommissioning of *Inchon* in June 2002. LHD 6 first amphibious ship to deploy with MH 60S helicopter. LHDs 1, 3, 5 and 7 based at Norfolk, Virginia, and LHDs 4 and 6 at San Diego, California where LHD 8 is also to be based. LHD 2 is based at Sasebo, Japan. LHD 8 completed the second round of builders trials on 7 February 2009.



BONHOMME RICHARD

(Scale 1 : 1,500), Ian Sturton



ESSEX

(Scale 1 : 1,500), Ian Sturton



BATAAN

5/2006, M Declerck / 1167671



BONHOMME RICHARD

10/2006, Michael Nitz / 1305195



IWO JIMA

10/2008, US Navy / 1353585



BOXER

5/2005, Hachiro Nakai / 1154020

4 + 5 (1) SAN ANTONIO CLASS (AMPHIBIOUS TRANSPORT DOCKS) (LPDM)

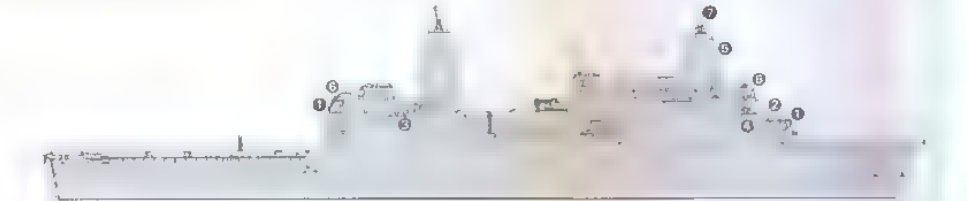
Name	No	Builders	Laid down	Launched	Commissioned	R/S
SAN ANTONIO	LPD 17	Northrop Grumman Ship Systems (Avondale)	9 Dec 2000	19 July 2003	14 Jan 2006	AA
NEW ORLEANS	LPD 18	Northrop Grumman Ship Systems (Avondale)	14 Oct 2002	20 Dec 2004	10 Mar 2007	PA
MESA VERDE	LPD 19	Northrop Grumman Ship Systems (Ingalls)	25 Feb 2003	20 Nov 2005	15 Dec 2007	AA
GREEN BAY	LPD 20	Northrop Grumman Ship Systems (Avondale)	7 Aug 2003	11 Aug 2006	24 Jan 2009	PA
NEW YORK	LPD 21	Northrop Grumman Ship Systems (Avondale)	30 Aug 2004	1 Mar 2008	Nov 2009	Bldg/AA
SAN DIEGO	LPD 22	Northrop Grumman Ship Systems (Avondale)	23 May 2007	May 2009	Nov 2010	Bldg/PA
ANCHORAGE	LPD 23	Northrop Grumman Ship Systems (Avondale)	24 Sep 2007	Oct 2009	May 2011	Bldg/PA
ARLINGTON	LPD 24	Northrop Grumman Ship Systems (Avondale)	18 Dec 2008	May 2010	Nov 2011	Bldg/PA
SOMERSET	LPD 25	Northrop Grumman Ship Systems (Avondale)	2009	Sep 2010	May 2012	Qrd

Displacement, tons, 25,885 full load
 Dimensions, feet (metres): 683.7 x 104.7 x 23
 (208.4 x 31.9 x 7)
 Main machinery: 4 Colt Pielstick PC 2.5 diesels, 40,000 hp
 (29.84 MW); 2 shafts; cp props
 Speed, knots: 22
 Complement: 360 (28 officers) plus 34 spare
 Military lift: 720 troops, 2 LCACs, 14 EFVs

Missiles: SAM: 2 Raytheon RAM RIM 116 21-cell Mk 49 launchers; passive IR/anti-radiation homing to 9.6 km (5.2 n miles) at 2.5 Mach; warhead 9.1 kg
 Guns: 2-30 mm Mk 46 4-12.7 mm MGs
 Countermasures: Decoys, 6 Mk 53 Mod 4 Nulka and chaff launcher; SLQ-25A Nixie towed torpedo decoy.
 ESM/ECM: SLQ-32A(V)2; intercept and jammer.
 Combat data systems: SSDS Mk 2; GCCS (M), CEC, JTIDS (Link 16), AADS (see Data Systems at front of section).
 Radars: Air search: ITT SPS-48E; 3D, E/F-band.
 Surface search/navigation: Raytheon SPS-73(V)13; I-band
 Fire control: Lockheed SPO-9B; I-band.

Helicopters: 1 CH-53E Sea Stallion or 2 CH-46E Sea Knight or 1 MV-22 Osprey

Programmes: The LPD 17 (ex-LX) programme was first approved by the Defense Acquisition Board on 11 January 1993. It will replace four classes of amphibious ships: LPD 4s, LSTs, LKAs and LSD 36s. Contract for first ship, with an opt on on two more, awarded to Avondale on 17 December 1996. A protest about the award delayed the effective contract date to April 1997. The lead ship contract options for FY99 and FY00 on LPD 18 and



SAN ANTONIO

(Scale 1 : 1,800), Ian Sturton / 116/439

LPD 19 were exercised in December 1998 and February 2000 respectively. A negotiated modification added the second FY00 ship, LPD 20, to the lead ship contract in May 2000. Contract awarded for LPD 21 in November 2003 and for LPD 22 and 23 on 1 June 2006. Contract for long lead items for LPD 24 and 25 awarded on 5 November 2006. Under agreement reached in June 2002, NGSS is to build all ships. Difficulties in design phase led to two-year delay to delivery date of lead ship. Launch and commissioning dates for LPD 18-20 delayed due to shipyard damage caused by Hurricane Katrina in 2005. Delivery of ninth ship is planned for 2012. Procurement of a tenth ship is under consideration.

Structure: Panama Canal-capable ships able to control and support landing forces disembarking either via surface craft such as LCACs or by VTOL aircraft, principally helicopters. The design supports a lift capability of 24,000 sq ft of deck space for vehicles, 34,000 cu ft of cargo below decks and 720 embarked Marines with surge lift capacity to 800 troops. The well-deck and stern gate

arrangements are similar to those of the Wasp class, the well-deck can carry two LCACs or one LCU, or 14 Expeditionary Fighting Vehicles. The flight deck can land-launch four CH-46s or two CH-53s or two MV-22s. The hangar will accommodate two CH-46s or one CH-53 or one MV-22. There is a 24-bed medical facility. Although with similar capabilities as the classes they are to replace the ships are not equipped with the flag facilities of some Austin class LPDs, the heavy over-the-side lift capability of LKAs or the ability of LSTs to beach. There is a crane for support of boat operations and an Advanced Enclosed Mast System, trialled in DD 988, is being fitted in aft. On 9 September 2003, salvaged steel from the World Trade Centre was cast into the bow section of USS New York. Operational: The first two ships have experienced a variety of problems. The first of class, LPD 17, was late in starting its maiden deployment in August 2008 and subsequently required to undergo repairs in November 2008. LPD 18 was assessed 'degraded' in its InSurv report in August 2008. LPD 18 started her maiden deployment in January 2009.



SAN ANTONIO

10/2008*, US Navy / 135/399



NEW ORLEANS

5/2007, US Navy / 130/5196

2 TARAWA CLASS (AMPHIBIOUS ASSAULT SHIPS) (LHAM)

Name	No	Builders	Laid down	Launched	Commissioned	F/S
NASSAU	LHA 4	Ingalls Shipbuilding	13 Aug 1973	21 Jan 1978	28 July 1979	AA
PELELIU (ex-Da Nang)	LHA 5	Ingalls Shipbuilding	12 Nov 1976	25 Nov 1978	3 May 1980	PA

Displacement, tons: 39,967 full load
Dimensions, feet (metres): 834 × 131.9 × 25.9
 (254.2 × 40.2 × 7.9)

Flight deck, feet (metres): 820 × 118.1 (250 × 36)

Main machinery: 2 Combustion Engineering boilers; 800 psi (42.3 kg/cm²); 900°F (482°C); 2 Westinghouse turbines, 70,000 hp (52.2 MW); 2 shafts; bow thruster; 900 hp (670 kW)

Speed, knots: 24 **Range, n miles:** 10,000 at 20 kt

Complement: 964 (56 officers)

Military lift: 1,703 troops; 4 LCU 1610 type or 2 LCU and 2 LCM 8 or 17 LCM 6 or 46 Assault Amphibian Vehicles; 1,200 tons aviation fuel. 1 LCAC may be embarked. 4 LCPL (replacement by RHIBs in progress)

Missiles: SAM: 2 GDC Mk 49 RAM RIM-116 ●; 21 rounds per launcher; passive IR/anti-radiation homing to 9.6 km (5.2 n miles) at 2.5 Mach, warhead 9.1 kg

Guns: 2 General Electric/General Dynamics 20 mm/76 6-barrelled Vulcan Phalanx Mk 15 ●; 3,000 rds/min (4,500 in Block 1) combined to 1.5 km.
 6 Mk 242 25 mm automatic cannons. 8—12.7 mm MGs.

Countermeasures: Decoys: 4 Loral Hycor SRBOC 6-barrelled fixed Mk 36; IR flares and chaff to 4 km (2.2 n miles).
 SLQ 25 Nixie; acoustic torpedo decoy system. NATO Sea Gnat. SLQ-49 chaff buoys. AEB SSQ 95

ESM/ECM: SLQ-32(V)3; intercept and jammers.

Combat data systems: ACDS Block 0. Advanced Combat Direction System to provide computerised support in control of helicopters and aircraft, shipboard weapons and sensors, navigation, landing craft control and electronic warfare. Links 4A, 11 and 16. SATCOM SRR 1, WSC-3 (UHF), USC-38 (EHF) SMQ-11 Metsat (see Data Systems at front of section).

Radars: Air search: ITT SPS-48E ●; E/F-band.

Lockhead SPS-40E ●; B-band

Hughes Mk 23TAS ●; D-band.

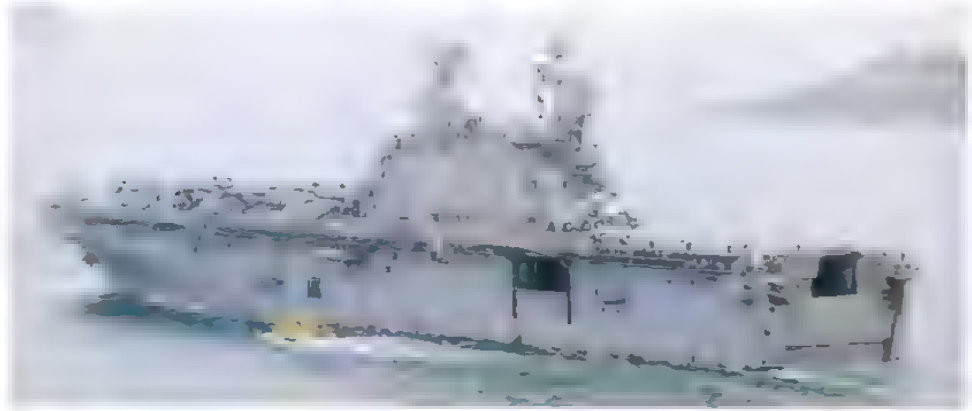
Surface search: Raytheon SPS-67(V)3 ●; G-band.

Navigation: Raytheon SPS-73; I-band

CCA: SPN 35A; SPN 43B

Tacan: URN 25 IFF: CIS Mk XV/JPX-36

Fixed-wing aircraft: Harrier AV-8B VSTOL aircraft in place of some helicopters as required. MV-22 Osprey in due course.



PELELIU

11/2008, Chris Sattler / 1333725

Helicopters: 19 CH 53D Sea Stallion or 26 CH 46D/E Sea Knight UAV in due course

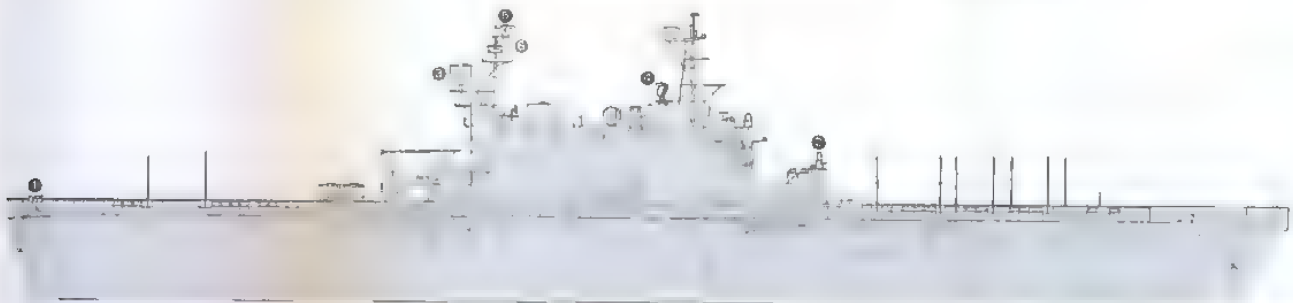
Programmes: Originally intended to be a class of nine ships. LHA 4 and LHA 5 were authorised in FY71.

Modernisation: Two Vulcan Phalanx CIWS replaced the GMLS Mk 25 Sea Sparrow launchers. Programme completed in early 1991 RAM launchers fitted to all of the class 1993-95. One launcher is above the bridge offset to port, and the other on the starboard side at the after end of the flight deck. Mk 23TAS target acquisition radar fitted in LHA 5 in 1992 and LHA 4 in 1993. SPS-48E started replacing SPS-52D in 1994 to improve low altitude detection of missiles and aircraft. ACDS Block 0 in 1996. 5 in guns removed in 1997/98. Plans to fit SSDS have been shelved. Modifications to accommodate MV-22 Osprey operations and Collective Protection Systems upgrade in progress. Fuel oil compensation system has been installed to improve damaged stability

Structure: There are two lifts, one on the port side aft and one at the stern. Beneath the after elevator is a floodable

docking well measuring 268 ft in length and 78 ft in width which is capable of accommodating four LCU 1610 type landing craft. Also included is a large garage for trucks and AFVs and troop berthing for a reinforced battalion. 33,730 sq ft available for vehicles and 116,900 cu ft for palletted stores. Extensive medical facilities including operating rooms, X-ray room, hospital ward, isolation ward, laboratories, pharmacy, dental operating room and medical store rooms

Operational: The flight deck can operate a maximum of nine CH-53D Sea Stallion or 12 CH-46D/E Sea Knight helicopters or a mix of these and other helicopters at any one time. With some additional modifications, ships of this class can effectively operate AV-8B aircraft. The normal mix of aircraft allows for six AV-8Bs. The optimum aircraft configuration is dependent upon assigned missions. Unmanned Reconnaissance Vehicles (URVs) can be operated. LHA 3 decommissioned 28 October 2005 and LHA 2 in 2007. LHA 1 decommissioned in December 2008.



PELELIU

(Scale 1 : 1,500), Ian Sturton / 0131389



PELELIU

11/2008, US Navy / 1353583

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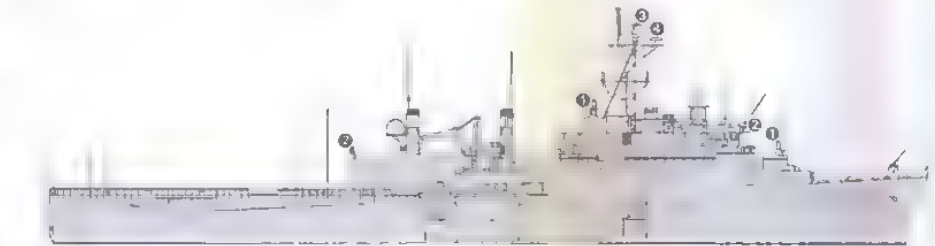
5 AUSTIN CLASS (AMPHIBIOUS TRANSPORT DOCKS) (LPD)

Name	No	Builders	Laid down	Launched	Commissioned	F/S
CLEVELAND	LPD 7	Ingalls Shipbuilding	30 Nov 1964	7 May 1966	21 Apr 1967	PA
DUBUQUE	LPD 8	Ingalls Shipbuilding	25 Jan 1965	6 Aug 1966	1 Sep 1967	PA
DENVER	LPD 9	Lockheed SB & Construction Co	7 Feb 1964	23 Jan 1965	26 Oct 1968	PA
NASHVILLE	LPD 13	Lockheed SB & Construction Co	14 Mar 1966	7 Oct 1967	14 Feb 1970	AA
PONCE	LPD 15	Lockheed SB & Construction Co	31 Oct 1966	20 May 1970	10 July 1971	AA

Displacement, tons: 9,130 light; 16,500–17,244 full load
Dimensions, feet (metres): 570 x 100 (84 hull) x 23 (173.8 x 30.5, 25.6 x 7)
Main machinery: 2 Foster-Wheeler boilers; 600 psi (42.3 kg/cm²); 870°F (467°C); 2 De Laval (General Electric in LPD 9 and LPD 10) turbines, 24,000 hp (18 MW); 2 shafts
Speed, knots: 21. **Range, n miles:** 7,700 at 20 kt
Complement: 420 (24 officers); Flag 90 (in LPD 7-13)
Military lift: 930 troops (840 only in LPD 7-13); 9 LCM 6s or 4 LCM 8s or 2 LCAC or 20 LVTs. 4 LCPL/LCVP

Guns: 2 General Electric/General Dynamics 20 mm/76 6-barrelled Vulcan Phalanx Mk 15 ●; 3,000 rds/min (4,500 in Block 1) combined to 1.5 km. 2–25 mm Mk 38 8–12.7 mm MGs
Countermeasures: Decoys: 4 Loral Hycor SRBOC 6-barrelled Mk 38; IR flares and chaff to 4 km (2.2 n miles). ESM. SLQ-32(V)1; intercept
Combat data systems: SATCOM ●, WSC-3 (UHF), WSC-6 (SHF) (see Data Systems at front of section).
Radars: Air search: Lockheed SPS-40E ●, B-band. Surface search: Norden SPS-67 ●; G-band. Navigation: Raytheon SPS-73(V)12; I-band. Tacan: URN 25. IFF: Mk XII LPX-36.

Helicopters: Up to 6 CH-46D/E Sea Knight can be carried. Hangar for only 1 light.



DENVER

(Scale 1 : 1,500), Ian Sturton / 0016471

Programmes: LPD 7-10 authorised in FY63, LPD 13 in FY64, LPD 15 in FY65
Modernisation: Modernisation carried out in normal maintenance periods from FY87. This included fitting two Phalanx, SPS-67 radar replacing SPS-10 and updating EW capability. 3 in guns have been removed. LPD 15 was the last LPD to receive machinery, electrical and habitability upgrades to extend life.
Structure: LPD 7-13 have an additional bridge and are fitted as flagships. One small telescopic hangar. There are structural variations in the positions of guns and electronic equipment in different ships of the class. Flight

deck is 168 ft (51.2 m) in length. Well-deck 394 x 50 ft (120.1 x 15.2 m). Communications domes are not uniformly fitted.
Operational: A typical operational load might include one Seahawk, two Sea Knight, two Twin Huey, four Sea Cobra helicopters and one Cyclone patrol craft. LPDs 7-9 based at San Diego and LPDs 13 and 15 at Norfolk. LPD 6 decommissioned in 2005, LPD 4 in 2006, LPDs 5 and 12 in 2007 and LPD 10 in 2008. LPD 14 transferred to the Indian Navy in January 2007, LPDs 9 and 13 to be decommissioned in 2009 and LPD 8 in 2010.



DENVER

7/2007, Guy Toremans / 1305194



CLEVELAND

8/2005, John Mortimer / 1304055

12 WHIDBEY ISLAND CLASS (DOCK LANDING SHIPS) (LSD)

Name	No	Builders	Laid down	Launched	Commissioned	F/S
WHIDBEY ISLAND	LSD 41	Lockheed SB & Construction Co	4 Aug 1981	10 June 1983	9 Feb 1985	AA
GERMANTOWN	LSD 42	Lockheed SB & Construction Co	5 Aug 1982	29 June 1984	8 Feb 1986	PA
FORT McHENRY	LSD 43	Lockheed SB & Construction Co	10 June 1983	1 Feb 1986	8 Aug 1987	PA
GUNSTON HALL	LSD 44	Avondale Industries	26 May 1986	27 June 1987	22 Apr 1989	AA
COMSTOCK	LSD 45	Avondale Industries	27 Oct 1986	16 Jan 1988	3 Feb 1990	PA
TORTUGA	LSD 46	Avondale Industries	23 Mar 1987	15 Sep 1988	17 Nov 1990	AA
RUSHMORE	LSD 47	Avondale Industries	9 Nov 1987	6 May 1989	1 June 1991	PA
ASHLAND	LSD 48	Avondale Industries	4 Apr 1988	11 Nov 1989	9 May 1992	AA
HARPERS FERRY	LSD 49	Avondale Industries	15 Apr 1991	16 Jan 1993	7 Jan 1995	PA
CARTER HALL	LSD 50	Avondale Industries	11 Nov 1991	2 Oct 1993	30 Sep 1995	AA
OAK HILL	LSD 51	Avondale Industries	21 Sep 1992	11 June 1994	8 June 1996	AA
PEARL HARBOR	LSD 52	Avondale Industries	27 Jan 1995	24 Feb 1996	30 May 1998	PA

Displacement, tons: 11,125 light; 15,939 (LSD 41-48), 16,740 (LSD 49 onwards) full load

Dimensions, feet (metres): 609 5 × 84 × 20 5 (185 8 × 25 6 × 6 3)

Main machinery: 4 Colt SEMT-Pielstick 16 PC2.5 V 400 diesels; 33,000 hp(m) (24.6 MW) sustained; 2 shafts; cp props

Speed, knots: 22

Range, n miles: 8,000 at 18 kt

Complement: 413 (21 officers)

Military lift: 402 (+102 surge) troops, 2 (CV) or 4 LCACs, or 9 (CV) or 21 LCM 6, or 1 (CV) or 3 LCUs, or 64 LVTs, 2 LCP

Cargo capacity: 5,000 cu ft for marine cargo, 12,500 sq ft for vehicles (including four preloaded LCACs in the well-deck). The cargo version has 67,600 cu ft for marine cargo, 20,200 sq ft for vehicles but only two LCACs. Aviation fuel, 90 tons.

Missiles: 1 GDC/Hughes Mk 49 RAM RIM-116 21-cell launcher; passive IR/anti-radiation homing to 9.6 km (5.2 n miles) at 2.5 Mach; warhead 9.1 kg. Being fitted in all.

Guns: 2 General Electric/General Dynamics 20 mm/76 6-barrelled Vulcan Phalanx Mk 15; 3,000 rds/min (4,500 in Block 1) combined to 1.5 km. 2—25 mm Mk 38, 6—12.7 mm MGs.

Countermeasures: Decoys: 4 Loral Hycor SRBOC 6-barrelled Mk 36 and Mk 50, IR flares and chaff, SLQ-25 Nixie

ESM: SLQ-32(V)1, intercept, SLQ-49.

Combat data systems: SATCOM SRR-1, WSC 3 (UHF) (see Data Systems at front of section), SSDS Mk 1

Radars: Air search: Raytheon SPS-49(V)1; C-band Surface search: Norden SPS-67V; G-band

Navigation: Raytheon SPS-64(V)9 or SPS-73(V)12, U-band

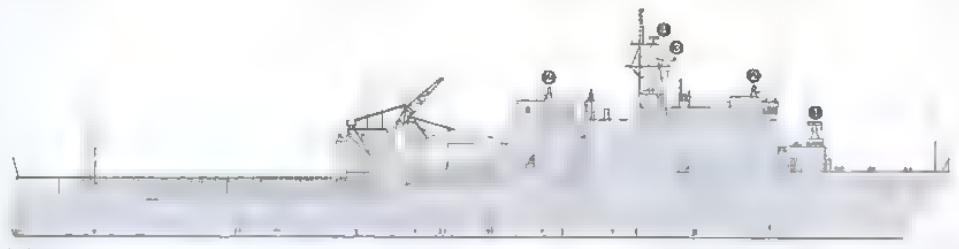
Tacan: URN 25. IFF: Mk XII UPX-29/UPX-36.

Helicopters: Platform only for 2 CH-53 Sea Stallion.

Programmes: Originally it was planned to construct six ships of this class as replacements for the Thomaston class LSDs. Eventually, the level of Whidbey Island class ships was established at eight, with four additional cargo-carrying variants to provide extra cargo capability. LSD 49-52 are also known as the Harper's Ferry class.

Modernisation: A Quick Reaction Combat Capability (QRCC)/Ship Self-Defense System (SSDS) was installed and successfully demonstrated in LSD 41 in 1993. During the QRCC demonstrations, the ship's SPS-49, SLQ-32, RAM and Phalanx were successfully integrated via SSDS. All ships of the class fitted with SSDS Mk 1. A mid-life upgrade package, to extend service life to 40 years, is planned for all LSD 41/49 class starting with LSD 44 in FY08.

Structure: Based on the earlier Anchorage class. One 60 and one 20 ton crane. Well-deck measures 440 × 50 ft (134.1 × 15.2 m) in the LSD but is shorter in the Cargo Variant (CV). The cargo version is a minimum modification to the LSD 41 design. Changes in that design include additional troop magazines, air conditioning, piping



ASHLAND

(Scale 1 : 1,500), Ian Sturton / 0053367



CARTER HALL

11/2008, Guy Toremans / 1353581



GERMANTOWN

10/2007, Michael Nitz / 1353580

and hull structure; the forward Phalanx is forward of the bridge, RAM is on the bridge roof, and there is only one crane. There is approximately 90 per cent commonality between the two classes.

Operations: LSDs 41, 43, 44, 48, 49, 50 and 51 are based at Little Creek, VA. LSDs 42, 45, 47 and 52 are based at San Diego, CA. LSDs 46 and 49 are based at Sasebo, Japan



COMSTOCK

7/2008, US Navy / 1353582

0 + 1 AMERICA CLASS (AMPHIBIOUS ASSAULT SHIP) (LHA)

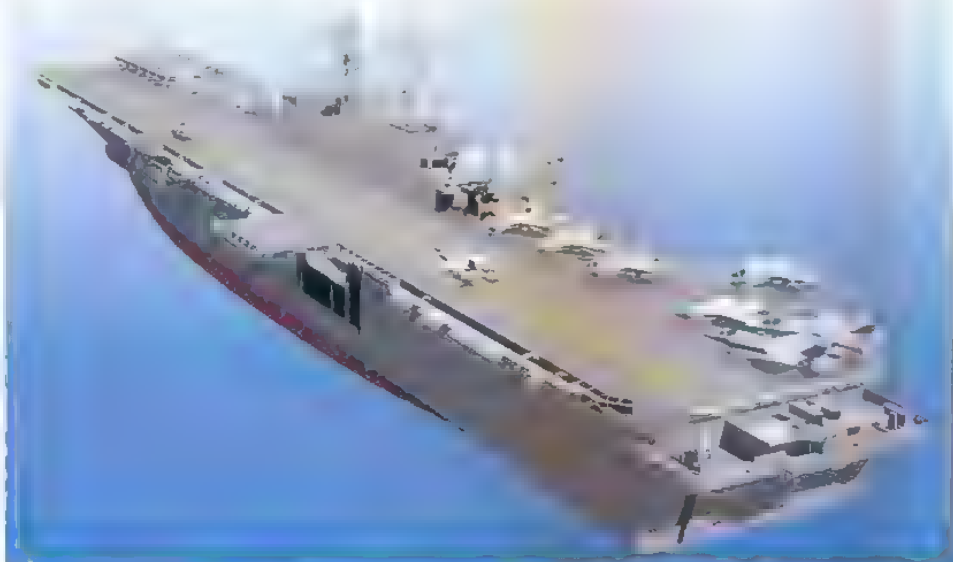
Name	No	Builders	Laid down	Launched	Commissioned
AMERICA	LHA 6	Northrop Grumman Ship Systems, Pascagoula, MS	Apr 2009	2011	2012

Displacement, tons: 44,850 full load
Dimensions, feet (metres): 844 oa; 778 wl x 194 oa, 106 wl x 28.7 (257.3; 237.1 x 59.1; 32.3 x 8.7)
Flight deck, feet (metres): 819 x 118 (249.6 x 36.0)
Main machinery: COGES: 2 GE LM 2500+ gas turbines; 70,000 hp (52.2 MW); 2 auxiliary propulsion motors; 10,000 hp (7.46 MW); 2 shafts
Speed, knots: 22
Range, n miles: 9,000 at 12 kt
Complement: 1,059 (85 officers)
Military lift: 1,687 troops (plus 184 surge)

Missiles: SAM: 2 Raytheon GMLS Mk 29 octuple launchers; 16 Evolved Sea Sparrow RIM-162D, semi-active radar homing to 18 km (9.7 n miles) at 3.6 Mach; warhead 38 kg. 2 Raytheon RAM RIM-116 Mk 49 launchers, passive IR/anti-radiation homing to 9.6 km (5.2 n miles) at 2.5 Mach; warhead 9.1 kg.
Guns: 2 General Electric/General Dynamics 20 mm 6-barrelled Vulcan Phalanx Mk 15.
Countermeasures: Mk 53 Mod 3 NULKA DLS, SLQ 25 Nixie, acoustic torpedo decoy system.
ESM/ECM: SLQ-32B(V)2
Combat data systems: SDDS Mk 2 Mod 4B, CEC USG-2A, Links 4A, 11 (modified), 18 and 22. SATCOMS: SSR-1, SRC-XX (UHF), USC-38 (EHF), URC-131(H)(HF), URC-139 (VHF) and 2 WSC-6C(V)9 (SHF), SMO-11 Metsa, Advanced Field Artillery TDS.
Weapons control: NSSMS Mk 57 Mod 12 with 2 Mk 9 MFCS.
Radars: Air search: ITT SPS 48E(V)10; 3D; E/F-band, Raytheon SPS-49A(V)1; SPQ-9B
 Surface search/Navigation: 2 SPS-73; I-band.
 CCA: SPN-35C and SPN-43C.
 Tacan LRN 25. IFF: CIS UPX-29

Fixed-wing aircraft: Similar to Wasp class with improved facilities to operate and support MV-22 Osprey and up to 23 F-35B Joint Strike Fighter (JSF)

Programmes: It was announced on 6 April 2004 that the LHA Replacement design was to be a modified version of the LHD 8 design. The detailed design phase started in



LHA(R)

6/2005, Northrop Grumman / 115405f.

January 2006 following ship design approval to proceed with Milestone B. A contract for the detailed design and construction of the first of class was let on 1 June 2007.
Structure: LHA Replacement is optimised for aviation operations and is to have additional cargo/magazine capacity in lieu of a traditional well deck. The flight deck has nine helicopter landing spots and is to be equipped with two aircraft elevators, one to starboard and aft of the island and one to port amidships; the folding capability

has been removed. Cargo capacity is 160,000 cu ft total with an additional 12,000 sq ft to accommodate vehicle stowage. The ship is to be fitted with a 24 bed capacity hospital and two operating rooms. The bridge is two decks lower than that of an LHA 1; the command, control and communications spaces having been moved inside the hull. The ship has gas turbine propulsion and all electric auxiliaries.

Operational: Homeport is yet to be announced

80 LANDING CRAFT AIR CUSHION (LCAC)

Displacement, tons: 87.2 light; 170-182 full load
Dimensions, feet (metres): 88 oa (on-cushion) (81 between hard structures) x 47 beam (on-cushion) (43 beam hard structure) x 2.9 draught (off-cushion) (26.8 (24.7) x 14.3 (13.1) x 0.9)
Main machinery: 4 Allied-Signal TF40B marine gas turbines for propulsion and lift; 16,000 hp (11.9 MW) sustained; 2 shrouded reversible-pitch airscrews (propulsion); 4 double-entry fans, centrifugal or mixed-flow (lift). SLEP configuration; 4 Vericor Power Systems ETF40B marine gas turbines with Full Authority Digital Engine Control (FADEC) for propulsion and lift; 19,000 hp (14.1 MW) sustained; 2 shrouded reversible-pitch airscrews (propulsion); 4 double-entry fans, centrifugal or mixed-flow (lift)
Speed, knots: 40 (loaded)
Range, n miles: 300 at 35 kt; 200 at 40 kt
Complement: 5
Military lift: 23 troops; 1 Main Battle Tank or 60-75 tons
Radars: Navigation: Marconi LN86 or Decca Bridgmaster E; I-band.

Programmes: Built by Textron Marine and Land Systems and Avondale Gulfport. A total of 90 craft delivered 1984-1997. The final craft LCAC 91 delivered in 2001 in SLEP configuration.

Modernisation: 72 in-service craft to receive Service Life Extension Programme (SLEP) from 2002-2016. The programme includes the installation of more powerful engines to provide greater lift capacity, an improved deep skirt for better handling in heavier sea states and an integrated navigation suite for precise navigation,



LCAC 86

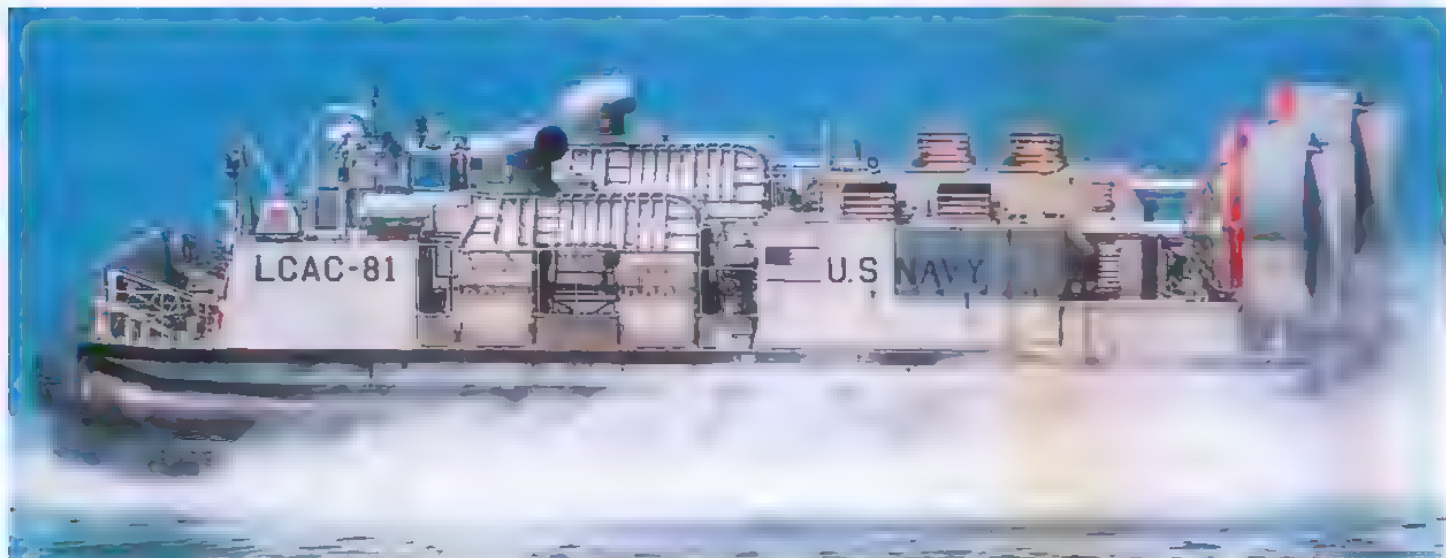
6/2005, J Cistak / 115405f.

and advanced Multimode Integrated Communications System in either normal, secure modes. Four craft were upgraded in FY04, five in FY05, five in FY06 and the remainder planned for subsequent years.

Structure: Incorporates the best attributes of the JEFF(A) and JEFF(B) learned from over five years of testing the two prototypes. Bow ramp 28.8 ft, stern ramp 15 ft. Cargo space capacity is 1,809 sq ft. Noise and dust levels are high and if disabled the craft is not easy to tow. 30 mm Gatling guns can be fitted

Operational: Ship classes capable of carrying the LCAC are Wasp (three), Tarawa (one), Austin (one), Whidbey Island (four), Harpers Ferry (two) and San Antonio (two). A portable transport module can be carried on the cargo deck to transport up to 180 troops. Some limitations in very rough seas. Shore bases on each coast at Little Creek, VA and Camp Pendleton, CA. Of 80 craft, 66 are operational and 14 undergoing SLEP.

Sales: Six to Japan. One of a similar type built by South Korea



LCAC 81

4/2008, Hachiro Nakai / 135356B

8 FRANK S BESSON CLASS (LOGISTIC SUPPORT VESSELS) (LSV-ARMY)

Name	No	Builders	Commissioned
GEN FRANK S BESSON JR	LSV 1	Moss Point Marine, MS	18 Dec 1987
CW 3 HAROLD C CLINGER	LSV 2	Moss Point Marine, MS	20 Feb 1988
GEN BREHON B SOMERVELL	LSV 3	Moss Point Marine, MS	2 Apr 1988
LTG WILLIAM B BUNKER	LSV 4	Moss Point Marine, MS	18 May 1988
MG CHARLES P GROSS	LSV 5	Moss Point Marine, MS	30 Apr 1991
SP/4 JAMES A LOUX	LSV 6	Moss Point Marine, MS	16 Dec 1994
SSGT ROBERT T KURODA	LSV 7	VT Halter Marine	26 Aug 2005
MG ROBERT SMALLS	LSV 8	VT Halter Marine	15 Sep 2007

Displacement, tons: 4,265 full load
Dimensions, feet (metres): 272.8 × 60 × 12 (83.1 × 18.3 × 3.7)
 314 (LSV 7) × 60.0 × 12.0 (95.7 × 18.3 × 3.6.6)
Main machinery: 2 GM EMD 16-645E2 diesels; 3,900 hp (2.9 MW) sustained; 2 shafts; Schottel bow thruster; 650 hp (485 kW)
Speed, knots: 11.6. **Range, n miles:** 8,300 at 11 kt
Complement: 31 (8 officers)
Military lift: 2,280 tons of vehicles including 26 M 1 tanks, containers or general cargo
Radars: Navigation: 2 Raytheon; E/F-band; I-band

Comment: First one approved in FY85, second in FY87, remainder from Army reserve funds. Army owned ro-ro design with 10,500 sq ft of deck space for cargo. Capable of beaching with 4 ft over the ramp on a 1.30 offshore gradient. Payload is 2,000 tons of cargo. LSV 1 is based at Fort Eustis, Virginia, LSVs 2, 5 and 7 are based at Pearl Harbour, HI. LSV 3 is with the Army Reserve and based at Tacoma, WA. LSVs 4 and 6 are based in Kuwait. LSV 8 is based at Baltimore, MD. Two modified ships of the class built for the Philippines Navy in 1993-94.



CW 3 HAROLD C CLINGER

7/2002, Chris Settler / 0529979

39 MECHANISED LANDING CRAFT (LCM 6 TYPE)

Displacement, tons: 64 full load
Dimensions, feet (metres): 56.2 × 14 × 3.9 (17.1 × 4.3 × 1.2)
Main machinery: 2 Detroit 6V-71 diesels; 348 hp (260 kW) sustained or 2 Detroit 8V-71 diesels, 460 hp (344 kW) sustained; 2 shafts
Speed, knots: 9. **Range, n miles:** 130 at 9 kt
Complement: 5
Military lift: 34 tons or 80 troops

Comment: Welded steel construction. All used for various utility tasks, none as landing craft.



LCM 6

6/1997, J W Currie / 0016487

35 MECHANISED LANDING CRAFT: LCM 8 TYPE

Displacement, tons: 65.6 light; 127 full load
Dimensions, feet (metres): 73.7 × 21 × 5.2 (22.5 × 6.4 × 1.6)
Main machinery: 2 Detroit 12V-71 diesels; 400 hp (298 kW) sustained; 2 shafts; Kort nozzles
Speed, knots: 12. **Range, n miles:** 190 at 9 kt full load
Complement: 4
Military lift: 675 tons or 1 M48/1 M60 tank or 110 fully equipped troops or 200 non-combat troops

Comment: Eleven craft are for use in amphibious ships. There are 24 similar craft used by the Army.



LCM 8

5/2003, A Sharma / 0577786

35 LCU 2000 CLASS (UTILITY LANDING CRAFT) (LCU-ARMY)

RUNNYMEDE LCU 2001	COAMO LCU 2014	MISSIONARY BRIDGE LCU 2028
KENNESAW MOUNTAIN LCU 2002	CONTRERAS LCU 2015	MOLINO DEL RAY LCU 2029
MACON LCU 2003	CORINTH LCU 2016	MONTERREY LCU 2030
ALDIE LCU 2004	EL CANEY LCU 2017	NEW ORLEANS LCU 2031
BRANDY STATION LCU 2005	FIVE FORKS LCU 2018	PALO ALTO LCU 2032
BRISTOE STATION LCU 2006	FORT DONELSON LCU 2019	PAULUS HOOK LCU 2033
BROAD RUN LCU 2007	FORT MCHENRY LCU 2020	PERRYVILLE LCU 2034
BUENA VISTA LCU 2008	GREAT BRIDGE LCU 2021	PORT HUDSON LCU 2035
CALABOZA LCU 2009	HARPERS FERRY LCU 2022	
CEDAR RUN LCU 2010	HOBKIRK LCU 2023	
CHICKAHOMINY LCU 2011	HOMIGUEROS LCU 2024	
CHICKASAW BAYOU LCU 2012	MALVERN HILL LCU 2025	
CHURUBUSCO LCU 2013	MATAMOROS LCU 2026	
	MECHANICSVILLE LCU 2027	

Displacement, tons: 1,102 full load
Dimensions, feet (metres): 173.8 × 42 × 8.5 (53 × 12.8 × 2.6)
Main machinery: 2 Cummins KTA50-M diesels; 2,500 hp (1.87 MW) sustained; 2 shafts; bow thruster
Speed, knots: 11.5
Range, n miles: 4,500 at 11.5 kt
Complement: 13 (2 officers)
Military lift: 350 tons
Radars: Navigation: 2 Raytheon; E/F-band; I-band.

Comment: Order placed with Lockheed by US Army 11 June 1986. First one completed 21 February 1990 by Moss Point Marine. The 2000 series have names, some of which duplicate naval ships. These are the first LCUs built to an Army specification. Seven are active, seven in reserve, 20 prepositioned and one used for training.



HOMIGUEROS

7/2003, A Sharma / 0572813



MOLINO DEL RAY

6/2003, A Sharma / 0572815

10 LANDING CRAFT (MPF TYPE)

Displacement, tons: 12.3
Dimensions, feet (metres): 44.1 × 14.5 × 7 (13.4 × 4.4 × 7)
Main machinery: 2 Cummins QSM11 diesels, 660 hp (492 kW); 2 Hamilton 364 waterjets
Speed, knots: 30 (light), 25 (full load)
Complement: 4
Guns: 2—12.7 mm MGs
Radars: Navigation: Furuno 1834, I-band.

Comment: Contract for the construction of 10 MPF utility craft awarded to Kvichak Marine Industries, Seattle, WA, in August 2006. First craft delivered in February 2006. The craft are to replace the LCM-8 craft as part of the lighterage system in support of prepositioned Marine amphibious assault missions. Aluminium construction with an articulated bow-door for beach deployment. Two are stationed at San Diego, CA, two at Norfolk, VA, and six onboard prepositioned MSC ships. Each craft can transport 30 troops and equipment.



MPF CRAFT

6/2007, Kvichak Marine / 1305174

75 LANDING CRAFT PERSONNEL (LCPL)

Displacement, tons: 11 full load
Dimensions, feet (metres): 35 x 12.1 x 3.8 (11 x 3.7 x 1.2)
Main machinery: 1 GM 8V-71TI diesel; 425 hp (317 kW) sustained; 1 shaft
Speed, knots: 20. **Range, n miles:** 150 at 20 kt
Complement: 3
Military lift: 17 troops
Radars: Navigation: Marconi LN66; I-band.

Comment: There are four variants of this craft: Mk 11, Mk 12, Mk 13 and 11 m LCPLs. Details given are for Mk 12 and 13. For use as control craft and carried aboard LHA, LPD and LSD classes.



LCPL Mk 13 4/1991, Bollinger / 0064143

34 LCU 1600 CLASS (UTILITY LANDING CRAFT) (LCU-ARMY (2) AND NAVY (32))

Displacement, tons: 200 light; 375 full load
Dimensions, feet (metres): 134.9 x 29 x 6.1 (41.1 x 8.9 x 1.9)
Main machinery: 2 Detroit 12V-71 diesels; 400 hp (298 kW) sustained; 2 shafts; Kort nozzles
Speed, knots: 11. **Range, n miles:** 1,200 at 8 kt
Complement: 14 (2 officers)
Military lift: 134 tons; 3 M103 (64 tons), 2 M1A1 tanks or 360 troops
Guns: 4—12.7 mm MGs
Radars: Navigation: Furuno; I-band.

Comment: Steel hulled construction. Versatile craft used for a variety of tasks. Most were built between the mid 1960s and mid-1980s. There are no plans for more of this type and a replacement craft is under consideration. Three converted to Diver Support Craft (ASDV). LCU 1667 and 1675 operated by the US Army. Two USN craft are in reserve. It is planned to reduce US Navy inventory to 28.



LCU 1600 class (Army) 2/2001, M Declerck 0521



LCU 1632 11/2008, US Navy / 1355646

MINE WARFARE FORCES

Notes: (1) There are no surface minelayers. Mining is done by carrier-based aircraft, land-based aircraft and submarines. The mine inventory includes Mk 56 moored influence mines, the Mk 67 submarine launched mobile mine (SLMM) and the Quickstrike series of bottom mines. Mk 56 is being phased out.

(2) NRF ships are manned by active and reserve crews
 (3) MH-53E Sea Stallion helicopters can be deployed in LHDs or transported by C-5 aircraft for mine countermasures
 (4) The Long-term Mine Reconnaissance System (LMRS) (AN/BLQ-11), developed by Boeing, is being used as a risk reduction vehicle for the US Navy's 21 in Mission Reconfigurable Unmanned Undersea Vehicle System (MRUUV). This programme is to develop and procure a modular UUV capable of supporting multiple payloads, reconfigurable for mine countermasures; intelligence, surveillance and reconnaissance; and other missions. The first submerged operation of two UUVs conducted from SSN 768 in October 2007. The UUVs form part of LMRS.

(5) Marine Mammal Systems (MMS) uses trained dolphins and sea lions for mine detection, detection of unauthorised swimmers, protection of fleet assets in port and critical infrastructure, and recovery of exercise mines and torpedoes. The dolphins can be transported by C-5 aircraft or amphibious ships. MMS is the only operational method of detecting and neutralising buried mines.

(6) The AN/WLD-1 Remote Minehunting System (RMS) is an off-board minehunting system that will reside with a forward deployed battle group. Approved for low-rate production, RMS is comprised of a 14,500 lb diesel powered semi-submersible (the Remote Minehunting Vehicle) combined with the towed AN/AQS-20A Sonar Mine Detecting Set. The vehicle tows variable depth sensor to detect, localise and classify bottom mines and moored mines. System includes line-of-sight and over-the horizon real-time data links, shipboard launch and recovery subsystem, and a software segment that integrates AN/WLD-1(V)1 into the ship's AN/SQQ-89(V)15 Undersea Warfare Combat System.

RMS can conduct real-time detection and processing when using line-of-sight communications. RMS will be deployed on Flight IIA Arleigh Burke-class DDGs as well as from the new Littoral Combat Ship (LCS) seaframes (where RMS forms part of the LCS Mine Warfare Mission Package) which was rolled out in September 2008. Installation of first system completed January 2007 aboard Bainbridge DDG 96.

(7) Rapid Airborne Mine Clearance System (RAMICS) is under development. RAMICS is to be operated from a MH-60S helicopter and consists of an electro-optic detection and ranging system and a 30 mm gun system to destroy near-surface and floating moored mines.

(8) Organic Airborne and Surface Influence Sweep (OASIS) is being developed for deployment from MH-60S helicopters, and selected surface craft. OASIS will provide organic, high-speed magnetic and acoustic influence minesweeping capability.

14 AVENGER CLASS (MINESWEEPERS/MINEHUNTERS) (MCM/MHSO)

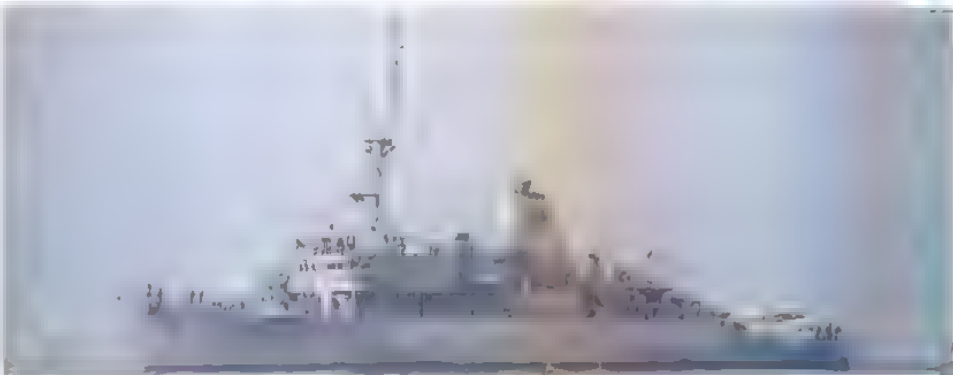
Name	No	Builders	Laid down	Launched	Commissioned	F/S
AVENGER	MCM 1	Peterson Builders Inc	3 June 1983	15 June 1986	12 Sep 1987	NRF
DEFENDER	MCM 2	Marinette Marine Corp	1 Dec 1983	4 Apr 1987	30 Sep 1989	NRF
SENTRY	MCM 3	Peterson Builders Inc	8 Oct 1984	20 Sep 1986	2 Sep 1989	NRF
CHAMPION	MCM 4	Marinette Marine Corp	28 June 1984	15 Apr 1989	27 July 1991	NRF
GUARDIAN	MCM 5	Peterson Builders Inc	8 May 1985	20 June 1987	16 Dec 1989	PA
DEVASTATOR	MCM 6	Peterson Builders Inc	9 Feb 1987	11 June 1988	6 Oct 1990	AA
PATRIOT	MCM 7	Marinette Marine Corp	31 Mar 1987	15 May 1990	18 Oct 1991	PA
SCOUT	MCM 8	Peterson Builders Inc	8 June 1987	20 May 1989	15 Dec 1990	PA
PIONEER	MCM 9	Peterson Builders Inc	5 June 1989	25 Aug 1990	7 Dec 1992	AA
WARRIOR	MCM 10	Peterson Builders Inc	25 Sep 1989	8 Dec 1990	3 Apr 1993	AA
GLADIATOR	MCM 11	Peterson Builders Inc	7 July 1990	29 June 1991	18 Sep 1993	NRF
ARDENT	MCM 12	Peterson Builders Inc	22 Oct 1990	16 Nov 1991	18 Feb 1994	AE
DEXTROUS	MCM 13	Peterson Builders Inc	11 Mar 1991	20 June 1992	9 July 1994	AE
CHIEF	MCM 14	Peterson Builders Inc	19 Aug 1991	12 June 1993	5 Nov 1994	AA

Displacement, tons: 1,379 full load
Dimensions, feet (metres): 224.3 x 38.9 x 12.2 (68.4 x 11.9 x 3.7)
Main machinery: 4 Waukesha L-1616 diesels (MCM 1-2); 2,600 hp(m) (1.91 MW) or 4 Isotta Fraschini ID 36 SS 6V AM diesels (MCM 3 onwards); 2,280 hp(m) (1.68 MW) sustained; 2 Hansome Electric motors; 400 hp(m) (294 kW) for hovering; 2 shafts; cp props; 1 Omnitrustrer hydrojet; 350 hp (257 kW)
Speed, knots: 13.5. **Range, n miles:** 2,500 at 10 kt
Complement: 84 (8 officers)

Guns: 2—12.7 mm MGs.
Countermasures: MCM 2 SLQ-48; includes Honeywell/Hughes ROV mine neutralisation system, capable of 6 kt (1,500 m cable with cutter (MP1), and countermining charge) (MP 2). SLQ-37(V)3; magnetic/acoustic influence sweep equipment. Oropesa SLQ-38 Type 0 Size 1; mechanical sweep.
Combat data systems: SATCOM SRR-1; WSC-3 (UHF) GEC/Marconi Nautis M in last two ships includes SSN 2 PINS command system and control. USQ-119E(V), UHF Dama and OTCIXS provide JMCIS connectivity.

Radars: Surface search. ISC Cardion SPS-55, I/J-band.
Navigation: ARPA 2525 or LN66, I-band. Both to be replaced by SPS-73.
Sonars: Raytheon/Thomson Sintra SQQ-32(V)3, VDS; active minehunting; high frequency.

Programmes: The contract for the prototype MCM was awarded in June 1982. The last three were funded in FY90.



SCOUT 10/2008, Shaun Jones 1353635

Modernisation: Integrated Ship Control System (ISCS) installed in all hulls.

Structure: The hull is constructed of oak, Douglas fir and Alaskan cedar, with a thin coating of fibreglass on the outside, to permit taking advantage of wood's low magnetic signature. A problem of engine rotation on the Waukesha diesels in MCM 1-2 was resolved; however, those engines have been replaced in the rest of the class by low magnetic engines manufactured by Isotta-

Fraschini, of Milan, Italy fitted with SSN2(V) Precise Integrated Navigation System (PINS)

Operational: Avenger fitted with the SQQ-32 for Gulf operations in 1991 and all of the class have been retrofitted. Two transferred to NRF in 1995, two more in 1996 and a fifth in October 2000. Scout and Dextrous permanently stationed in Bahrain, and Guardian and Patriot are at Sasebo, Japan. The remainder are based at Ingleside, Texas. Ingleside-based ships are to be homeported at San Diego by 2009.

RESEARCH SHIPS

Notes: (1) There are many naval associated research vessels which are civilian manned and not carried on the US Naval Vessel Register. In addition civilian ships are leased for short periods to support a particular research project or trial. Some of those employed include *RSB-7* (m ssile booster recovery), *Acoustic Pioneer* and *Acoustic Explorer* (acoustic research). (2) The stealth ship prototype *Sea Shadow* was de-activated in 2006 and may be converted into a museum



ACOUSTIC EXPLORER

10/2007, Michael Nitz / 1353634

1 EXPERIMENTAL CATAMARAN (X-CRAFT) (AGE)

SEA FIGHTER FSF-1

Displacement, tons: 1,025 standard, 1,400 full load
Dimensions, feet (metres): 269 x 72.2 x 11.5 (82.0 x 22.0 x 3.5)
Main machinery: CODOG, 2 GE LM 2500 gas turbines, 60,000 hp (44.7 MW); 2 MTU 16V695 diesels; 11,585 hp (8.6 MW); four Rolls-Royce Kamewa 125 SH waterjets
Speed, knots: 50 **Range, n miles:** 4,000 at 20 kt
Complement: 17
Radars, Navigation: I-band
Helicopters: Platform for 1 SH-60R

Comment: In September 2002, the Office of Naval Research selected Titan Corporation of San Diego, California and Nigel Gee and Associates LTD of Southampton, UK to design an experimental vessel known as X-CRAFT. A contract for development and build of the vessel was awarded in February 2003. The keel was laid in June 2003 and the vessel was launched in February 2005 at Nichols Brothers Boat Builders in Whidbey Island, Washington. The vessel, an aluminium-hulled, wave-piercing catamaran, was delivered to the Navy in May 2005. Multipurpose stern ramp, with direct access to the mission bay, allows launch and recover of manned and unmanned surface and sub-surface vehicles. Flight deck has dual landing spots for two MH-60 helicopters or UAV. Between May 2005 and September 2006 the vessel was stationed in San Diego and manned by a combined Navy/Coast Guard crew to evaluate experimental manning an operational concepts. In October 2006 a civilian crew assumed operations and maintenance of the vessel. In March 2008 the homeport was changed from San Diego to Panama City, Florida where it is used as a test platform for at-sea science and technology experimentation and advanced concept demonstrations. Modifications to reduce ship signature as well as improvements to hull, mechanical and electrical capabilities were to be completed in April 2009.



SEAFIGHTER

10/2005, US Navy / 1123764

1 EXPERIMENTAL SWATH (AGE)

STILETTO

Displacement, tons: 60 full load
Dimensions, feet (metres): 87.9 x 40.0 x 2.5 (26.8 x 12.2 x 0.76)
Main machinery: 4 Caterpillar diesels; 6,600 hp (4.9 MW); 4 surface piercing propellers
Speed, knots: 50
Complement: 35
Radars, Navigation: To be announced.
Helicopters: Platform for 2 SH-60R

Programmes: Developed by the Office of Force Transformation to act as a testbed for new technologies and to evaluate the potential uses of innovative hullforms. The ship was designed by M Ship Company of San Diego, California and constructed in 15 months by Knight & Carver Yacht Center, National City, CA. The ship was delivered in 2006 and trials (including mine warfare and special operations) are expected to last several years.

Structure: Small Water Area Twin Hull (SWATH) design of lightweight all-carbon composite construction. Multiple hulls reduce drag and generate hydrodynamic lift. The ship is capable of launching/recovering an 11 m RIB via a stern ramp and can also act as a platform for UAVs. In addition, the craft includes an 'electronic keel' which enables mission planning modules to be installed and networked.

Operational: The craft took part in Exercise Trident Warrior in August 2006. The craft was shipped to Norfolk, VA, in late 2006 where it is now based.



STILETTO

5/2006, US Navy / 1157633

0 + 1 EXPERIMENTAL CATAMARAN (AGE)

SUSITNA

Displacement, tons: 987 full load
Dimensions, feet (metres): 195.0 x 60.0 x 12.1 (SWATH); 4.8 (barge) (59.7 x 18.3 x 3.7; 1.5)
Main machinery: 4 MTU 12V 4000 diesels; 4 Wärtsilä waterjets
Speed, knots: 22 **Range, n miles:** 200 at 20 kt

Programmes: Originally developed by Lockheed Martin as the Vancraft concept, it attracted Congressional interest as a transformational technology and later became known as Expeditionary Craft (E-Craft). Sponsored jointly by the Office of Naval Research and Alaska's Matanuska Susitna Borough, the keel was laid at Alaska Ship and Drydock Inc at Ketchikan, AK, on 24 August 2006. When completed in 2010, the E-craft is to be operated as a ferry between Anchorage and Port Mckenzie while also serving as a three-year technology demonstrator to support expeditionary logistic-support concepts.

Structure: The ship has a reconfigurable hull form that has three modes of operation. A catamaran mode is for high-speeds, a Small-Water-Area Twin Hull (SWATH) mode is for stability in high sea states and a shallow draft landing-craft (barge) mode is for manoeuvring in shallow water. In addition the ship is claimed to be the world's first ice-breaking twin-hulled vessel. The ship's centre deck can be raised and lowered hydraulically while the buoyancy of the catamaran hulls can be adjusted while underway. The ship is designed as half scale of a potential future military vessel and is to be capable of carrying up to 150 passengers and 20 cars.



SUSITNA

2/2007, US Navy / 1185948

1 ELECTRIC SHIP DEMONSTRATOR

SEA JET

Displacement, tons: 120 full load
Dimensions, feet (metres): 133 x 7 x 7 (40.5 x 7 x 7)
Main machinery: 720-cell lead-acid battery bank; 2,690 hp (2 MW); 2 motors; 2 AWJ-21 waterjets; 1 Caterpillar C9 diesel generator, 335 hp (250 kW)
Speed, knots: 16
Range, n miles: 200 at 8 kt
Complement: 3
Radars, Navigation: Furuno 1933C; I-band.

Comment: An Advanced Electric Ship Demonstrator (AESD) designed to test and develop electric ship and propulsor technologies. Funded by the Office of Naval Research, the craft is an approximately quarter-scale version of a destroyer-sized surface ship with tumblehome hullform. Its first task was to test Rolls Royce Naval Marine's AWJ-21 waterjet technology. Testing of the General Dynamics RIMJET podded propulsor began in March 2008. Other technologies, such as low signature superstructure, are also to be trialled. The vessel was built by Dakota Creek Industries, Anacortes, WA, and is located at the Naval Surface Warfare Center Carderock Division, Acoustic Research Detachment in Bayview, Idaho. The vessel started trials on Lake Pend Oreille on 30 November 2005.



SEA JET

6/2005, US Navy / 1118518

2 ASHEVILLE CLASS (YFR7)

ATHENA (ex-Chehalis)

ATHENA II (ex-Grand Rapids)

Displacement, tons: 235 full load
Dimensions, feet (metres): 164.5 x 23.8 x 9.5 (50.7 x 7.3 x 2.9)
Main machinery: CODOG; 1 GE LM 1500 gas-turbine; 12,500 hp (9.3 MW); 2 Cummins VT12-375 diesels; 1,450 hp (1.07 MW); 2 shafts; cp props
Speed, knots: 16 **Range, n miles:** 1,700 at 16 kt
Complement: 22

Comment: Both built 1969-71. Work for the Naval Surface Warfare Center, at Panama City, Florida. Disarmed. *Laurin* was decommissioned in 2007 and is to be sunk as a target.



ATHENA II

6/1993, Giorgio Arra / 0508179

RESEARCH OCEANOGRAPHIC SHIPS

2 MELVILLE CLASS (AGOR)

Name	No	Builders	Commissioned	F/S
MELVILLE	AGOR 14	Defoe SB Co, Bay City, MI	27 Aug 1969	Loan
KNORR	AGOR 15	Defoe SB Co, Bay City, MI	14 Jan 1970	Loan

Displacement, tons: 2,944 full load
Dimensions, feet (metres): 278.9 x 46.3 x 16.5 (85 x 14.7 x 5.0)
Main machinery: Diesel-electric; 3 Caterpillar 3516 diesel generators; 1 Caterpillar 3508 diesel generator; 2 motor-driven Z-drive azimuth thrusters; 3,000 hp (2.2 MW); 1 bow thruster; 900 hp (670 kW)
Speed, knots: 14. **Range, n miles:** 10,060 at 11.7 kt
Complement: 23 (9 officers) plus 38 scientists
Sonars: Deep-water multibeam; sub-bottom profiler; Acoustic Doppler Current Profiler

Comment: *Melville* operated by Scripps Institution of Oceanography and *Knorr* by Woods Hole Oceanography Institution for the Office of Naval Research, under technical control of the Oceanographer of the Navy. Fitted with internal wells for lowering equipment and observation ports. Problems with the propulsion system led to major modifications including electric drive (via the original mechanical) and the insertion of a 34 ft central section increasing the displacement from the original 1,915 tons and allowing better accommodation and improved laboratory spaces. The forward propeller is retractable. These ships are highly manoeuvrable for precise position keeping.



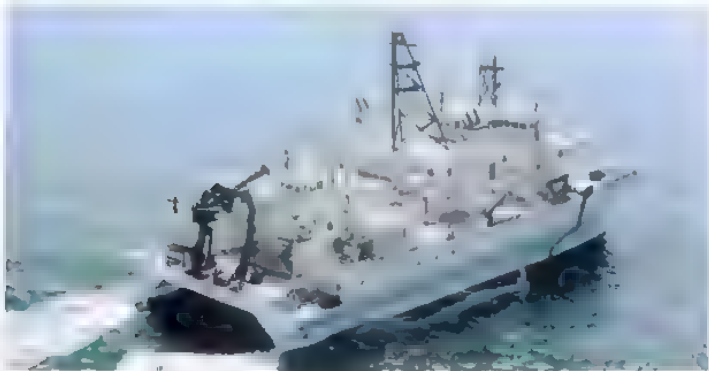
MELVILLE 3/2003, Robert Peabot / 0572738

1 AGOR-26 CLASS (AGOR)

Name	No	Builders	Commissioned
KILO MOANA	AGOR 26	Atlantic Marine, Jacksonville	3 Sep 2002

Displacement, tons: 2,542 full load
Dimensions, feet (metres): 186 x 88 x 25 (56.7 x 26.8 x 7.6)
Main machinery: Diesel-electric; 4 Caterpillar 3508B diesel generators, 2 Westinghouse motors; 4,025 hp (3 MW); 1 bow thruster 1,100 hp (820 kW)
Speed, knots: 15. **Range, n miles:** 10,000 at 11 kt
Complement: 48 (31 scientists)

Comment: Replacement for *R/V Moana Wave*. Designed to commercial standards and constructed by Atlantic Marine, Jacksonville. Launched on 17 November 2001. The ship is a small waterplane area, twin hull (SWATH) oceanographic vessel capable of performing general purpose oceanographic research in coastal and deep ocean areas. The University of Hawaii School of Ocean and Earth Science and Technology operates the ship under a charter agreement for the Office of Naval Research (ONR). The survey suite consists of a Kongsberg EM 120 multibeam echosounder (12 kHz), a Kongsberg EM 1002 shallow water echo sounder (95 kHz), a Workhorse Mariner 300 kHz current profiler and an Ocean Surveyor 38 kHz current profiler.



KILO MOANA 6/2004, University of Hawaii Marine Center / 1043533

3 THOMAS G THOMPSON CLASS (AGOR)

Name	No	Builders	Launched	Commissioned	F/S
THOMAS G THOMPSON	AGOR-23	Halter Marine	27 July 1990	8 July 1991	Loan
ROGER REVELLE	AGOR-24	Halter Marine	20 Apr 1995	11 June 1996	Loan
ATLANTIS	AGOR-25	Halter Marine	1 Feb 1996	3 Mar 1997	Loan

Displacement, tons: 3,400 full load
Dimensions, feet (metres): 274 oa; 246.8 wl x 52.5 x 19 (83.5; 75.2 x 16 x 5.6)
Main machinery: Diesel-electric; 6 Caterpillar diesel generators; 6.65 MW (3-1.5 MW and 3-715 kW); 2 motors; 6,000 hp (4.48 MW); 2 Z-drives; bow thruster; 1,140 hp (850 kW)
Speed, knots: 15. **Range, n miles:** 15,000 at 12 kt
Complement: 22 plus 37 scientists
Sonars: Various multibeam seafloor mapping sonars and sub-bottom and Acoustic Doppler Current Profiling systems.

Comment: *Thomas G Thompson* was the first of a class of oceanographic research vessels capable of operating worldwide in all seasons and suitable for use by navy laboratories, contractors and academic institutions. Dynamic positioning system enables precise station-keeping. 4,000 sq ft of laboratories. AGORs 23, 24 and 25 are operated by academic institutions for the Office of Naval Research through charter party agreements (AGOR 23-University of Washington; AGOR 24-Scripps Institution of Oceanography; AGOR 25-Woods Hole Oceanographic Institution). Ships in this series are able to meet changing oceanographic requirements for general-purpose, year-round, worldwide research. This includes launching, towing and recovering a variety of equipment. The ships are also involved in hydrographic data collection. *Atlantis* is the support vessel for human-occupied research submersibles operated by the National Deep Submergence Facility.



THOMAS G THOMPSON 6/2004, Mitsuhiro Kadota / 1045632

HIGH SPEED VESSELS

Notes: The T-Craft (Transformation Craft) program was launched by the Office of Naval Research in 2008 with the award of contracts to three shipbuilders: Umco Mandal, Alion Science and Technology, and Textron Marine and Land. The requirement is to design and build prototype vessels that combine surface-effect and hovercraft capabilities. The T-Craft would be an upgrade to US Navy's current inventory of air-cushioned LCACs which have limited range, relatively small cargo capacity and are not designed for open ocean deployment. The vessel is to be high-speed (up to 40 kt), wave-skimming vessel able to cross oceans, ferry supplies from ship to shore, and transform into hovercraft with capability to slide ashore. The vessel, up to about 85 m long, would have a range of 2,500 n miles at 20 kt in transit mode. Prototypes are to be ready for testing in 2010 and the competition winner may receive a contract to build the first of class.

1 HIGH SPEED VESSEL (HSV/MCS)

SWIFT HSV-2

Displacement, tons: 1,800
Dimensions, feet (metres): 318.9 x 88.6 x 11.3 (97.2 x 27.0 x 3.4)
Main machinery: 4 Caterpillar 3618 diesels; 38,620 hp (28.8 MW); 4 LIPS 1500 waterjets
Speed, knots: 42 (light); 38 (full load)
Range, n miles: 2,400 at 35 kt
Complement: 17 civilian, 20 military
Military lift: 500 tons cargo and 325 personnel
Helicopters: Platform for AH-1, MH/SH 60, UH-1 or CH-46.

Comment: Built as *Incat 61* (Incat Evolution 108) of aluminium construction. HSV-2 was under bareboat charter before being placed under long-term charter for up to five years from November 2008 to Military Sealift Command. The role of the ship is to conduct specialised missions worldwide. These have included deployment to the Horn of Africa, the Persian Gulf and Southeast Asia. *Swift* support relief operations in the US Gulf Coast region following hurricane Katrina. In 2007, the vessel served as the platform for an experiment for the Global Fleet Station concept, deploying to the Caribbean and South America.



SWIFT 2/2004, US Navy / 1043637

1 HIGH SPEED VESSEL (HSV)

WESTPAC EXPRESS HSV 4676

Displacement, tons: 1,464
Dimensions, feet (metres): 331.4 x 87.4 x 13.8 (101.0 x 26.65 x 4.2)
Main machinery: 4 Caterpillar 3618 diesels; 38,620 hp (28.8 MW); 4 Kamewa waterjets
Speed, knots: 40
Range, n miles: 1,100 at 35 kt
Military lift: 550 tonnes of equipment and 970 personnel

Comment: Following trials which started in July 2001, chartered by Military Sealift Command from Austal Ships, West Australia. The current charter was extended in February 2007 for up to 69 months. Aluminium construction. Employed by US Marine Corps Third Expeditionary Force (III MEF) to transport equipment and troops from Okinawa for training exercises in Yokohama, Guam and other regional destinations. The benefits include reduced dependence on and cost of airlift. The vessel will retain commercial livery and markings. Based at Okinawa.

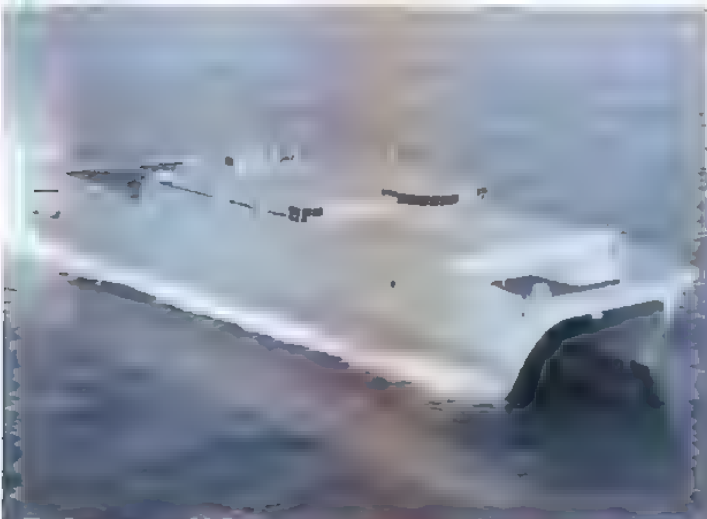


WESTPAC EXPRESS 8/2001, Mitsuhiro Kadota / 0131282

0 + 1 (9) JOINT HIGH SPEED VESSELS (TSV)

Displacement, tons: To be announced
Dimensions, feet (metres): 337.9 x 93.5 x 12.6 (103.0 x 28.5 x 3.83)
Main machinery: 4 MTU 20V8000 M71L diesels; 48,800 hp (36.4 MW); 4 Wärtsilä WLD 1400 SR waterjets
Speed, knots: 43
Range, n miles: 1,200 at 35 kt
Military lift: 150 troops + 312 troops (seated) + 835 tonnes of equipment
Helicopters: Platform for one CH-53E

Comment: The Joint High Speed Vessel (JHSV) Program is for 10 high-speed intra-theatre connector vessels. This program was initiated following signature of a Memorandum of Agreement (MOA) with the US Army which married the Army's Theater Support Vessel (TSV) program with the Navy's High Speed Connector (HSC) program. Acquisition for JHSV is under the auspices of the Navy's Program Executive Office, Ships, but each service is to fund procurement and life-cycle costs of its own ships. Contracts for the preliminary design of JHSV were awarded to Austal USA, Bath Iron Works and Bollinger Shipyards (teamed with Incat) on 31 January 2008. On 13 November 2008, the Navy awarded Austal USA a fixed-price incentive contract for detailed design and construction of one vessel. The contract includes priced options for the construction of up to nine additional ships and associated shore-based spares. The semi-SWATH catamaran design ship is of aluminium construction and has an articulated slewing stern ramp. The first vessel, for the Army, is to be delivered in 2011.



JHSV (artist's impression) 11/2008*, Austal Ships / 1353633

DEEP SUBMERGENCE VEHICLES

(Included in US Naval Vessel Register)

Notes: (1) Deep submergence vehicles and other craft and support ships are operated by Submarine Development Squadron Five (CSDS-5) Deep Submergence Unit (DSU) in San Diego, California. The Squadron is a Major Command that includes advanced diving equipment, divers trained in 'saturation' techniques. DSV-2 is in an inactive lay-up condition. Two unmanned vessels CURV (Cable Controlled Underwater Remote Vehicle) Super Scorpis made test dives to 5,000 ft (1,524 m). (2) The Supervisor of Salvage and Diving operates four additional Navy ROVs. They are all air-transportable and can be operated from a variety of warships and commercial vessels.

1 CUTTHROAT CLASS (DSV)

Name	No	Builders	Commissioned
CUTTHROAT	LSV-2	Newport News Shipbuilding and General Dynamics Electric Boat Division	Apr 2001

Displacement, tons: 205
Dimensions, feet (metres): 111 x 10 x 9 (33.8 x 3.1 x 2.7)
Main machinery: Permanent Magnet electric motor; 3,000 hp(m) (2.23 MW)
Speed, knots: 34 dived

Comment: The contract was placed with Newport News and Electric Boat in January 1999 to build *Cutthroat* LSV-2. The largest autonomous unmanned submarine in the world, it is a 1:3.4 scaled-down model of the Virginia-class submarine used to test advanced submarine technologies, including hydro-acoustics, hydrodynamics and manoeuvring. Its diving depth matches that of the Virginia class. The forward compartment contains 1,680 lead acid batteries and the after compartment contains the propulsion and auxiliary systems together with data recording and control systems. All appendages, including control surfaces and simulated sonar fairing, can be removed or relocated. LSV-2 is operated by the Acoustic Research Detachment at the Instrumented Range at Lake Pend Oreille in Bayview, Idaho. It is named after a species of trout indigenous to the lake.



CUTTHROAT 2000, Newport News / 0105821

1 DEEP SUBMERGENCE VEHICLE: ALVIN TYPE (DSV)

Name	No	Builders	F/S
– (ex-Alvin)	DSV 2	General Mills Inc, Minneapolis	PSA

Displacement, tons: 18 full load
Dimensions, feet (metres): 26.5 x 8.5 (8.1 x 2.6)
Main machinery: 6 brushless DC motors; 6 thrusters; 2 vertical-motion thrusters (located near the centre of gravity); 2 horizontally (near stern) (1 directed athwartships, 1 directed longitudinally); 2 on rotatable shaft near stern for vertical or longitudinal motion
Speed, knots: 2
Range, n miles: 3 at 0.5 kt
Complement: 3 (1 pilot, 2 observers)

Comment: Ex-Alvin was built for operation by the Woods Hole Oceanographic Institution for the Office of Naval Research. Named for Allyn C Vine of Woods Hole Oceanographic Institution, the original configuration had an operating depth of 6,000 ft. Ex-Alvin accidentally sank in 5,051 ft of water on 16 October 1968, was subsequently raised in August 1969 and refurbished in 1970–71 to its original configuration. Placed in Naval service on 1 June 1971, she was subsequently refitted with a titanium pressure sphere to provide increased depth capability. Ex-Alvin has an operating depth of 4,500 m (14,764 ft) and is powered by two banks of lead-acid batteries providing a 120 V DC system with 47 kW/h of capacity. In October 2006, after conducting dive number 4,162, ex-Alvin was overhauled and provided with upgraded equipment. The National Science Foundation is funding a replacement, capable of depths of 8,500 m which is expected to become operational in 2010. Two other DSVs were placed out of service in 1997/98, one transferred to the Woods Hole Institute.

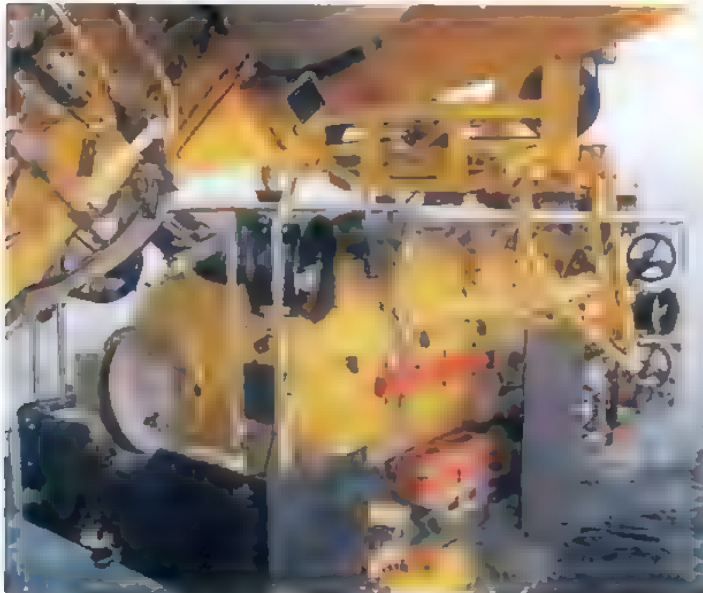


DSV 2 10/2003, Rod Catanach, Woods Hole Oceanographic Institution / 0009313

1 PRESSURIZED RESCUE MODULE

Displacement, tons: To be announced
Dimensions, feet (metres): To be announced
Main machinery: To be announced
Speed, knots: To be announced
Complement: To be announced

Comment: The Submarine Rescue, Diving and Recompression System (SRDRS) replaced DSRV on 1 October 2008. It consists of three principal components: a Pressurized Rescue Module (PRM), Submarine Decompression System (SDS) and an Atmospheric Diving Suit (ADS). The PRM is a tethered, remotely operated submersible launched and controlled from a vessel of opportunity in up to Sea State 4. It has a cylindrical hull on which navigation, video, propulsion, and life support systems are mounted externally. The vehicle is designed for submerged transit to a depth of 2,000 ft (610 m) of sea water, for docking and mating (up to a 45° angle) to a disabled submarine (DISSUB) and for evacuation and transfer of up to 18 rescued personnel directly to the Submarine Decompression Chambers (SDCs) into which rescued personnel can be transferred under pressure and safely decompressed to atmospheric pressure. ADS is a military adapted commercial diving suit that has been successfully tested to a depth of 2,000 ft (610 m). The system is designed to be transportable worldwide in a standard shipping container. Overall, the system is capable of rescuing up to 155 personnel from a pressurized DISSUB.



SDRS

6/2008, Richard Scott / 1353632

AUXILIARIES

Notes: As of January 2009, the US Navy had about 440 active and 10 inactive service craft, primarily small craft, on the US Naval Vessel Register. A majority of these vessels provide services to the fleet in various harbours and ports. Others are ocean-going ships that provide services to the fleet for research purposes. Most of the service craft are rated as 'active, in service', while others are rated as 'in commission' and some are accommodation ships.

2 CAPE FLATTERY CLASS (TORPEDOTRIALS CRAFT) (YTT)

BATTLE POINT YTT 10

DISCOVERY BAY YTT 11

Displacement, tons: 1,168 full load
Dimensions, feet (metres): 186.5 × 40 × 10.5 (56.9 × 12.2 × 3.2)
Main machinery: 1 Cummins KTA50-M diesel, 1,250 hp (932 kW) sustained; 1 shaft; 1 bow thruster; 400 hp (298 kW); 2 stern thrusters; 600 hp (448 kW)
Speed, knots: 11
Range, n miles: 1,000 at 10 kt
Complement: 31 plus 9 spare berths

Comment: Built by McDermott Shipyard, Morgan City, and delivered in 1991-92. Fitted with two 21 in Mk 59 and three (one triple) 12 75 in Mk 32 Mod 5 torpedo tubes. Used for torpedo trials and development at Keyport, Washington. A battery is fitted for limited duration operations with the diesel shutdown. Both based at Naval Underwater Warfare Centre, Keyport, WA.



YTT

9/1999, van Ginderen Collection / 0094162

2 DIVING TENDERS (YDT)

YDT 17-18

Displacement, tons: 275 full load
Dimensions, feet (metres): 132 × 27 × 6.0 (40.2 × 8.2 × 1.8)
Main machinery: 2 Caterpillar diesels; 2,800 hp (1.91 MW); 2 Hamilton waterjets
Speed, knots: 20
Complement: 8 plus 7 divers

Comment: Tenders used to support shallow-water diving operations and are based at Panama City, FL. Ordered from Swiftships in July 1997 and delivered in April 1999.



YDT 17

8/1999, US Navy / 0081000

23 PATROL CRAFT (YP)

YP 663

YP 665

YP 690-692

YP 694-698

YP 700-702

Displacement, tons: 167 full load
Dimensions, feet (metres): 108 × 24 × 8 (32.9 × 7.3 × 2.4)
Main machinery: 2 Detroit 12V-71 diesels, 680 hp (507 kW) sustained; 2 shafts
Speed, knots: 13.3
Range, n miles: 1,500 at 12 kt
Complement: 6 (2 officers) plus 24 midshipmen
Raders: Navigation, I-band

Comment: Built in the 1980s by Peterson Builders and Mannette Marine, both in Wisconsin. Twenty-one are based at the Naval Academy, Annapolis and two at Naval Underwater Warfare Centre, Keyport, WA.



YP 694

5/2006, James E Mathwick / 1167100

14 TORPEDO WEAPONS RETRIEVERS (YPT)

Comment: Four different types spread around the Fleet bases and at AUTC. There are 2 TRs × 65 ft (aluminium), 1 TRB × 72 ft (wood), 4 TWRs × 85 ft (aluminium), and 5 TWRs × 120 ft (steel).



TR 6

7/2000, Sattler/Steele / 0106813

FLOATING DRY DOCKS

Notes: The US Navy operates a limited number of floating dry docks to supplement dry dock facilities at major naval activities. The larger floating dry docks are made sectional to facilitate movement and to render them self-docking. Some of the ARD-type docks have the forward end of their docking well closed by a structure resembling the bow of a ship to facilitate towing. Berthing facilities, repair shops and machinery are housed in sides of larger docks. None is self-propelled.

SMALL AUXILIARY FLOATING DRY DOCKS (AFDL)

Name/No	Completed	Capacity (tons)	Construction	Status
DYNAMIC (AFDL 6)	1944	950	Steel	Active, Norfolk, VA
ADEPT (AFDL 23)	1944	1,770	Steel	Commercial lease, Ingleside, TX
RELANCE (AFDL 47)	1946	7,000	Steel	Commercial lease, Charleston, SC

Sales: AFDL 1 to Dominican Republic; 4, Brazil; 5, Taiwan; 11, Kampuchea; 20, Philippines; 22, Vietnam; 24, Philippines; 26, Paraguay; 28, Mexico; 33, Peru; 34 and 35, Taiwan; 39, Brazil; 40 and 44, Philippines. AFDL 23 to be sold to the current lessee.



DYNAMIC 11/2006, US Navy / 1306191

AUXILIARY REPAIR DRY DOCKS AND MEDIUM AUXILIARY REPAIR DRY DOCKS (ARDM)

Name/No	Commissioned	Capacity (tons)	Construction	Status
SHIPPINGPORT (ARDM 4)	1979	7,800	Steel	Active, New London, CT
ARCO (ARDM 5)	1986	7,800	Steel	Active, San Diego, CA

Sales: ARD 2 to Mexico; 5, Chile; 6, Pakistan; 8, Peru; 9, Taiwan; 11, Mexico; 12, Turkey; 13, Venezuela; 14, Brazil; 15, Mexico; 17, Ecuador; 22 (Windsor), Taiwan; 23, Argentina; 24, Ecuador; 25, Chile; 28, Colombia; 29, Iran; 32, Chile. ARDM 1 (ex-ARD 19) awaiting disposal decision



ARCO 9/2008, Julio Montes / 1353531

UNCLASSIFIED MISCELLANEOUS (IX)

- Notes: (1) In addition to the vessels listed below, one of the ex-Forrest Sherman class, *Decatur*, completed conversion on 21 October 1994 as a Self-Defence testing-ship, including high-energy laser trials. Tests with HFSWR (high-frequency surface wave radar) started mid-1997.
 (2) *Mercer APL 39* (ex-IX 502) and *Nueces APL 40* (ex-IX 503) are barrack ships of mid-1940s vintage
 (3) IX 516 is a decommissioned SSBN used for propulsion plant training.
 (4) IX 517 is a submarine sea trials escort vessel (*Gosport*)
 (5) IX 523 is used for security training, both at Norfolk, VA.
 (6) IX 310 is an accommodation barge at Naval Undersea Warfare Center, Dresden, NJ.
 (7) IX 521, IX 522 and IX 525 are individual drydock sections.
 (8) IX 527 and IX 528 are submarine test platforms, IX 529 is a surface ship test platform and IX 531 a test platform for HM&E
 (9) IX 530 (ex-YFND 5) is a berthing barge.



IX 517 7/2003, Declerck/Steeghers / 1043688

1 CONSTITUTION CLASS (AXS)

Name	Builders	Launched	Under Way	F/S
CONSTITUTION	Edmund Hart's Shipyard, Boston	21 Oct 1797	22 July 1798	AA

Displacement, tons: 2,250
 Dimensions, feet (metres): 204 oa; 175 w) x 43.5 x 22.5 (62.2; 53.3 x 13.2 x 6.8)
 Speed, knots: 13 under sail
 Complement: 75 (4 officers)

Comment: The oldest ship remaining on the Navy List. One of six frigates authorised 27 March 1794. Best remembered for her service in the war of 1812, in which she earned the nickname 'Old Ironsides'. Following extensive restoration (1927-30), went on a three year goodwill tour around the United States (1931-34), travelling over 22,000 miles and receiving over 4 million visitors. Open to the public in her homeport of Boston, the ship receives over 400,000 visitors a year. The most recent overhaul was conducted at the Charlestown Navy Yard, Boston from 1992-98. Under fighting sails (jibs, topsails and spanker) *Constitution* sailed for the first time in 116 years on 21 July 1997 as part of her bicentennial celebration. Armament is 32 x 24 pounder guns, 20 x 32 pounder carronades and 2 24 pounder bow-chasers. Sail area 42,710 sq ft (13,018 m²).



CONSTITUTION 7/1997, Todd Stevens, US Navy / 0016501

1 TRAINING SHIP (AXT)

Name	Builders	Commissioned
IX 514 (ex-YFU 79)	Pacific Coast Eng, Alameda	1968

Displacement, tons: 380 full load
 Dimensions, feet (metres): 125 x 36 x 8.0 (38.1 x 10.9 x 2.4)
 Main machinery: 4 GM 6-71 diesels; 696 hp (519 kW) sustained; 2 shafts
 Speed, knots: 8
 Radars: Navigation: Racal Decca; I-band.

Comment: Harbour utility craft converted in 1986 with a flight deck covering two thirds of the vessel and a new bridge and flight control position at the forward end. Used for basic helicopter flight training at Pensacola, Florida. Similar craft IX 501 deleted.



IX 514 12/1994, van Ginderen Collection / 0508217

1 RESEARCH SHIP (AGE)

SLICE

Displacement, tons: 180 full load
 Dimensions, feet (metres): 105 x 55.5 x 14 (32 x 16.9 x 4.3)
 Main machinery: 2 MTU 16V 396TB94 diesels; 13,700 hp(m) (10.07 MW); 2 shafts; LIPS cp props
 Speed, knots: 30
 Complement: 12

Comment: Technology demonstrator built by Pacific Marine and owned by Lockheed Martin. Participated as a littoral warfare combatant in Fleet Battle Experiment Juliet (FBE-J) (part of Millennium Challenge 2002). Modular capability packages, carried to simulate Littoral Combat Ship (LCS), included Mine Countermeasures (MCM), Antisubmarine Warfare (ASW), Force Protection and Time Critical Targeting. Weapons tested during FBE-J included the Lockheed Martin/Oerlikon Contraves 35 mm Millennium Gun and the NetFires System and launcher.



SLICE 10/2002, US Navy / 0572739

TUGS

16 LARGE HARBOUR TUGS (YTB)

MUSKEGONYTB 763	NEODESHA YTB 815
KEOKUKYTB 771	WANAMASSA YTB 820
MANISTEEYTB 782	CANONCHETYTB 823
KITTANNINGYTB 787	SANTAQUINYTB 824
OPELJKAYTB 798	CATAHECASSAYTB 828
MASSAPEQUAYTB 807	DEKANAWIDAYTB 831
WENATCHEEYTB 808	SKENANDOOYTB 835
ACCONACYTB 812	POKAGON YTB 836

Displacement, tons: 356 full load
Dimensions, feet (metres): 109 × 30 × 13.8 (33.2 × 9.1 × 4.2)
Main machinery: 1 Fairbanks-Morse 38D8-1/8 diesel; 2,000 hp (1.49 MW) sustained; 1 shaft
Speed, knots: 12
Range, n miles: 2,000 at 12 kt
Complement: 10-12
Radars: Navigation: Marconi LN66, I-band.

Comment: Built between 1959 and 1975. Two transferred to Saudi Arabia in 1975. Being withdrawn from service and tugs are being provided by MSC charter.



MASSAPEQUA

6/2008*, Hechiro Nakai / 1353569

MILITARY SEALIFT COMMAND (MSC)

Notes: (1) The Military Sealift Command (MSC) operates in four mission areas: Naval Fleet Auxiliary Force, Special Mission, Strategic Sealift and Prepositioning
 (2) Headquarters are in the Washington Navy Yard, Washington DC. The organisation is commanded by a US Navy Rear Admiral and operates six subordinate commands worldwide. The Military Sealift Fleet Support Command (MSFSC) in Norfolk, VA, crews, trains, equips and maintains MSC's government-owned, government-operated ships across the globe. MSFSC is commanded by a civilian member of the US Senior Executive Service. In addition, MSC has five operational commands called Sealift Logistic Commands (SEALOGs) which operate in the Atlantic, Pacific, Europe, Central and Far East areas of operation. Each SEALOG is commanded by a US Navy Captain.
 (3) MSC ships are assigned standard hull designations with the added prefix 'T'. MSC ships carry no weapons systems. They are crewed by civilians who are either employed by the US federal government or private companies under contract to MSC. Many ships' funnels have black, grey, blue and gold horizontal bands.

NAVAL FLEET AUXILIARY FORCE

4 SUPPLY CLASS (FAST COMBAT SUPPORT SHIPS) (AOEH)

Name	No	Builders	Laid down	Launched	Commissioned	F/S
SUPPLY	T-AOE 6	National Steel & Shipbuilding Co	24 Feb 1989	6 Oct 1990	26 Feb 1994	AA
RAINIER	T-AOE 7	National Steel & Shipbuilding Co	31 May 1990	28 Sep 1991	21 Jan 1995	PA
ARCTIC	T-AOE 8	National Steel & Shipbuilding Co	2 Dec 1991	30 Oct 1993	16 Sep 1995	AA
BRIDGE	T-AOE 10	National Steel & Shipbuilding Co	16 Sep 1993	25 Aug 1996	5 Aug 1998	PA

Displacement, tons: 19,700 light; 48,500 full load
Dimensions, feet (metres): 753.7 × 107 × 38 (229.7 × 32.6 × 11.6)
Main machinery: 4 GE LM 2500 gas turbines; 105,000 hp (78.33 MW) sustained; 2 shafts
Speed, knots: 30
Range, n miles: 6,000 at 22 kt
Complement: 180 civilian; 28 naval
Cargo capacity: 156,000 barrels of fuel; 1,800 tons ammunition; 400 tons refrigerated cargo; 250 tons general cargo; 20,000 gallons water
Helicopters: 2 MH 60

Comment: Construction started in June 1988. Supply decommissioned and transferred to MSC in July 2001, Arctic in June 2002, Rainier in August 2003 and Bridge in June 2004



RAINIER

8/2008*, Shaun Jones / 1353630

7 + 5 (2) LEWIS AND CLARK CLASS
(DRY CARGO/AMMUNITION SHIPS) (AKEH)

Name	No	Builders	Launched	Commissioned
LEWIS AND CLARK	T-AKE 1	National Steel & Shipbuilding Co	21 May 2005	20 June 2006
SACAGAWEA	T-AKE 2	National Steel & Shipbuilding Co	24 June 2006	27 Feb 2007
ALAN SHEPARD	T-AKE 3	National Steel & Shipbuilding Co	6 Dec 2006	26 June 2007
RICHARD E BYRD	T-AKE 4	National Steel & Shipbuilding Co	15 May 2007	8 Jan 2008
ROBERT E PEARY	T-AKE 5	National Steel & Shipbuilding Co	27 Oct 2007	5 June 2008
AMELIA EARHART	T-AKE 6	National Steel & Shipbuilding Co	6 Apr 2008	30 Oct 2008
CARL M BRASHEAR	T-AKE 7	National Steel & Shipbuilding Co	18 Sep 2008	4 Mar 2009
WALLY SCHIRRA	T-AKE 8	National Steel & Shipbuilding Co	8 Mar 2009	2009
MATTHEW PERRY	T-AKE 9	National Steel & Shipbuilding Co	2009	2010
CHARLES DREW	T-AKE 10	National Steel & Shipbuilding Co	2010	2011
WASHINGTON CHAMBERS	T-AKE 11	National Steel & Shipbuilding Co	2011	2012
WILLIAM McLEAN	T-AKE 12	National Steel & Shipbuilding Co	2011	2012

Displacement, tons: 24,833 light; 42,000 full load
Dimensions, feet (metres): 689.0 × 105.6 × 29.9 (210.0 × 32.2 × 9.1)
Main machinery: Integrated electric propulsion; 4 FM/MAN 8&W 9L and 8L 48/60 diesel generators (35.7 MW); 2 Alstom motors, 1 shaft; fixed pitch prop, bow thruster
Speed, knots: 20
Range, n miles: 14,000 at 20 kt
Complement: 124 (11 naval)
Cargo capacity: 3,442 tons fuel; 200 tons potable water; 6,675 dry cargo; 1,716 tons refrigerated stores
Countermeasures: AN/SIQ-25 towed torpedo decoy.
Radars: Decca BridgeMaster; I-band
Helicopters: 2 UH 46D/MH-60.

Comment: Design and construction contract placed on 18 October 2001 for delivery of first and second vessels. Contract for construction of the third of class in July 2002 and for the fourth in July 2003. A further two were ordered in January 2004 and two more on 11 January 2005. A ninth ship was ordered on 30 January 2006 and a tenth on 1 February 2008. T-AKE 11 and 12 were ordered on 16 December 2008. The contract includes long-lead items for T-AKE 13 and 14 which are to be ordered in 2010. The ships are being built to commercial standards to replace existing AE and AFS. Three RAS stations are to be fitted each side.



LEWIS AND CLARK

11/2008*, Guy Toremans / 1353674

2 MARS CLASS (COMBAT STORES SHIPS) (AFSH)

Name	No	Builders	Commissioned	F/S
CONCORD	T-AFS 5	National Steel & Shipbuilding Co	27 Nov 1968	TPA
SAN JOSE	T-AFS 7	National Steel & Shipbuilding Co	23 Oct 1970	TPA

Displacement, tons: 9,200 light; 15,900-18,663 full load
Dimensions, feet (metres): 581 × 79 - 26 (177.1 × 24.1 × 7.9)
Main machinery: 3 Babcock & Wilcox boilers; 580 psi (40.8 kg/cm²); 825°F (440 C), 1 De Laval turbine (Westinghouse in AFS 6); 22,000 hp (16.4 MW); 1 shaft
Speed, knots: 20
Range, n miles: 10,000 at 18 kt
Complement: 127 civilians plus 22 naval
Cargo capacity: 2,625 tons dry stores; 1,300 tons refrigerated stores (varies with specific loadings)
Radars: Navigation: 2 Raytheon; I-band
Tacan: URN 25
Helicopters: 2 MH 60.

Comment: Concord transferred to MSC on 15 October 1992 after disarming and conversion to a civilian crew. San Jose followed on 2 November 1993 and Niagara Falls on 23 September 1994. All have accommodation improvements and stores lifts installed. These ships carry comprehensive inventories of aviation spare parts as well as the cargo listed above. Two others of the class de-activated in 1997 Niagara Falls deactivated in 2008 and Concord and San Jose to follow in 2009.



SAN JOSE

9/2008*, Shaun Jones / 1353674

4 KILAUEA CLASS (AMMUNITION SHIPS) (AEH)

Name	No	Builders	Commissioned	F/S
FLINT	T-AE 32	Ingalls Shipbuilding	20 Nov 1971	TPA
SHASTA	T-AE 33	Ingalls Shipbuilding	26 Feb 1972	TPA
MOUNT BAKER	T-AE 34	Ingalls Shipbuilding	22 July 1972	TAA
KISKA	T-AE 35	Ingalls Shipbuilding	16 Dec 1972	TPA

Displacement, tons: 9,340 light; 19,940 full load
Dimensions, feet (metres): 564 x 81 x 28 (171.9 x 24.7 x 8.5)
Main machinery: 3 Foster-Wheeler boilers; 600 psi (42.3 kg/cm²); 870°F (467°C); 1 GE turbine; 22,000 hp (16.4 MW); 1 shaft
Speed, knots: 20 **Range, n miles:** 10,000 at 18 kt
Complement: 133 civilians plus 4 naval plus 35 (the o aircrew)
Radars: Navigat on 2 Raytheon, I-band
Tacan: URN 25
Helicopters: 2 CH-46E Sea Knight (cargo normally embarked).

Comment: *Kilauea* transferred to MSC 1 October 1980, *Flint* in August 1995, *Kiska* in August 1996, *Mount Baker* in December 1996, *Shasta* in October 1997 and *Santa Barbara* in September 1998. An eighth of class was to have transferred in 1999, but has been decommissioned. *Butte* decommissioned in 2002 and *Santa Barbara* in 2005. Ships underwent a civilian modification overhaul during which accommodation was improved. Main armament taken out. Seven UNREP stations operational four port, three starboard. *Kilauea* was deactivated in 2008.



SHASTA 4/2008, Hachiro Nakai / 13535/0

1 SIRIUS (LYNESS) CLASS (COMBAT STORES SHIP) (AFSH)

Name	No	Builders	Commissioned	F/S
SATURN (ex-Stromness)	T-AFS 10	Swan Hunter & Wigham Richardson Ltd, Wallsend-on-Tyne	10 Aug 1967	TAA

Displacement, tons: 9,010 light; 16,792 full load
Measurement, tons: 7,782 dwt; 12,359 gross; 4,744 net
Dimensions, feet (metres): 524 x 72 x 22 (159.7 x 22 x 6.7)
Main machinery: 1 Wallsend-Sulzer 8RD76 diesel; 11,520 hp (8.59 MW); 1 shaft
Speed, knots: 18 **Range, n miles:** 12,000 at 16 kt
Complement: 118-127 civilians plus 24 naval
Cargo capacity: 8,313 m³ dry; 3,921 m³ frozen
Radars: Navigation: 2 Raytheon; I-band
Tacan: URN 25
Helicopters: 2 MH-60

Comment: Purchased from the UK on 1 October 1983. Refitted from August 1992-96 to improve communications, RAS facilities and cargo handling equipment. *Sirius* deactivated in 2005. *Spica* in 2008 and *Saturn* to follow in 2009.



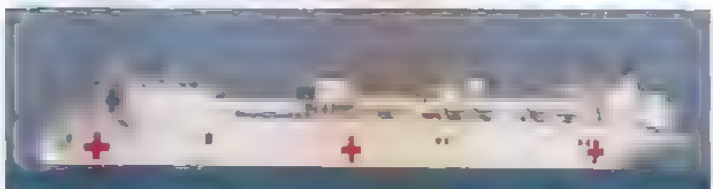
SATURN 5/2006, Marco Ghigino / 1167536

2 MERCY CLASS (HOSPITAL SHIPS) (AHH)

Name	No	Builders	Commissioned	F/S
MERCY (ex-SS Worth)	T-AH 19	National Steel & Shipbuilding Co	1976	ROS/TPA
COMFORT (ex-SS Rose City)	T-AH 20	National Steel & Shipbuilding Co	1976	ROS/TAA

Displacement, tons: 89,380 full load
Measurement, tons: 54,367 gross; 35,958 net
Dimensions, feet (metres): 894 x 105.6 x 32.8 (272.6 x 32.2 x 10)
Main machinery: 2 boilers; 2 GE turbines; 24,500 hp (18.3 MW); 1 shaft
Speed, knots: 17 **Range, n miles:** 13,420 at 17 kt
Complement: 61 civilian crew; 820 military medical staff; 387 military support staff
Radars: Navigation: E/F/I-band
Tacan: URN 25
Helicopters: Platform only

Comment: Converted San Clemente class tankers. *Mercy* was commissioned 19 December 1986; *Comfort* on 30 November 1987. Each ship has 1,000 beds and 12 operating theatres. Normally, the ships are kept in a reduced operating status in Baltimore, MD, and San Diego, CA, by a small crew of civilian mariners and active duty Navy medical and support personnel. Each ship can be fully activated and crewed within five days. *Mercy* deployed to Southeast Asia after tsunami of 26 December 2004. She spent two months off the Indonesian province of Banda Aceh. In 2006, *Mercy* conducted a four-month humanitarian assistance mission and treated over 60,000 patients in the Philippines, Bangladesh, Indonesia and East Timor. A similar mission was conducted by *Comfort* in South America and the Caribbean during 2007 and again by *Mercy* in Southeast Asia and the Pacific in mid-2008.



MERCY 8/2008, Chris Sattler / 1353626

14 HENRY J KAISER CLASS (OILERS) (AOH)

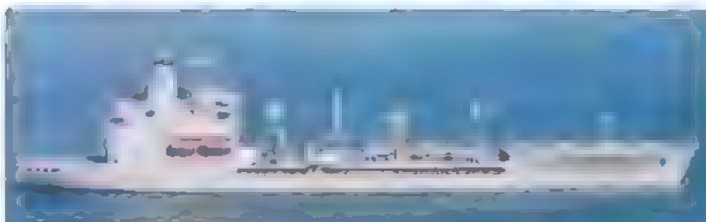
Name	No	Builders	Laid down	Commissioned	F/S
HENRY J KAISER	T-AO 187	Avondale	22 Aug 1984	19 Dec 1986	TPA/ROS
JOHN LENTHALL	T-AO 189	Avondale	15 July 1985	2 June 1987	TAA
WALTER S DIEHL	T-AO 193	Avondale	8 July 1986	13 Sep 1988	TPA
JOHN ERICSSON	T-AO 194	Avondale	15 Mar 1989	18 Mar 1991	TPA
LEROY GRUMMAN	T-AO 195	Avondale	7 June 1987	2 Aug 1989	TAA
KANAWHA	T-AO 196	Avondale	13 July 1989	6 Dec 1991	TAA
PECOS	T-AO 197	Avondale	17 Feb 1988	8 July 1990	TPA
BIG HORN	T-AO 198	Avondale	9 Oct 1989	31 July 1992	TAA
TIPPECANOE	T-AO 199	Avondale	19 Nov 1990	26 Mar 1993	TPA
GUADALUPE	T-AO 200	Avondale	9 July 1990	26 Oct 1992	TPA
PATUXENT	T-AO 201	Avondale	16 Oct 1991	21 June 1995	TAA
YUKON	T-AO 202	Avondale	13 May 1991	11 Dec 1993	TPA
LARAMIE	T-AO 203	Avondale	1 Oct 1994	24 May 1996	TAA
RAPPAHANNOCK	T-AO 204	Avondale	29 June 1992	7 Nov 1995	TPA

Displacement, tons: 40,900; 41,225 (T-AO 201, 203-204) full load
Dimensions, feet (metres): 677.5 x 97.5 x 36 (206.5 x 29.7 x 10.9)
Main machinery: 2 Colt-Pielstick 10 PC4.2V 570 diesels; 34,422 hp (24.3 MW) sustained; 2 shafts; cp props
Speed, knots: 20 **Range, n miles:** 6,000 at 18 kt
Complement: 74-89 civilian plus 5 naval
Cargo capacity: 180,000; 159,500 (T-AO 201, 203-204) barrels of fuel oil or aviation fuel
Countermeasures: Decoys SLQ 25 Nixie, towed torpedo decoy
Radars: Navigation: 2 Raytheon; I-band
Helicopters: Platform only.

Comment: Construction was delayed initially by design difficulties, by excessive vibration at high speeds and other problems encountered in the first ship of the class. There are stations on both sides for underway replenishment of fuel and solids. Fitted with integrated electrical auxiliary propulsion. TAOs 201, 203 and 204 were delayed by the decision to fit double hulls to meet the requirements of the Oil Pollution Act of 1990. This modification increased construction time from 32 to 42 months and reduced cargo capacity by 17 per cent although this can be restored in an emergency. Hull separation is 1.83 m at the sides and 1.98 m on the bottom. TAOs 181 and 192 were transferred from Penn Ship (when the yard became bankrupt) to Tampa. Tampa's contract was also cancelled on 25 August 1993. Neither ship was completed. T-AO 187 is kept in reduced operating status on the west coast. T-AO 188 and 190 were laid up in mid-1996 and T-AO 189 in September 1997, but returned to service in January 1999. T-AO 188 returned to reduced operating status in April 2005 but was transferred to the inactive fleet in October 2006.



BIG HORN 3/2006, M Declerck / 1167536



HENRY KAISER 10/2007, Michael Nitz / 1353627

4 SAFEGUARD CLASS (SALVAGE SHIPS) (ARS)

Name	No	Builders	Commissioned	F/S
SAFEGUARD	T-ARS 50 (ex-ARS 50)	Peterson Builders	16 Aug 1985	PA
GRASP	T-ARS 51 (ex-ARS 51)	Peterson Builders	14 Dec 1985	AA
SALVOR	T-ARS 52 (ex-ARS 52)	Peterson Builders	14 June 1986	PA
GRAPPLE	T-ARS 53 (ex-ARS 53)	Peterson Builders	15 Nov 1986	AA

Displacement, tons: 3,283 full load
Dimensions, feet (metres): 256 x 51 x 17 (77.7 x 15.5 x 5.2)
Main machinery: 4 Caterpillar diesels; 4,200 hp (3.13 MW); 2 shafts; cp Kort nozzle props; bow thruster; 500 hp (373 kW)
Speed, knots: 14 **Range, n miles:** 8,000 at 12 kt
Complement: 26 civilians plus 4 naval comms plus up to 34 naval divers
Radars: Navigation: E/F/I-band.

Comment: Prototype approved in FY81, two in FY82 and one in FY83. The procurement of the fifth ARS was dropped on instructions from Congress. The design follows conventional commercial and Navy criteria. Can support surface-supplied diving operations to a depth of 58 m. Equipped with recompression chamber. Bollard pull, 65.5 tons. Using beach extraction equipment the pull increases to 360 tons. 150 ton deadlift. *Grasp* transferred from the US Navy on 19 January 2006 and *Grapple* on 13 July 2006. *Salvor* and *Safeguard* followed on 12 January 2007 and 28 September 2007 respectively.



GRAPPLE 9/2007, Michael Winter / 1305243

4 POWHATAN CLASS (FLEET OCEANTUGS) (ATF)

Name	No	Laid down	Commissioned	F/S
CATAWBA	T-ATF 188	14 Dec 1977	28 May 1980	TPA
NAVAJO	T-ATF 169	14 Dec 1977	13 June 1980	TPA
SIoux	T-ATF 171	22 Mar 1979	1 May 1981	TPA
APACHE	T-ATF 172	22 Mar 1979	30 July 1981	TAA

Displacement, tons: 2,260 full load
Dimensions, feet (metres): 226.0 x 42 x 15 (68.9 x 12.8 x 4.6)
Main machinery: 2 GM EMD 20-645F7B diesels; 7,250 hp (m) (5.41 MW) sustained; 2 shafts; Kort nozzles, cp props, bow thruster; 300 hp (224 kW)
Speed, knots: 14.5. **Range, n miles:** 10,000 at 13 kt
Complement: 16 civilians plus 4 naval
Radars: Navigation: E/F/I-band.

Comment: Built at Marinette Marine Corp, Wisconsin patterned after commercial offshore supply ship design. Originally intended as successors to the Cherokees and Abnaki class ATFs. All transferred to MSC upon completion. 10 ton capacity crane and a bollard pull of at least 54 tons. A 'dock grid' is fitted aft which contains 1 in bolt receptacles spaced 24 in apart. This allows for the bolting down of a wide variety of portable equipment in support of salvage and training evolutions worldwide. There are two fire pumps supplying three fire monitors with up to 2,200 gallons of foam per minute. A deep module can be embarked to support naval salvage teams. Two of the class deactivated for commercial lease in 1999 and one other in 2005



APACHE 6/2008, Richard Scott / 1353625



SIoux 7/2004, Michael Nitz / 1043836

SPECIAL MISSION SHIPS

Notes: (1) Most special missions ships are operated by civilian mariners who work for private companies under contract to MSC. USNS *Zeus* is crewed by civil service mariners (CIVMARs) working for MSC. USS *Mount Whitney* and USS *Emory S Land* have hybrid crews of navy sailors and CIVMARs. Technical work and communication support conducted by embarked military personnel as well as civilian technicians from other commands and agencies
 (2) There is also a number of chartered vessels: *Dolores Chouest*, *C-Commando* and *C-Champion* support the Naval Special Warfare Command and are owned and operated by Edison Chouest. *MV Graystone*, *MV Bluewater*, *MV Silverstar* and *MV Gemstone* provide submarine support and are owned and operated by Hornbeck Offshore Services.
 (3) The Command Ship *Mount Whitney* LCC 20 transferred to MSC in 2004 and deployed to the Mediterranean Sea as the 6th Fleet command ship. *Mount Whitney* is one of the first ships to be operated jointly by uniformed personnel and CIVMARs from MSC.
 (4) Submarine tender USS *Emory S Land* transferred to MSC in 2008 and its sister ship JSS *Frank Cable* is scheduled to transfer to MSC in 2010. Sub tenders, like command ships, are unusual in that they have both uniformed Navy personnel and civil service mariners serving under the leadership of a US Navy Captain, which allows the ships to retain their commissioned status.

1 ZEUS CLASS (CABLE REPAIRING SHIP) (ARC)

Name	No	Builders	Commissioned	F/S
ZEUS	T-ARC 7	National Steel & Shipbuilding Co	19 Mar 1984	TAA

Displacement, tons: 8,370 light; 14,934 full load
Dimensions, feet (metres): 513 x 73 x 25 (156.4 x 22.3 x 7.6)
Main machinery: Diesel-electric; 5 GM EMD 20-645F7B diesel generators, 14.32 MW sustained; 2 motors, 10,200 hp (7.51 MW); 2 shafts; bow thrusters (forward and aft)
Speed, knots: 15.8. **Range, n miles:** 10,000 at 15 kt
Complement: 55 civilians plus 10 scientists

Comment: Ordered 7 August 1979. Remotely manned engineering room controlled from the bridge. The only active cable laying/repair ship in the US Navy, she can lay up to 1,000 miles of cable in depths of 9,000 ft. The ship is also equipped for bottom mapping surveys to support cable operations.



ZEUS 8/2006, Hachiro Nakai / 1167499

1 CONVERTED COMPASS ISLAND CLASS (MISSILE RANGE INSTRUMENTATION SHIP) (AGM)

Name	No	Builders	Commissioned	F/S
OBSERVATION ISLAND (ex-Empire State Manner)	T-AGM 23 (ex-AG 154, ex-YAG 57)	New York Shipbuilding	5 Dec 1958	TPA

Displacement, tons: 13,060 light; 17,015 full load
Dimensions, feet (metres): 564 x 76 x 25 (171.6 x 23.2 x 7.6)
Main machinery: 2 Foster-Wheeler boilers; 600 psi (42.3 kg/cm²); 875°F (467°C); 1 GE turbine; 19,250 hp (14.36 MW); 1 shaft
Speed, knots: 20
Range, n miles: 17,000 at 15 kt
Complement: 66 civilians plus 59 scientists
Radars: Raytheon 1650/9X and 1660/12S; I-band.
Tacan: URN 25.

Comment: Built as a Manner class merchant ship (C4-S-A1 type); launched on 15 August 1953, acquired by the Navy on 10 September 1956 for use as a Fleet Ballistic Missile (FBM) test ship. Converted at Norfolk Naval Shipyard. In reserve from September 1972. On 18 August 1977, *Observation Island* was reacquired by the US Navy from the Maritime Administration and transferred to the Military Sealift Command. Reclassified AGM 23 on 1 May 1979. Converted to Missile Range Instrumentation Ship from July 1979-April 1981 at Maryland SB and DD Co to carry an Air Force shipborne phased array radar system for collection of data on foreign and domestic ballistic missile tests. Operated by the Navy in the North Pacific for the US Air Force.



OBSERVATION ISLAND 4/2008, Hachiro Nakai / 1353571

1 IMPECCABLE CLASS (OCEAN SURVEILLANCE SHIP) (AGOS)

Name	No	Builders	Commissioned	F/S
IMPECCABLE	T-AGOS 23	Tampa Shipyard/Halter Marine	22 Mar 2001	TAA

Displacement, tons: 5,370 full load
Dimensions, feet (metres): 281.5 x 95.8 x 26 (85.8 x 29.2 x 7.9)
Main machinery: Diesel-electric; 3 GM EMD 12-645F7B diesel generators; 5.48 MW (60 Hz) sustained; 2 Westinghouse motors; 5,000 hp (3.73 MW); 2 shafts; 2 omni-thruster hydrojets, 1,800 hp (1.34 MW)
Speed, knots: 12; 3 when towing
Range, n miles: 3,000 at 12 kt
Complement: 21 civilian crew plus 5 sponsor agency civilians plus 16 military
Radars: Raytheon; I-band.
Sonars: SURTASS; LFA and passive surveillance towed array

Comment: Hull form based on that of *Victorious*. Acoustic systems include an active low frequency towed array (LFA), which has a series of modules each of which houses two high-powered active transducers. These can be used with either mono or bistatic receivers. The payload is lowered through a centre well. Laid down 2 February 1993. Ship was 60 per cent complete when shipyard encountered difficulties that led to termination in October 1993 of the contract for completion of two Kaiser class oilers. Work stopped on *Impeccable*, and the construction contract was also cancelled. The contract was assigned to Halter Marine on 20 April 1995 to complete the ship. Launched 25 April 1998. WSC-3(V)3 and WSC-6 communications fitted



IMPECCABLE 5/2006, Hachiro Nakai / 1167500

**1 CONVERTED STALWART CLASS
(MISSILE RANGE INSTRUMENTATION) (TAGM)**

Name	No	Laid down	Commissioned	F/S
INVINCIBLE	T-AGM 24	8 Nov 1985	3 Feb 1987	TPA

Displacement, tons: 2,285 full load
 Dimensions, feet (metres): 224 x 43 x 14.9 (68.3 x 13.1 x 4.5)
 Main machinery: Diesel-electric; 4 Caterpillar D 398B diesel generators; 3,200 hp (2.39 MW); 2 motors, 1,600 hp (1.2 MW); 2 shafts, bow thruster; 550 hp (410 kW)
 Speed, knots: 11
 Range, n miles: 4,000 at 11 kt
 Complement: 38 (18 civilian mariners, 11 sponsor personnel)
 Radars: US Air Force Cobra Gemini; dual-band; E/F/I-bands.
 Navigation: Furuno, E/F/I-bands.

Comment: Converted to a Missile Range Instrumentation ship (TAGM) in early 1989 and provides a seaborne radar platform for US Air Force data collection requirements on theatre ballistic missiles



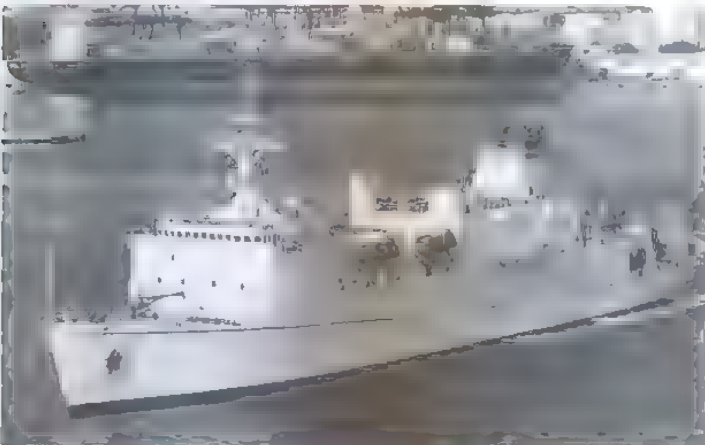
INVINCIBLE 6/1989, Ships of the World / 0984177

1 WATERS CLASS (NAVIGATION TEST SUPPORT SHIP) (AGS)

Name	No	Builders	Commissioned	F/S
WATERS	T-AG 45	Avondale Industries	26 May 1993	TAA

Displacement, tons: 12,208 full load
 Dimensions, feet (metres): 455 x 68.9 x 21 (138.7 x 21 x 6.4)
 Main machinery: Diesel-electric; 5 GM EMD diesels; 7,400 hp (5.45 MW); 2 Westinghouse motors, 6,800 hp (15.07 MW); 2 shafts; 4 thrusters
 Speed, knots: 12
 Range, n miles: 6,500 at 12 kt
 Complement: 86 civilians plus 59 scientists
 Radars: 2 Raytheon; E/F- and I-bands.

Comment: Ordered 4 April 1990 Laid down 16 May 1991 and launched 6 June 1992 Carried out oceanographic and acoustic surveys in support of the Integrated Underwater Surveillance System. Converted in 1998 to support submarine navigation system testing and missile tracking. In 1999 has replaced *Vanguard* and *Range Sentinel*, both of which have been deactivated.



WATERS 4/1994, Giorgio Arca / 0508213

4 VICTORIOUS CLASS (OCEAN SURVEILLANCE SHIPS) (AGOS)

Name	No	Builders	Commissioned	F/S
VICTORIOUS	T-AGOS 19	McDermott Marine	5 Sep 1991	TPA
ABLE	T-AGOS 20	McDermott Marine	22 July 1992	TAA
EFFECTIVE	T-AGOS 21	McDermott Marine	27 Jan 1993	TPA
LOYAL	T-AGOS 22	McDermott Marine	1 July 1993	TAA

Displacement, tons: 3,396 full load
 Dimensions, feet (metres): 234.5 x 93.6 x 24.8 (71.5 x 28.5 x 7.6)
 Main machinery: Diesel-electric; 4 Caterpillar 3512TA diesels; 5,440 hp (4 MW) sustained; 2 GE motors; 3,200 hp (2.39 MW); 2 shafts; 2 bow thrusters; 2,400 hp (1.79 MW)
 Speed, knots: 16; 3 when towing
 Complement: 19 civilian plus 5 sponsor personnel and 7 military
 Radars: Navigation 2 Raytheon; I-band.
 Sonars: SURTASS and LFA; towed array; passive/active surveillance.

Comment: All of SWATH design because of its greater stability at slow speeds in high latitudes under adverse weather conditions. A contract for the first SWATH ship, T-AGOS 19, was awarded in November 1986, and options for a further three were exercised in October 1988 T-AGOS 20 deactivated in July 2003 and re-activated in 2007 and reconfigured to accommodate LFA.



ABLE 8/2008* / 1353624

1 JOHN MCDONNELL CLASS (SURVEYING SHIP) (AGS)

Name	No	Builders	Commissioned	F/S
JOHN MCDONNELL	T-AGS 51	Halter Marine	16 Dec 1991	TPA

Displacement, tons: 2,054 full load
 Dimensions, feet (metres): 208 x 45 x 14 (63.4 x 13.7 x 4.3)
 Main machinery: 1 GM EMD 12-645E6 diesel; 2,550 hp (1.9 MW) sustained; 1 auxiliary diesel, 230 hp (172 kW); 1 shaft
 Speed, knots: 12
 Range, n miles: 13,800 at 12 kt
 Complement: 22 civilians plus 11 scientists

Comment: Laid down on 3 August 1989 and launched on 15 August 1990. Carries 34 ft survey launches for data collection in coastal regions with depths between 10 and 600 m and in deep water to 4,000 m. A small diesel is used for propulsion at towing speeds of up to 6 kt. Simrad high-frequency active hull-mounted and side scan sonars are carried. *Littlehales* was deactivated in March 2003 and transferred to NOAA.



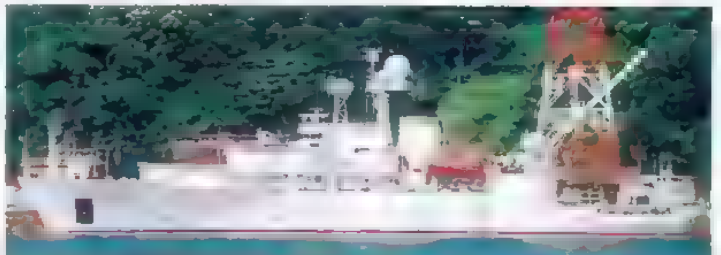
JOHN MCDONNELL 8/2004, Hachiro Nakai / 1043695

6 PATHFINDER CLASS (SURVEYING SHIPS) (AGS)

Name	No	Builders	Launched	Commissioned	F/S
PATHFINDER	T-AGS 60	Halter Marine	7 Oct 1993	5 Dec 1994	TAA
SUMNER	T-AGS 61	Halter Marine	19 May 1994	30 May 1995	TPA
BOWDITCH	T-AGS 62	Halter Marine	15 Oct 1994	30 Dec 1995	TPA
HENSON	T-AGS 63	Halter Marine	21 Oct 1996	20 Feb 1998	TAA
BRUCE C HEEZEN	T-AGS 64	Halter Marine	17 Dec 1998	13 Jan 2000	TAA
MARY SEARS	T-AGS 65	Halter Marine	19 Oct 2000	17 Dec 2001	TAA

Displacement, tons: 4,782 full load
 Dimensions, feet (metres): 328.5 x 58 x 19 (100.1 x 17.7 x 5.8)
 Main machinery: Diesel-electric; 4 EMD/Baylor diesel generators; 11,425 hp (8.52 MW); 2 GE CDF 1944 motors; 8,000 hp (5.97 MW) sustained; 6,000 hp (4.48 MW); 2 LIPS Z drives; bow thruster; 1,500 hp (1.19 MW)
 Speed, knots: 16
 Range, n miles: 12,000 at 12 kt
 Complement: 24 civilians plus 27 oceanographers

Comment: Contract awarded in January 1991 for two ships with an option for a third which was taken up on 29 May 1992. A fourth ship was ordered in October 1994 with an option for two more. Fifth ordered 15 January 1997 and sixth on 6 January 1999. There are three multipurpose cranes and five winches plus a variety of oceanographic equipment including multibeam echo-sounders, towed sonars and expendable sensors. ROVs may be carried. The aft deck and dry laboratory spaces are reconfigurable to support a variety of missions.



BOWDITCH 8/2006, Hachiro Nakai / 1167501



HENSON 6/2007, L-G Nilsson / 1305188

2 EMORY S LAND CLASS (SUBMARINE TENDERS) (ASH)

Name	No	Builders	Laid down	Launched	Commissioned	F/S
EMORY S LAND	AS 39	Lockheed SB & Construction Co, Seattle	2 Mar 1976	4 May 1977	7 July 1979	PA
FRANK CABLE	AS 40	Lockheed SB & Construction Co, Seattle	2 Mar 1976	14 Jan 1978	29 Oct 1979	PA

Displacement, tons: 13,911 standard; 22,978 full load
Dimensions, feet (metres): 643.8 x 85 x 28.5 (196.2 x 25.9 x 8.7)
Main machinery: 2 Combustion Engineering boilers; 320 psi (43.6 kg/cm²); 860°F (462°C); 1 De Laval turbine, 20,000 hp (14.9 MW); 1 shaft
Speed, knots: 20 **Range, n miles:** 10,000 at 12 kt
Complement: AS 39: 1,268 (83 officers); AS 40: 1,270 (81 officers)

Guns: 4 Oerlikon 20 mm Mk 57
Radars: Navigation, ISC Cardion SPS-55, I/J-band
Helicopters: Platform only

Comment: The first US submarine tenders designed specifically for servicing nuclear-propelled attack submarines. Each ship can simultaneously provide services to four submarines moored alongside. Equipped with one 30 ton crane and two 5 ton mobile cranes. There

is a 23 bed sick bay. *Frank Cable* is based at Guam and *Emory S Land* changed homeport to Bremerton, WA in October 2007. *Emory S Land* transferred to Military Sealift Command in February 2008 and *Frank Cable* is scheduled to transfer in 2010 but, while operated by a hybrid crew of naval and civilian personnel, both ships remain under naval command and in commissioned status.



EMORY S LAND

4/1999, Jürg Kürsener / 0084155

0 + 1 MISSILE RANGE INSTRUMENTATION SHIP (AGM)

Name	No	Builders	Laid down	Launched	Commissioned
HOWARD O LORENZEN	T-AGM 25	VT Halter Marine	13 Aug 2008	2008	2010

Displacement, tons: 12,575 standard
Dimensions, feet (metres): 534.1 x 88.6 x 21.3 (162.8 x 27.0 x 6.51)
Main machinery: Diesel-electric; 4 diesel generators; 2 motors; 20,115 hp (15 MW); 2 shafts
Speed, knots: 20
Range, n miles: 12,000 at 12 kt
Complement: 30 + 46 technicians + 12 spare
Radars: Navigation: To be announced

Comment: The Cobra Judy Replacement programme is for the replacement of the current missile range instrumentation ship *Observation Island* by 2012 and the development of a successor mission equipment system to conduct worldwide technical data collection against ballistic missiles in flight. Raytheon was awarded the contract in December 2003 for an integrated, computer-driven surveillance and data collection radar system that comprises a dual-band radar suite. This consists of I-band and E/F-band active phased array sensors and other related mission equipment.

STRATEGIC SEALIFT FORCE

Notes: These ships provide ocean transportation for Defense and other government agencies. As well as those listed below, MSC also contracts additional tankers and dry cargo ships as needed. As a result these numbers vary with the operational requirement.

2 SHUGHART CLASS (LARGE, MEDIUM SPEED, RO-RO (LMSR) SHIPS) (AKR)

Name	No	Commissioned	F/S
SHUGHART (ex-Laura Maersk)	T-AKR 295	7 May 1996	TWWR
YANO (ex-Leise Maersk)	T-AKR 297	8 Feb 1997	TWWR

Measurement, tons: 54,298 grt
Dimensions, feet (metres): 908.8 x 105.5 x 34.4 (276.4 x 32.2 x 10.5)
Main machinery: 1 Burmeister & Wain 12L90 GFCA diesel, 46,653 hp(m) (34.29 MW); 1 shaft; bow and stern thrusters
Speed, knots: 24
Range, n miles: 12,000 at 24 kt
Complement: 21-44 civilian; up to 50 military
Cargo capacity: 255,064 sq ft plus 47,023 sq ft deck cargo
Radars: Navigation: 2 Sperry ARPA; I-band.

Comment: Both were container ships built in Denmark in 1981 and lengthened by Hyundai in 1987. Conversion contract awarded to National Steel and Shipbuilding in July 1993. Both fitted with a stern slewing ramp, side accesses and cranes for both roll-on/roll-off and lift-on/lift-off capabilities. Two twin 57 ton cranes. Conversion for *Shughart* started in June 1994, *Yano* in May 1995. *Soderman* underwent conversion to merchant prepositioning ship and renamed *Stockham*.



YANO

12/2006, Adolfo Ortigueira GH / 1167838

2 GORDON CLASS (LARGE, MEDIUM-SPEED, RO-RO (LMSR) SHIPS) (AKR)

Name	No	Commissioned	F/S
GORDON (ex-Selandia)	T-AKR 296	23 Aug 1996	TWWR
GILLILAND (ex-Jutlandia)	T-AKR 298	24 May 1997	TWWR

Measurement, tons: 55,422 grt
Dimensions, feet (metres): 956 x 106.8 x 36.3 (291.4 x 32.2 x 11.9)
Main machinery: 1 Burmeister & Wain 12K84EF diesel; 26,000 hp(m) (19.11 MW); 2 Burmeister & Wain 9K84EF diesels; 39,000 hp(m) (28.66 MW); 3 shafts (centre cp prop); bow thruster
Speed, knots: 24, **Range, n miles:** 12,000 at 24 kt
Complement: 21-49 civilian; 50 military
Cargo capacity: 276,109 sq ft plus 45,722 sq ft deck cargo
Radars: Navigation: 2 Sperry ARPA, I-band.

Comment: Built in Denmark in 1972 and lengthened by Hyundai in 1984. Conversion contract given to Newport News Shipbuilding on 30 July 1993. Both fitted with a stern slewing ramp, side accesses and improved craneage. Conversion started for both ships on 15 October 1993.



GILLILAND

2/2000, A Sharma / 0083304

7 BOB HOPE CLASS (LARGE, MEDIUM-SPEED, RO-RO (LMSR) SHIPS) (AKR)

Name	No	Builders	Launched	Commissioned	F/S
BOB HOPE	T-AKR 300	Avondale	27 Mar 1997	18 Nov 1998	TWWR
FISHER	T-AKR 301	Avondale	21 Oct 1997	4 Aug 1999	TWWR
SEAY	T-AKR 302	Avondale	25 June 1998	30 Mar 2000	TWWR
MENDONCA	T-AKR 303	Avondale	25 May 1999	30 Jan 2001	TWWR
PILILAAU	T-AKR 304	Avondale	18 Jan 2000	24 July 2001	TWWR
BRITTIN	T-AKR 305	Avondale	21 Oct 2000	11 July 2002	TWWR
BENAVIDEZ	T-AKR 306	Avondale	11 Aug 2001	10 Sep 2003	TWWR

Displacement, tons: 61,680 full load
Dimensions, feet (metres): 948.9 x 106 / 35 (289.1 x 32.3 x 11)
Main machinery: 4 Colt Pielstick 10 PC4.2 V diesels, 65,160 hp(m) (47.89 MW); 2 shafts, cp props
Speed, knots: 24, **Range, n miles:** 12,000 at 24 kt
Complement: 26-45 civilian; up to 60 military
Cargo capacity: 317,510 sq ft plus 70,152 sq ft deck cargo

Comment: Contract awarded in 1993, options for additional ships exercised in 1994, 1995, 1996 and 1997. All fitted with a stern slewing ramp, side accesses and cranes for both roll-on/roll-off and lift-on/lift-off capabilities. Ramps extend to 130 ft (40 m), and two twin 55 ton cranes are installed.



PILILAAU

1/2008, Shaun Jones / 1305187

4 CHAMPION CLASS (TANKERS) (AOT)

Name	No	Builders	Commissioned
PAUL BUCK	T-AOT 1122	American SB Co, Tampa, FL	7 June 1965
SAMUEL L GOBB	T-AOT 1123	American SB Co, Tampa, FL	15 Nov 1965
RICHARD G MATTHIENSEN	T-AOT 1124	American SB Co, Tampa, FL	18 Feb 1966
LAWRENCE H GIANELLA	T-AOT 1125	American SB Co, Tampa, FL	22 Apr 1966

Displacement, tons: 39,624 full load
 Dimensions, feet (metres): 615 x 90 x 36 (187.5 x 27.4 x 10.8)
 Main machinery: 1 Sulzer 5RTA76 diesel, 18,400 hp (13.52 MW) sustained; 1 shaft
 Speed, knots: 16. Range, n miles: 12,000 at 16 kt
 Complement: 23 (9 officers)
 Cargo capacity: 238,400 barrels of oil fuel

Comment: Built for Ocean Carriers Inc, Houston, Texas specifically for long-term time charter to the Military Sealift Command (20 years) as Point-to-Point fuel tankers. Purchased by the US Navy in 2003 and designated USNS. The last two are equipped with a modular fuel delivery system to allow them to rig underway replenishment gear



LAWRENCE H GIANELLA

1/2002, A Sharma / 0530036

PREPOSITIONING FORCE

Notes: (1) Military Sealift Command's Afloat Prepositioning Force (APF) improves US capabilities to deploy forces rapidly to any area of conflict. The force includes long-term chartered commercial vessels, activated Ready Reserve Force ships and government ships and includes vehicle/cargo carriers, container ships, aviation logistics ships and Large, Medium-Speed, Roll-on/roll-off (LMSR) ships. Together these ships preposition equipment and supplies for the Marine Corps, Navy, Army, Air Force and the Defense Logistics Agency. The APF comprises the Maritime Prepositioning Force (MPF), Navy, Defense Logistics Agency and Air Force ships (NDAF) and Army Prepositioned Stocks-3 ships (APS-3)

(2) The MPF operates in forward-deployed Maritime Prepositioning Squadrons (MPSRONs). MPSRON One is located in the Eastern Atlantic Ocean and Mediterranean Sea; MPSRON Two at Diego Garcia in the Indian Ocean and MPSRON Three in the western Pacific Ocean. There are 15 ships loaded with equipment and supplies for the US Marine Corps.

(3) Three NDAF ships are loaded with US Air Force and Navy ammunition. One ship serves as an at-sea pumping station to transfer fuel to shore from a tanker as far as 8 miles from the coast. Two T-AVB ships serve as USMC intermediate maintenance facilities for rotary wing aircraft. Two high-speed vessels are also part of NDAF - one transports marines and their cargo in the Far East and the other conducts specialised missions worldwide.

(4) Nine APS-3 ships support requirements for US Army brigade and combat support/ combat service support elements. In 2007, some of the LMSRs were put in reduced operating status. In 2008, one LMSR was assigned to the Maritime Prepositioning Force.

(5) Maritime Prepositioning Force (Future): the US Navy's Seabasing initiative, in which manoeuvre forces are supported by logistics and combat fire support in staging bases in or near the theatre of operations, is under development. This is likely to require a variety of platforms that can assemble offshore and either redeploy quickly or support continuing operations ashore. It is envisaged that a seabase would comprise an Expeditionary Strike Group (ESG), a Carrier Strike Group (CSG), and a Maritime Prepositioning Group (MPG) supported by a Combat Logistics Force. Various classes of Maritime Prepositioning Force (Future) ships are to be capable of selectively offloading standardised loads and other equipment. Large deck areas suitable for flight operations and ship-to-ship interface points supporting movement of cargo to smaller tactical watercraft are also necessary. MPF(F) might additionally assume some of the roles planned for the JCC(X) future command and control ship. Other potential applications of the MPF(F) include acting as intra theatre shuttles, afloat medical care and mine-countermeasures support. Some 14 vessels are required and construction of the first ship is to begin in FY11

(6) An integral vessel of the Maritime Prepositioning Force (Future) will be the Mobile Landing Platform (MLP) based on a Float On-Float Off (FLO-FLO) design. It is being developed primarily to provide a surface interface between other ships and connectors within a seabase. The MLP mission requirements and major functions include: projecting a Marine combat unit and its equipment via LCACs or EFVs; transporting six LCACs; accommodating a Marine combat unit of 728 personnel with ability to interface with MPF(F) LMSR, JHSV and other displacement type surface assault craft to facilitate equipment, cargo and personnel transfer in sea base. The MLP will support the critical mission requirement to launch and recover surface assault craft loaded with vehicles, cargo and combat personnel by providing two LCAC stowage lanes (two craft interface points), RO/RO cargo holds of sufficient size to accommodate one-third of the Marine Expeditionary Brigade (MEB), Surface Battalion Landing Team (BLT) vehicles and accommodations for the combat troops being transferred ashore on the assault craft. The MLP will be a US flagged new construction ship. Plans are to begin to buy 'pier in the ocean' MLP starting in FY10 with initial operational capability by FY17.

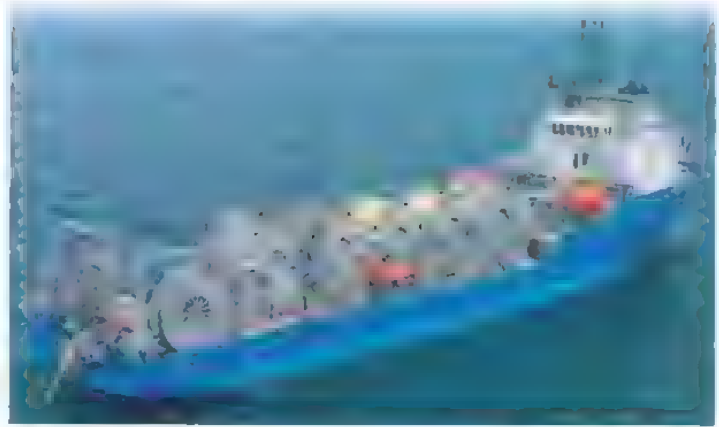
(7) Army Strategic Fleets (ASF): The US Army prepositioning plan calls for the deployment of four ASFs. Two ASFs would be composed of LMSRs, one carrying an intermediate brigade combat team, and the other carrying an intermediate brigade combat team. The other two ASFs would each contain LMSRs carrying sustainment supplies plus an ammunition ship and a warehouse ship. ASFs will be based around Guam and Saipan in the Pacific Ocean and Diego Garcia in the Indian Ocean.

1 OFFSHORE PETROLEUM DISTRIBUTION SHIP (AG)

Name	No	Builders	Commissioned	F/S
VADM K R WHEELER	T-AG 5001	Ed san Chouest Offshore, Louisiana	20 Sep 2007	Sqn 3

Displacement, tons: 10,404
 Measurement, tons: 5,565 grt
 Dimensions, feet (metres): 348.5 x 70.0 x 22.7 (106.22 x 21.33 x 6.9)
 Main machinery: 2 MAK V12M32C diesels; 16,314 hp (12.1 MW); 2 shafts
 Speed, knots: 15. Range, n miles: 20,220 at 13 kt
 Complement: 24 civilians

Comment: An offshore petroleum distribution system that works as an at-sea pumping system to transfer fuel ashore from commercial and military tankers from up to 8 miles off the coast. The delivery rate is 1.7 million gallons per 20 h day. Steel construction.



VADM K R WHEELER

9/2007, US Navy / 130518D

8 WATSON CLASS (LARGE, MEDIUM-SPEED, RO-RO (LMSR) SHIPS) (AKR)

Name	No	Builders	Launched	Commissioned	F/S
WATSON	T-AKR 310	NASSCO	26 July 1997	23 June 1998	PREPO
SISLER	T-AKR 311	NASSCO	28 Feb 1998	1 Dec 1998	PREPO
DAHL	T-AKR 312	NASSCO	2 Oct 1998	13 July 1999	PREPO
RED CLOUD	T-AKR 313	NASSCO	7 Aug 1999	18 Jan 2000	PREPO
CHARLTON	T-AKR 314	NASSCO	11 Dec 1999	23 May 2000	PREPO
WATKINS	T-AKR 315	NASSCO	28 July 2000	5 Dec 2000	PREPO
POMEROY	T-AKR 316	NASSCO	10 Mar 2001	14 Aug 2001	PREPO
SODERMAN	T-AKR 317	NASSCO	26 Apr 2002	25 Sep 2002	PREPO

Displacement, tons: 62,968 full load
 Dimensions, feet (metres): 951.4 x 106 x 35 (290 x 32.3 x 11)
 Main machinery: 2 GE Marine LM gas turbines; 64,000 hp (47.7 MW); 2 shafts; cp props
 Speed, knots: 24
 Range, n miles: 12,000 at 24 kt
 Complement: 26-45 civilian; up to 50 military
 Cargo capacity: 394,673 sq ft, 13,000 tons

Comment: Contract awarded in 1993, options for additional ships exercised at one a year to 2002. All are fitted with a stern slewing ramp, side accesses and cranes for both roll-on/roll-off and lift-on/lift-off capabilities. Ramps extend to 130 ft (40 m), and two twin 55 ton cranes are installed. All but *Sisler* serve as APS-3 ships. *Sisler* is a Maritime Prepositioning Ship.



POMEROY

3/2008, Hachiro Nakai / 13535/2

1 CONTAINER SHIP (AK)

Name	No	Builders	Commissioned	F/S
MAJ BERNARD F FISHER (ex-Sea Fox)	T-AK 4396	Odense	1985	PREPO

Displacement, tons: 48,012 full load
 Dimensions, feet (metres): 652.2 x 105.6 x 36.1 (198.7 x 32.2 x 11)
 Main machinery: 1 BMW diesel; 1 shaft
 Speed, knots: 19
 Complement: 19
 Cargo capacity: 993 TEU (on deck); 1,102 TEU (under deck)

Comment: Owned and operated by Sealift, Inc. under charter to MSC. When fully loaded the ship can carry 2,095 20 ft containers although current load of aviation munitions is less. Aviation munitions are to re-supply forward-deployed fighter and attack squadrons. The ship is fitted with an extensive cocoon system enabling it to store deck-loaded munitions in an environmentally controlled atmosphere. *Fisher* is an NDAF ship chartered in 2004.



MAJ BERNARD F FISHER

6/1998, US Navy / 008418S

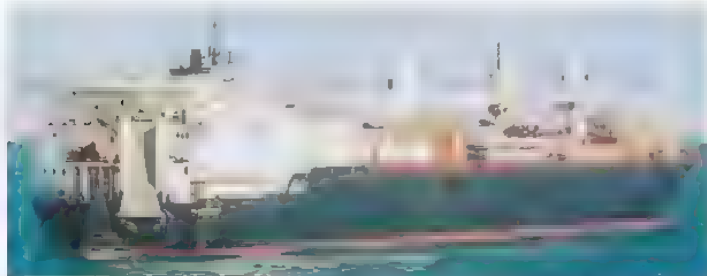
960 US/Military Sealift Command (MSC)

3 CPL LOUIS J HAUGE, JR CLASS (VEHICLE CARGO SHIPS) (AKRH)

Name	No	Builders	Commissioned	F/S
CPL LOUIS J HAUGE, JR (ex-MV <i>Estelle Maersk</i>)	T-AK 3000	Odense Staalskibsveerft A/S, Lindo	Oct 1979	Sqn 3
PFC JAMES ANDERSON, JR (ex-MV <i>Emma Maersk</i>)	T-AK 3002	Odense Staalskibsveerft A/S, Lindo	July 1979	Sqn 3
1st LT ALEX BONNYMAN (ex-MV <i>Emilie Maersk</i>)	T-AK 3003	Odense Staalskibsveerft A/S, Lindo	Jan 1980	Sqn 3

Displacement, tons: 46,552 full load
Dimensions, feet (metres): 755 × 90 × 37.1 (230 × 27.4 × 11.3)
Main machinery: 1 Sulzer 7RND76M diesel; 16,800 hp(m) (12.35 MW); 1 shaft; bow thruster
Speed, knots: 16.4
Range, n miles: 10,800 at 16 kt
Complement: 27 plus 10 technicians
Cargo capacity: Containers, 383; Ro-Ro, 121,595 sq ft; JP-5 bbls, 17,128; DF-2 bbls, 10,642; Mogas bbls, 3,865; stable water, 2,022; cranes, 3 twin 30 ton; 92,831 cu ft breakbulk
Helicopters: Platform only

Comment: Converted from Maersk Line ships by Bethlehem Steel, Sparrow Point, MD. Conversion work included the addition of 167 ft (479 m) amidships. All operated by Maersk Line Ltd.



CPL LOUIS J HAUGE JR 3/1998, A Sharma / 0053110

1 RO-RO CONTAINER: CARGO SHIP (AKR)

Name	No	Builders	Commissioned	F/S
GYSGT FRED W STOCKHAM (ex- <i>Soderman</i>)	T-AK 3017	National Steel and Shipbuilding	July 2001	Sqn 2

Displacement, tons: 55,123 full load
Dimensions, feet (metres): 907 × 106 × 36 (276.4 × 32.2 × 10.9)
Main machinery: 1 Burmeister & Wain 12L90 GFC diesel; 46,653 hp(m) (34.29 MW); 1 shaft, bow and stern thrusters
Speed, knots: 24
Range, n miles: 12,000 at 24 kt
Complement: 28 crew, 12 cargo maintenance, 83 opp
Cargo capacity: 94,337 sq ft, 1,126 TEU

Comment: Ex-USNS *Soderman* joined the Maritime Prepositioning Force in July 2001 and is assigned to MPSRON Two. Carries USMC expeditionary airfield, fleet hospital package and construction equipment.



GYSGT FRED W STOCKHAM 8/2001, van Ginderen Collection / 0131776

2 CONTAINER SHIPS (AK)

Name	No	Builders	Commissioned	F/S
LTC JOHN U D PAGE (ex- <i>Newark Bay</i>)	T-AK 4543	Daewoo Shipbuilding	1985	PREPO
SSGT EDWARD A CARTER (ex- <i>OOCL Innovation</i>)	T-AK 4544	Daewoo Shipbuilding	1984	PREPO

Displacement, tons: 81,284 full load
Dimensions, feet (metres): 950 × 106 × 38 (289.5 × 32.3 × 11.6)
Main machinery: 1 Sulzer RLB 90 diesel, 1 shaft
Speed, knots: 18
Complement: 20
Cargo capacity: 2,500 TEU

Comment: LTC John U D Page delivered to MSC in February 2001 and SSGT Edward A Carter in June 2001. Both operated by Maersk Lines Limited and are APS-3 ships for army prepositioning in the Indian Ocean. Both ships re-chartered in December 2005.



SSGT EDWARD A CARTER 7/2007, Nipper McDonnell / 1305185

1 CONTAINER SHIP (AK)

Name	No	Builders	Commissioned	F/S
CAPT STEVEN L BENNETT (ex- <i>Sea Pride</i>)	T-AK 4236	Samsung Shipbuilding	1984	PREPO

Displacement, tons: 52,878 full load
Dimensions, feet (metres): 686.0 × 99.7 × 38.1 (209.0 × 30.4 × 11.6)
Main machinery: 1 diesel; 1 shaft
Speed, knots: 16
Complement: 19 civilian
Cargo capacity: 520 TEU (on deck); 1,006 TEU (under deck)

Comment: The ship is owned and operated by Sealift Inc, under charter to Military Sealift Command. When fully loaded, *Bennett* carries over 916 20 ft containers of various aviation munitions intended to resupply forward-deployed fighter and attack squadrons. The ship is fitted with an extensive cocoon system enabling it to store deck-loaded munitions in an environmentally controlled atmosphere. *Bennett* is an NDAF ship and was re-chartered in 2007.



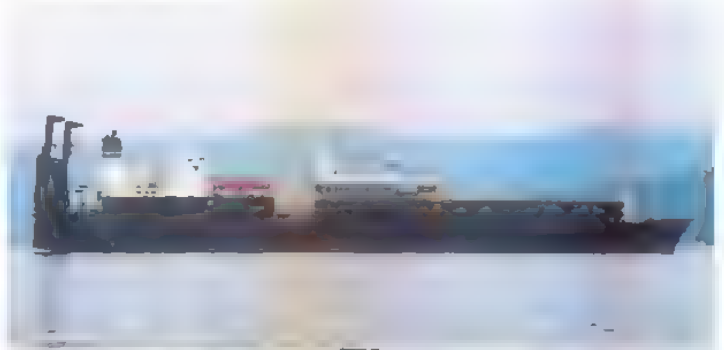
CAPT STEVEN L BENNETT 7/2007, Nipper McDonnell / 1305184

1 RO-RO CONTAINER (CARGO SHIP) (AK)

Name	No	Builders	Commissioned	F/S
1st LT HARRY L MARTIN (ex- <i>Tarago</i>)	T-AK 3015	Bremer Vulkan, Vegesack	20 Apr 2000	Sqn 3

Displacement, tons: 47,777 full load
Dimensions, feet (metres): 754.3 × 106 × 36.1 (229.9 × 32.3 × 11)
Main machinery: 1 MAN K7-SZ-90/160 diesel; 25,690 hp(m) (18.88 MW); 1 shaft
Speed, knots: 18
Range, n miles: 17,000 at 17 kt
Complement: 23 plus 100 military
Cargo capacity: 168,547 sq ft, 735 TEU

Comment: Completed in 1979. Acquired in February 1997 for conversion at Atlantic Drydock, Jacksonville. Carries USMC expeditionary airfield, fleet hospital package and construction equipment.



1st LT HARRY L MARTIN 10/2008, Hachiro Nakai / 1305174

1 RO-RO CONTAINER (CARGO SHIP) (AK)

Name	No	Builders	Commissioned	F/S
LCPL ROY M WHEAT (ex- <i>Bazalya</i>)	T-AK 3016	Detyens Shipyards, Charleston, SC	Oct 2001	Sqn 1

Displacement, tons: 50,101 full load
Dimensions, feet (metres): 863.8 × 98.4 × 34.8 (263.3 × 30 × 10.6)
Main machinery: 2 gas turbines; 47,020 hp(m) (34.56 MW); 2 shafts
Speed, knots: 20
Range, n miles: 12,000 at 20 kt
Complement: 30 plus 100 marines
Cargo capacity: 109,170 sq ft, 846 TEU

Comment: Acquired in March 1997 for conversion for Maritime Prepositioning Force by Bonder Shipbuilding, Mobile. The ship has been lengthened by 117 ft. Carries USMC expeditionary airfield, fleet hospital package and construction equipment.



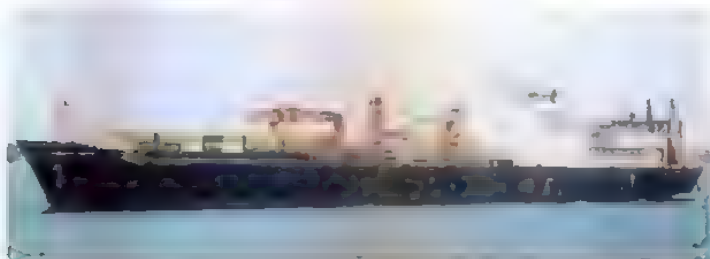
LCPL ROY M WHEAT 6/2007, M Declerck / 1305183

3 SGT MATEJ KOCAK CLASS (VEHICLE CARGO SHIPS) (AKH)

Name	No	Builders	Commissioned	F/S
SGT MATEJ KOCAK (ex-SS John B Waterman)	T-AK 3005	Pennsylvania SB Co, Chester, PA	14 Mar 1981	Sqn 2
PFC EUGENE A OBREGON (ex-SS Thomas Heywood)	T-AK 3006	Pennsylvania SB Co, Chester, PA	1 Nov 1982	Sqn 1
MAJ STEPHEN W PLESS (ex-SS Charles Carroll)	T-AK 3007	General Dynamics Corp, Quincy, MA	14 Mar 1983	Sqn 3

Displacement, tons: 48,754 full load
Dimensions, feet (metres): 821 x 105.6 x 32.3 (260.2 x 32.2 x 9.8)
Main machinery: 2 boilers; 2 GE turbines; 30,000 hp (22.4 MW); 1 shaft
Speed, knots: 20
Range, n miles: 13,000 at 20 kt
Complement: 29 plus 10 technicians
Cargo capacity: Containers, 562; Ro-Ro, 152,236 sq ft; JP-5 bbls, 20,290; DF-2 bbls, 12,355; Mogas bbls, 3,717; stable water, 2,189; cranes, 2 twin 50 ton and 1–30 ton gantry
Helicopters: Platform only

Comment: Converted from three Waterman Line ships by National Steel and Shipbuilding, San Diego. Delivery dates T-AK 3005, 1 October 1984; T-AK 3006, 16 January 1985; T-AK 3007, 15 May 1985. Conversion work included the addition of 157 ft (47.9 m) amidships. All operated by Waterman SS Corp.



EUGENE A OBREGON 7/2007, Nipper McDonnell / 1305182

5 2nd LT JOHN P BOBO CLASS (VEHICLE CARGO SHIPS) (AKRH)

Name	No	Builders	Commissioned	F/S
2nd LT JOHN P BOBO	T-AK 3008	General Dynamics, Quincy	14 Feb 1985	Sqn 1
PFC DEWAYNET WILLIAMS	T-AK 3009	General Dynamics, Quincy	5 June 1985	Sqn 1
1st LT BALDOMERO LOPEZ	T-AK 3010	General Dynamics, Quincy	20 Nov 1985	Sqn 2
1st LT JACK LUMMUS	T-AK 3011	General Dynamics, Quincy	5 Mar 1986	Sqn 3
SGT WILLIAM R BUTTON	T-AK 3012	General Dynamics, Quincy	27 May 1986	Sqn 2

Displacement, tons: 44,330 full load
Dimensions, feet (metres): 675.2 x 105.5 x 29.6 (205.8 x 32.2 x 9)
Main machinery: 2 Stork-Wartsila Werkspoor 16TM410 diesels; 27,000 hp(m) (19.84 MW) sustained; 1 shaft; bow thruster; 1,000 hp (746 kW)
Speed, knots: 17.7
Range, n miles: 12,840 at 18 kt
Complement: 30 plus 10 technicians
Cargo capacity: Containers, 578; Ro-Ro, 156,153 sq ft; JP-5 bbls, 20,778; DF-2 bbls, 13,334; Mogas bbls, 4,880; stable water, 2,357; cranes, 1 single and 2 twin 39 ton
Helicopters: Platform only.

Comment: Built for MPS operations. T-AK 3008, 3009, 3010 and 3011 are government owned (purchased in 2006/07) and are operated by American Overseas Marine. T-AK 3012 is owned and operated by American Overseas Marine.

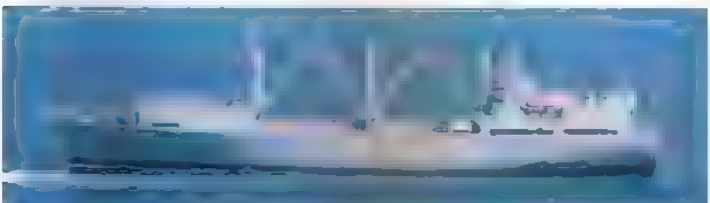


SGT WILLIAM R BUTTON 7/2007, Nipper McDonnell / 1305181

2 AVIATION LOGISTICS SHIPS (AVB)

Name	No	Builders	Commissioned
WRIGHT (ex-SS Young America)	T-AVB 3	Ingalls Shipbuilding	1970
CURTISS (ex-SS Great Republic)	T-AVB 4	Ingalls Shipbuilding	1959

Comment: To reinforce the capabilities of the Maritime Prepositioning Ship programme, conversion of two ro-ro ships into maintenance aviation support ships was approved in FY85 and FY86. Wright was completed 14 May 1986, Curtiss 18 August 1987. Both conversions took place at Todd Shipyards, Galveston, Texas. Each ship has side ports and three decks aft of the bridge superstructure and has the capability to load the vans and equipment of a Marine Aviation Intermediate Maintenance Activity. The ships' mission is to service aircraft from an afloat platform. They can then revert to a standard sealift role if required. Maritime Administration hull design is C5-S-78a. These NDAF ships are operated by American Overseas Marine and maintained in a reduced operating status although they remain permanently available to the Prepositioning Force.



CURTISS 10/2007, Michael Nitz / 1353623

READY RESERVE FORCE (RRF)

Notes: (1) The Ready Reserve Force was created in 1976, to support deployment and sustainment requirements and to respond to national emergencies. The RRF is designed to be made available quickly for military sealift operations. Its functions have been widened to include humanitarian and domestic security issues. (2) On 1 January 2009 the RRF consisted of 48 ships, including Ro-Ro, breakbulk, auxiliary crane, heavy lift barge carriers, special mission tankers and aviation logistic support ships. These are maintained in various stages of readiness and able to get underway in five, 10 or 20 days. They are located in various ports along the US East, West and Gulf Coasts. (3) The Department of Transportation's Maritime Administration (MARAD) is responsible for the maintenance and administration of the ships at all times. Military Sealift Command assumes operational control only once the ships are activated for military missions. (4) RRF ships have red, white and blue funnel stripes. (5) Eight Algal class Fast Sealift Ships transferred to MARAD control in October 2008.

1 PRODUCT TANKER (AOT)

PETERSBURG T-AOT 9109

Comment: Petersburg completed APS service in December 2007

6 AUXILIARY CRANE SHIPS (AK)

Name	No	Builders	Conversion
KEYSTONE STATE (ex-SS President Harrison)	T-ACS 1	Defoe SB Co, Bay City	1984
GEM STATE (ex-SS President Monroe)	T-ACS 2	Defoe SB Co, Bay City	1985
GRAND CANYON STATE (ex-SS President Polk)	T-ACS 3	Dillingham SR, Portland	1986
GOPHER STATE (ex-Export Leader)	T-ACS 4	Norshipco, Norfolk	Oct 1987
FLICKERTAIL STATE (ex-Export Lightning)	T-ACS 5	Norshipco, Norfolk	Dec 1987
CORNHUSKER STATE (ex-Staghound)	T-ACS 6	Norshipco, Norfolk	Mar 1988

Comment: Auxiliary crane ships are container ships to which have been added up to three twin boom pedestal cranes which will lift containerised or other cargo from itself or adjacent vessels and deposit it on a pier or into lighterage.



GOPHER STATE 7/2003, W Sartori / 0572766

2 BREAK BULK SHIPS (AK/AKR/AE)

CAPE JACOB T-AK 5029 CAPE GIBSON T-AK 5061

Comment: Cape Jacob is operational as an APS ship.



BREAK BULK SHIP 8/2002, Royal Australian Navy / 0677196

27 RO-RO SHIPS (AKR)

CAPE ISLAND (ex-Mercury) T-AKR 10	CAPE HENRY T-AKR 5067
CAPE INTREPID (ex-Lyra) T-AKR 11	CAPE HORN T-AKR 5068
CAPE TEXAS T-AKR 112	CAPE EDMONT T-AKR 5069
CAPE TAYLOR (ex-Cygnus) T-AKR 113	CAPE INSCRIPTION T-AKR 5076
ADM WM H CALLAGHAN T-AKR 1001	CAPE KNOX T-AKR 5082
CAPE ORLANDO (ex-American Eagle) T-AKR 2044	CAPE KENNEDY T-AKR 5083
CAPE DUCATO T-AKR 5051	CAPE VINCENT (ex-Tsabo Italia) T-AKR 9666
CAPE DOUGLAS T-AKR 5052	CAPE RISE (ex-Saudi Riyadh) T-AKR 9678
CAPE DOMINGO T-AKR 5053	CAPE RAY (ex-Saudi Makkah) T-AKR 9679
CAPE DECISION T-AKR 5054	CAPE VICTORY (ex-Merzario Britania) T-AKR 9701
CAPE DIAMOND T-AKR 5055	CAPE TRINITY (ex-Santos) T-AKR 9711
CAPE ISABEL T-AKR 5062	CAPE RACE (ex-G&C Admiral) T-AKR 9960
CAPE HUDSON T-AKR 5066	CAPE WASHINGTON (ex-Hual Transporter) T-AKR 9961
	CAPE WRATH (ex-Hual Trader) T-AKR 9962



CAPE WASHINGTON 9/2007, Michael Winter / 1305261

4 MISCELLANEOUS HEAVY LIFT SHIPS (AK/AKR)

Lash ships
CAPE FLATTERY-AK 5070
CAPE FAREWELL-AK 5073

Heavy lift ships
CAPE MAY-AKR 5063
CAPE MOHICAN-AKR 5085



CAPE MOHICAN

3/1999, van Ginderen Collection / 0084193

8 ALGOL CLASS (FAST SEALIFT SHIPS) (AKRH)

Name	No	Builders	Delivered
ALGOL (ex-SS Sea-Land Exchange)	T-AKR 287	Rotterdamische DD Mij NV, Rotterdam	7 May 1973
BELLATRIX (ex-SS Sea-Land Trade)	T-AKR 288	Rhein Stahl Nordseewerke, Emden, West Germany	6 Apr 1973
DENEbola (ex-SS Sea-Land Resource)	T-AKR 289	Rotterdamische DD Mij NV, Rotterdam	4 Dec 1973
POLLUX (ex-SS Sea-Land Market)	T-AKR 290	A G Weser, Bremen, West Germany	20 Sep 1973
ALTAIR (ex-SS Sea Land Finance)	T-AKR 291	Rhein Stahl Nordseewerke, Emden, West Germany	17 Sep 1973
REGULUS (ex-SS Sea-Land Commercial)	T-AKR 292	A G Weser, Bremen, West Germany	30 Mar 1973
CAPELLA (ex-SS Sea-Land McLean)	T-AKR 293	Rotterdamische DD Mij NV, Rotterdam	4 Oct 1972
ANTARES (ex-SS Sea Land Galloway)	T-AKR 294	A G Weser, Bremen, West Germany	27 Sep 1972

Displacement, tons: 55,355 full load
Measurement, tons: 25,389 net; 27,051 28,095 dwt
Dimensions, feet (metres): 946.2 x 105.6 x 36.8 (288.4 x 32.2 x 11.2)
Main machinery: 2 Foster-Wheeler boilers; 875 psi (61.6 kg/cm²); 950°F (510°C); 2 GE MST-19 steam turbines; 120,000 hp (89.5 MW); 2 shafts
Speed, knots: 33. **Range, n miles:** 12,200 at 27 kt
Complement: 43 (as merchant ship); 28 (minimum); 15 (ROS)
Helicopters: Platform only

Comment: All were originally built as container ships for Sea-Land Services, Port Elizabeth, NJ, but used too much fuel to be cost-effective as merchant ships. Six ships of this class were approved for acquisition in FY81 and the remaining two in FY82. The purchase price included 4,000 containers and 800 container chassis for use in container ship configuration. All eight were converted to Fast Sealift Ships, which are vehicle cargo ships. Conversion included the addition of roll-on/roll-off features. The area between the forward and after superstructures allows for a helicopter flight deck. Capacities are as follows. (sq ft) 150,016 to 166,843 ro-ro; 43,407 lift-on/lift-off; and either 44 or 46 20 ft containers. In addition to one ro-ro ramp port and starboard, twin 35 ton pedestal cranes are installed between the deckhouses and twin 50 ton cranes are installed aft. Ninety-three per cent of a US Army mechanised division can be lifted using all eight ships. Seven of the class moved nearly 11 per cent of all the cargo transported between the US and Saudi Arabia during and after the Gulf War. Six were activated for the Somali operation in December 1992 and all have been used in various operations and exercises since then. All based in Atlantic and Gulf of Mexico ports. All transferred to US Maritime Administration (MARAD) on 1 October 2008 and maintained in the Ready Reserve Force.



DENEbola

2/2005, Robert Pabst / 1154010

COAST GUARD

Headquarters Appointments

Commandant:
 Admiral Thed W Allen
Vice Commandant:
 Vice Admiral Vivien Crea
Commander, Atlantic Area:
 Vice Admiral Robert J Papp
Commander, Pacific Area:
 Vice Admiral David P Pekoske

Establishment

The United States Coast Guard was established by an Act of Congress approved 28 January 1915, which consolidated the Revenue Cutter Service (founded in 1790) and the Life Saving Service (founded in 1848). The act of establishment stated the Coast Guard 'shall be a military service and a branch of the armed forces of the USA at all times. The Coast Guard shall be a service in the Treasury Department except when operating as a service in the Navy'.

Congress further legislated that in time of national emergency or when the President so directs, the Coast Guard operates as a part of the Navy. The Coast Guard did operate as a part of the Navy during the First and Second World Wars.

The Lighthouse Service (founded in 1789) was transferred to the Coast Guard on 1 July 1939 and the Bureau of Navigation and Steamboat Inspection on 28 February 1942.

The Coast Guard was transferred from the Department of Transportation to the Department of Homeland Security on 1 March 2003.

Missions

The Coast Guard has five strategic aims.

Safety: Prevent deaths, injuries, and property damage associated with maritime transportation, fishing and recreational boating.

National Defense: Defend the nation as one of the five US Armed Services. Enhance regional stability in support of the National Security Strategy specifically maritime homeland security.

Maritime Security: Protect maritime borders from all intrusions by (a) halting the flow of illegal drugs, aliens, and contraband into the United States through maritime routes, (b) preventing illegal fishing; and (c) suppressing violations of federal law in the maritime arena.

Mobility: Facilitate maritime commerce and eliminate interruptions and impediments to the economical movement of goods and people, while maximizing recreational access and enjoyment of the water.

Protection of Natural Resources: Prevent environmental damage and natural resource degradation associated with maritime transportation, fishing, and recreational boating.

Organisation

Headquarters: Buzzards Point, Washington DC

Atlantic area: Portsmouth, VA
 1st District: Boston, MA
 5th District: Portsmouth, VA
 7th District: Miami, FL
 8th District: New Orleans, LA
 9th District: Cleveland, OH
Pacific area: Alameda, CA
 11th District: Alameda, CA
 13th District: Seattle, WA
 14th District: Honolulu, HI
 17th District: Juneau, AK
 Each district is further sub-divided into sectors.

Personnel

2009: 6,487 officers, 1,551 warrant officers, 32,274 enlisted, 7,640 reserves

Integrated Deepwater System (IDS)

IDS is a progressive 25-year programme to modernise, convert and replace USCG ships and aircraft and to improve command and control and logistics systems. The first contract for the programme, was awarded in June 2002 to Integrated Coast Guard Systems (ICGS), a partnership of Lockheed Martin and Northrop Grumman. Northrop Grumman Ship Systems will conduct the design and build three classes of new cutters and associated small boats. Up to 91 vessels are planned. Lockheed Martin is responsible for the C4ISR and system integration aspects of the programme and for aircraft procurement. Following a 2005 assessment of post-11 September 2001 (9/11) operational requirements, the Deepwater programme has been revised to incorporate more robust capabilities.

Cutter Strength

All Coast Guard vessels over 65 ft in length and that have adequate crew accommodation are referred to as 'cutters'. All names are preceded by USCG. The first two digits of the hull number for all Coast Guard vessels under 100 ft in length indicates the approximate length overall. Approximately 2,000 standard and non-standard boats are in service ranging in size from 11 ft skiffs to 55 ft aids-to-navigation craft.

Category/Classification	Active	Building (Projected)
Cutters		
WHEC High Endurance Cutters	12	-
WMEC Medium Endurance Cutters	29	-
WMSL National Security Cutters	1	1 (7)
WMSM Offshore Patrol Cutters	-	(25)

Category/Classification	Active	Building (Projected)
Icebreakers		
WAGB Icebreakers	3	-
WLBB Icebreaker	1	-
WTGB Icebreaking Tugs	9	-
Patrol Forces		
WPC Patrol Coastal	3	(58)
WPB Patrol Craft	106	8
Training Cutters		
WIX Training Cutters	1	-
Buoy Tenders		
WLB Buoy Tenders, Seagoing	16	-
WLM Buoy Tenders, Coastal	14	-
WLI Buoy Tenders, Inland	4	-
WLR Buoy Tenders, River	18	-

Construction Tenders

WLIC Construction Tenders, Inland	13	-
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Harbour Tugs

WYTL Harbour Tugs, Small	11	-
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DELETIONS

Cutters

2007 *Storis*

Patrol Forces

2008 *Tempest, Monsoon* (both returned to US Navy)

Tenders and Tugs

2006 *Gentian*
 2008 *Blackberry*

Icebreakers

2006 *Mackinaw*

HIGH ENDURANCE CUTTERS

1 + 2 (5) LEGEND CLASS (NATIONAL SECURITY CUTTERS) (PSOH/WMSL)

Name	No	Builders	Laid down	Launched	Commissioned	Homeport
BERTHOLF	WMSL 750	Northrop Grumman Ingalls Shipbuilding	29 Mar 2005	11 Nov 2006	4 Aug 2008	Alameda, CA
WAESCHE	WMSL 751	Northrop Grumman Ingalls Shipbuilding	11 Sep 2006	12 July 2008	2010	Alameda, CA
STRATTON	WMSL 752	Northrop Grumman Ingalls Shipbuilding	2008	2010	2011	Alameda, CA
-	WMSL 753	Northrop Grumman Ingalls Shipbuilding	2010	2011	2012	-

Displacement, tons: 3,206 standard, 4,112 full load
Dimensions, feet (metres): 418 x 54.0 x 21.0
 (127.4 x 16.5 x 6.4)
Main machinery: CODAG; 1 GE LM2500 gas turbine, 29,500 hp (22.0 MW); 2 MTU20V 1163 diesels; 19,310 hp (14.4 MW); bow thruster; 2 shafts, cp props
Speed, knots: 28
Range, n miles: 12,000 at 9 kt
Complement: 108 (14 officers)

Guns: 1 Bofors 57 mm/70 Mk 3; 220 rds/min to 17 km (9.3 n miles); weight of shell 2.4 kg
 1 General Dynamics 20 mm Phalanx Mk 15. 4—12.7 mm MGs.

Countermeasures: Decoys: Mk 53 Mod 6 Decoy System with Nulka and SRBOC
 ESM/ECM: SLO 32.

Electro-optic systems: Kollmorgen Mk 46 optronic sight
Radars: Surface search: TRS 3D/18; E/F-band.
 Navigation: Hughes-Furuno SPS 73, I-band.
 Fire control: SPQ-9B, I/J-band
 Tacan: AN/URN 25

Helicopters: 1 HH-65C and two VUAV or 2 HH-65C.

Programmes: Contracts awarded to Northrop Grumman Ship Systems on 2 April 2003 for the design and long lead material procurement of the first of a class of eight Maritime (formerly National) Security Cutters to replace High Endurance Cutters. Lockheed Martin providing command/control/communications and intelligence integration and hardware. Contract for production and delivery of first ship on 28 June 2004 and for second on 18 January 2005

Structure: Can carry up to 11 m interceptor craft, stern ramps for rapid launch and recovery. Two helicopter hangars. The hull of the third of class is being redesigned to reflect concerns about structural fatigue in the first two vessels. Modifications are to be made to the first two ships early in their lives.

Operational: Designed to deploy 230 days per year, crew deployments will continue to be 185 days away from homeport per year through a crew rotation concept



BERTHOLF

2/2008*, Northrop Grumman / 1305173



BERTHOLF
10/2008*, Frank Findler
.353573

12 HAMILTON AND HERO CLASSES (PSOH/WHEC)

Name	No	Builders	Laid down	Launched	Commissioned	F/S	Home Port
HAMILTON	WHEC 715	Avondale Shipyards	Jan 1965	18 Dec 1965	20 Feb 1967	PA	San Diego, CA
DALLAS	WHEC 716	Avondale Shipyards	7 Feb 1966	1 Oct 1966	1 Oct 1967	AA	Charleston, SC
MELLON	WHEC 717	Avondale Shipyards	25 July 1966	11 Feb 1967	22 Dec 1967	PA	Seattle, WA
CHASE	WHEC 718	Avondale Shipyards	27 Oct 1966	20 May 1967	1 Mar 1968	PA	San Diego, CA
BOUTWELL	WHEC 719	Avondale Shipyards	5 Dec 1966	17 June 1967	14 June 1968	PA	Alameda, CA
SHERMAN	WHEC 720	Avondale Shipyards	23 Jan 1967	23 Sep 1967	23 Aug 1968	PA	Alameda, CA
GALLATIN	WHEC 721	Avondale Shipyards	27 Feb 1967	18 Nov 1967	20 Dec 1968	AA	Charleston, SC
MORGENTHAU	WHEC 722	Avondale Shipyards	17 July 1967	10 Feb 1968	14 Feb 1969	PA	Alameda, CA
RUSH	WHEC 723	Avondale Shipyards	23 Oct 1967	16 Nov 1968	3 July 1969	PA	Honolulu, HI
MUNRO	WHEC 724	Avondale Shipyards	18 Feb 1970	5 Dec 1970	10 Sep 1971	PA	Kodiak, AK
JARVIS	WHEC 725	Avondale Shipyards	9 Sep 1970	24 Apr 1971	30 Dec 1971	PA	Honolulu, HI
MIDGETT	WHEC 726	Avondale Shipyards	5 Apr 1971	4 Sep 1971	17 Mar 1972	PA	Seattle, WA

Displacement, tons: 3,300 full load
Dimensions, feet (metres): 378 x 42.8 x 20
 (115.2 x 13.1 x 6.1)
Flight deck, feet (metres): 88 x 40 (26.8 x 12.2)
Main machinery: CODAG; 2 Pratt & Whitney FT4A-6 gas turbines; 36,000 hp (26.86 MW); 2 Fairbanks-Morse 38TD8-1/8-12 diesels; 7,000 hp (5.22 MW) sustained, 2 shafts; cp props; retractable bow propulsor; 350 hp (261 kW)
Speed, knots: 29
Range, n miles: 9,600 at 15 kt
Complement: 162 (19 officers)

Guns: 1 OTO Melara 3 in (76 mm)/62 Mk 75 Compact, 85 rds/min to 16 km (8.7 n miles) anti-surface; 12 km (6.6 n miles) anti-aircraft; weight of shell 6 kg.
 2 Boeing 25 mm/87 Mk 38 Bushmaster
 1 GE/GD 20 mm Vulcan Phalanx 6-barrelled Mk 15; 3,000 rds/min combined to 1.5 km. 4—12.7 mm MGs.

Countermeasures: Decoys: 2 Loral Hycor SRBOC 6-barrelled fixed Mk 36; IR flares and chaff
 ESM: WLR-1C, WLR-3; intercept
Combat data systems: SCCS 378 includes OTCIXS satellite link

Weapons control: Mk 92 Mod 1 GFCS
Radars: Air search: Lockheed SPS-40B, B-band
 Surface search: Hughes/Furuno SPS-73; E/F- and I-bands.
 Fire control: Sperry Mk 92; I/J-band
 Tacan: URN 25

Helicopters: 1 HH-65A or 1 HH-60J

Programmes: Twelve built of a total of 36 originally planned.

Modernisation: FRAM programme for all 12 ships in this class from October 1985 to October 1992. Work included



DALLAS

9/2008*, C D Yaylali 1353622

standardising the engineering plans, improving the clutching systems, replacing SPS-29 air search radar with SPS 40 radar and replacing the Mk 56 fire-control system and 5 in/38 gun mount with the Mk 92 system and a single 76 mm OTO Melara Compact gun. In addition Harpoon and Phalanx CIWS fitted to five of the class by 1992 and CIWS to all by late 1993. The flight deck and other aircraft facilities upgraded to handle a Jay Hawk helicopter including a telescopic hangar URN 25 Tacan added along with the SQR-4 and SQR 17 sonobuoy receiving set and passive acoustic analysis systems. SRBOC chaff launchers were also fitted but not improved ESM which has been shelved. All missiles, torpedo tubes, sonar and ASW equipment removed in 1993-94. 25 mm Mk 38 guns replaced the 20 mm Mk 67.

Shipboard Command and Control System (SCCS) fitted to all of the class by 1996. Surface search radar replaced 1997-99. First phase of C4ISR upgrades, including access to SIPRNET and classified networks, completed in 2004.
Structure: These ships have clipper bows, twin funnels enclosing a helicopter hangar, helicopter platform aft. All are fitted with elaborate communications equipment. Superstructure is largely of aluminium construction. Bridge control of manoeuvring is by aircraft-type joystick rather than wheel.
Operational: Ten of the class are based in the Pacific, leaving only two on the East Coast. The removal of SSMs and all ASW equipment refocuses on Coast Guard roles. Munro changed homeport to Kodiak, AK, in 2007. Decommissioning of the class is expected to begin in 2011.

MEDIUM ENDURANCE CUTTERS

Notes: The Offshore Patrol Cutter programme is for a class of approximately 25 ships to replace the Famous Cutter and Reliance classes. The broad requirement is for a 100 m ship, armed with a medium calibre gun and capable of

operating a helicopter and/or UAVs. Although a contract for an accelerated design was signed with Northrop Grumman Ship Systems on 10 June 2004, construction of the first of class, which was expected to start in 2007, has been

cancelled. The programme is to start anew with the concept design phase likely to begin in 2009 and construction of the ships, likely to follow the Legend class, projected to begin in about 2015.

13 FAMOUS CUTTER CLASS (PSOH/WMEC)

Name	No	Builders	Laid down	Launched	Commissioned	F/S	Home Port
BEAR	WMEC 901	Tacoma Boatbuilding Co	23 Aug 1979	25 Sep 1980	4 Feb 1983	AA	Portsmouth, VA
TAMPA	WMEC 902	Tacoma Boatbuilding Co	3 Apr 1980	19 Mar 1981	16 Mar 1984	AA	Portsmouth, VA
HARRIET LANE	WMEC 903	Tacoma Boatbuilding Co	15 Oct 1980	6 Feb 1982	20 Sep 1984	AA	Portsmouth, VA
NORTHLAND	WMEC 904	Tacoma Boatbuilding Co	9 Apr 1981	7 May 1982	17 Dec 1984	AA	Portsmouth, VA
SPENCER	WMEC 905	Robert E Derecktor Corp	26 June 1982	17 Apr 1984	28 June 1986	AA	Boston, MA
SENECA	WMEC 906	Robert E Derecktor Corp	16 Sep 1982	17 Apr 1984	4 May 1987	AA	Boston, MA
ESCANABA	WMEC 907	Robert E Derecktor Corp	1 Apr 1983	6 Feb 1985	27 Aug 1987	AA	Boston, MA
TAHOMA	WMEC 908	Robert E Derecktor Corp	28 June 1983	6 Feb 1985	6 Apr 1988	AA	Kittery, ME
CAMPBELL	WMEC 909	Robert E Derecktor Corp	10 Aug 1984	29 Apr 1986	19 Aug 1988	AA	Kittery, ME
THETIS	WMEC 910	Robert E Derecktor Corp	24 Aug 1984	29 Apr 1986	30 June 1989	AA	Key West, FL
FORWARD	WMEC 911	Robert E Derecktor Corp	11 July 1986	22 Aug 1987	4 Aug 1990	AA	Portsmouth, VA
LEGARE	WMEC 912	Robert E Derecktor Corp	11 July 1986	22 Aug 1987	4 Aug 1990	AA	Portsmouth, VA
MOHAWK	WMEC 913	Robert E Derecktor Corp	15 Mar 1987	5 May 1988	20 Mar 1991	AA	Key West, FL

Displacement, tons: 1,820 full load
Dimensions, feet (metres): 270 x 38 x 13.9
(82.3 x 11.6 x 4.2)

Main machinery: 2 Alco 18V-251 diesels; 7,290 hp (5.44 MW) sustained; 2 shafts, cp props

Speed, knots: 19.5

Range, n miles: 9,900 at 12 kt

Complement: 100 (14 officers) plus 5 aircrew

Guns: 1 OTO Melara 3 in (76 mm)/62 Mk 75; 85 rds/min to 16 km (8.7 n miles) anti-surface; 12 km (6.6 n miles) anti-aircraft; weight of shell 6 kg
2-12.7 mm MGs or 2-40 mm Mk 19 grenade launchers

Countermeasures: Decoys: 2 Loral Hycor SRBOC 6-barrelled fixed Mk 36; IR flares and chaff

ESM/ECM: SLQ-32(V)2; radar intercept.

Combat data systems: SCCS-270; OTCIXS satellite link.

Radars: Surface search; Hughes/Furuno SPS-73, I-band
Fire control: Sperry Mk 92 Mod 1; I/J-band
Tacan. URN 25.

Helicopters: 1 HH-65A or HH-60J or MH-68A or SH-60B

Programmes: The contract for construction of WMEC 905-913 was originally awarded to Tacoma Boatbuilding Co on 29 August 1980. However, under lawsuit from the Robert E Derecktor Corp, Middletown, Rhode Island, the contract to Tacoma was determined by a US District Court to be invalid and was awarded to Robert E Derecktor Corp on 15 January 1981.

Modernisation: OTCIXS satellite link fitted from 1992. CAISR upgrades completed in 2004. Tampa refitted 2005-06 as part of the Mission Effectiveness Project to extend service lives. The work includes engineering and habitability measures. All of the class are to be similarly refitted.



NORTHLAND

5/2006, A A de Kruif / 115/486

Structure: They are the only medium endurance cutters with a helicopter hangar (which is telescopic) and the first cutters with automated command and control centre. Fin stabilisers fitted. Plans to fit SSM and/or CIWS have been abandoned as has towed array

sonar and sonobuoy datalinks. New radars fitted 1997-99.

Operational: Very lively in heavy seas because the length to beam ratio is unusually small for ships required to operate in Atlantic conditions.

14 RELIANCE CLASS (PSOH/WMEC)

Name	No	Builders	Commissioned	F/S	Home Port
RELIANCE	WMEC 615	Todd Shipyards	20 June 1964	AA	Kittery, ME
DILIGENCE	WMEC 616	Todd Shipyards	26 Aug 1964	AA	Wilmington, NC
VIGILANT	WMEC 617	Todd Shipyards	3 Oct 1964	AA	Cape Canaveral, FL
ACTIVE	WMEC 618	Christy Corp	17 Sep 1966	PA	Port Angeles, WA
CONFIDENCE	WMEC 619	Coast Guard Yard, Baltimore	19 Feb 1966	AA	Cape Canaveral, FL
RESOLUTE	WMEC 620	Coast Guard Yard, Baltimore	8 Dec 1966	AA	St Petersburg, FL
VALIANT	WMEC 621	American Shipbuilding Co	28 Oct 1967	AA	Miami, FL
STEADFAST	WMEC 623	American Shipbuilding Co	25 Sep 1968	AA	Warrenton, OR
DAUNTLESS	WMEC 624	American Shipbuilding Co	10 June 1968	AA	Galveston, TX
VENTUROUS	WMEC 625	American Shipbuilding Co	18 Aug 1968	AA	St Petersburg, FL
DEPENDABLE	WMEC 626	American Shipbuilding Co	22 Nov 1968	AA	Cape May, NJ
VIGOROUS	WMEC 627	American Shipbuilding Co	2 May 1969	AA	Cape May, NJ
DECISIVE	WMEC 628	Coast Guard Yard, Baltimore	23 Aug 1968	AA	Pascagoula, MS
ALERT	WMEC 630	Coast Guard Yard, Baltimore	4 Aug 1969	PA	Warrenton, OR

Displacement, tons: 1,129 full load (WMEC 620-630)
1,110 full load (WMEC 618, 619)

Dimensions, feet (metres): 210.5 x 34 x 10.5
(64.2 x 10.4 x 3.2)

Main machinery: 2 Alco 16V-251 diesels; 6,480 hp (4.83 MW) sustained; 2 shafts; LIPS cp props

Speed, knots: 18. **Range, n miles:** 6,100 at 14 kt; 2,700 at 18 kt
Complement: 75 (12 officers)

Guns: 1 Boeing 25 mm/87 Mk 38 Bushmaster; 200 rds/min to 6.8 km (3.4 n miles). 2-12.7 mm MGs.

Combat data systems: SCCS 210.

Radars: Surface search; Hughes/Furuno SPS-73; I-band.

Helicopters: 1 HH-65A or MH-68A embarked as required

Modernisation: All 14 cutters underwent a Major Maintenance Availability (MMA) from 1987-94. The exhausts for main engines, ship service generators and boilers were run in a new vertical funnel which reduces flight deck size. 76 mm guns were replaced by 25 mm Mk 38. A Mission Effectiveness Project was initiated in 2005. Work, to extend service lives, includes engineering and habitability measures. Dependable is the first to be refitted and all of the class are to be similarly upgraded.

Structure: Designed for search and rescue duties. Design features include 360° visibility from bridge; helicopter flight deck (no hangar); and engine exhaust vent at stern which has been replaced by a funnel during MMA. Capable of towing ships up to 10,000 tons. Air conditioned throughout except engine room; high degree of habitability

Operational: Normally operate within 500 miles of the coast. Primary roles are SAR, law enforcement homeland security and defence operations

Sales: Courageous sold to Sri Lanka in 2004.



VENTUROUS

11/2008, Marco Ghiglino / 1353621

1 EDENTON CLASS (PSOH/WMEC)

Name	No	Builders	Commissioned	F/S	Home Port
ALEX HALEY (ex-Edenton)	WMEC 39 (ex-ATS 1)	Brooke Marine, Lowestoft	23 Jan 1971	PA	Kodiak, AK

Displacement, tons: 3,000 full load
Dimensions, feet (metres): 282.6 x 50 x 15.1 (86.1 x 15.2 x 4.6)
Main machinery: 4 Caterpillar 3516 DITAWJ diesels; 6,000 hp(m) (4.41 MW); 2 shafts; cp props; bow thruster
Speed, knots: 18. **Range, n miles:** 10,000 at 13 kt
Complement: 99 (9 officers)
Guns: 2 McDonnell Douglas 25 mm/87 Mk 38; 200 rds/min to 6.8 km (3.4 n miles) 2—12.7 mm MGs
Radars: Surface search: Hughes/Furuno SPS-73; I-band.
Combat data systems: SCCS-282.
Helicopters: Platform for 1 HH-65A or 1 HH-60J.

Comment: Former Navy salvage ship paid off in 1996 and taken on by the Coast Guard in November 1997 for conversion. All diving and salvage gear removed, flight deck installed, and upgraded navigation and communications. Armed with 25 mm guns. Used in the Bering Sea, Gulf of Alaska and North Pacific as a multimission cutter from 16 December 1999



ALEX HALEY 12/1999, USCG / 0084188

1 DIVER CLASS (PSO/WMEC)

Name	No	Builders	USN Comm	F/S	Home Port
ACUSHNET (ex-Shackle)	WMEC 167 (ex-WAGO 167, ex-WAT 167, ex-ARS 9)	Basalt Rock Co, Napa, CA	5 Feb 1944	PA	Ketchikan, AK

Displacement, tons: 1,557 standard; 1,746 full load
Dimensions, feet (metres): 213 x 41 x 15 (64.9 x 12.5 x 4.6)
Main machinery: 4 Fairbanks-Morse diesels; 3,000 hp (2.24 MW) sustained, 2 shafts
Speed, knots: 15.5. **Range, n miles:** 9,000 at 8 kt
Complement: 75 (9 officers)
Guns: 2—12.7 mm MGs.
Radars: Navigation: 2 Raytheon SPS-73; I-band.

Comment: Large, steel-hulled salvage ship transferred from the Navy to the Coast Guard and employed in tug and oceanographic duties. Modified for handling environmental data buoys and reclassified WAGO in 1968 and reclassified WMEC in 1980. Major renovation work completed in 1983 and now used for SAR homeland security and law enforcement operations.



ACUSHNET 8/2006, Globke Collection / 1167494

SHIPBORNE AIRCRAFT

Numbers/Type: 73/24 EADS HH-65C/MH-65C Dolphin.
Operational speed: 175 kt (324 km/h).
Service ceiling: 10,000 ft (3,048 m).
Range: 290 n miles (537 km).
Role/Weapon systems: Short-range rescue and recovery (SRR) helicopter. All A and B models converted to C configuration, with Turbomeca Arriel 2C2 engines by 2007. Conversion included extended heat shields, reconfigured cockpit and improved avionics to facilitate multimission cutter operations. MH version has airborne use-of-force upgrade, interoperable with homeland security and local response agencies. Also configured to allow installation and removal of special AUF mission weapons. Sensors: Bendix RDR 1300 radar and Collins mission management system. Equipped with CDU-900G control displays and MFD-255 multifunctional displays. Weapons: 1—762 mm MG



MH-65C 12/2006, US Navy / 1353643

Numbers/Type: 40/2 Sikorsky HH-60J/MH-60T Jayhawk.
Operational speed: 180 kt (333 km/h).
Service ceiling: 13,000 ft (3,961 m).
Range: 300 n miles (555 km).
Role/Weapon systems: Coast Guard version of Seahawk, first flew in 1988. A life-extension programme began in 2005 and is to upgrade the entire fleet by 2013 to MH-60T configuration. Sensors: Bendix RDR-1300C (or Primus 701 in MH-607) weather/search radar. AAQ-15 FLIR. Weapons: 1—7.62 mm MG

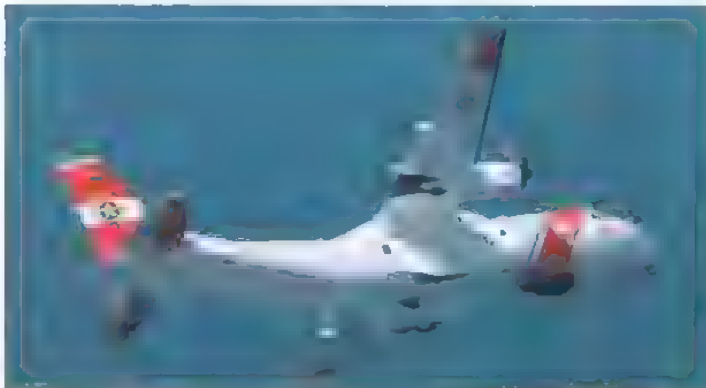


HH-60J 5/2006, Takatoshi Okano / 1167495

LAND-BASED MARITIME AIRCRAFT

Notes: (1) A High Altitude Endurance Unmanned Air Vehicle (HAE-UAV) is planned to enter service from 2016 although this date may be brought forward. Equipped with high-resolution sensors (EO/FLIR, SAR, ISAR, GMTI), the HAE-UAV is to provide long-range surveillance over large areas for extended periods of time. With a loiter altitude of up to 65,000 ft, they are to be capable of transmitting data and EO/IR imagery to shore-based command and control centres to contribute to the Common Operational Picture (COP). The programme is likely to be informed by the USN's BAMS (Broad Area Maritime Surveillance) programme, contenders for which include the Northrop Grumman RQ-4A Global Hawk. Four aircraft are planned.
 (2) Four P-3B Orions are used for AEW by US Customs.

Numbers/Type: 8 EADS/CASA HC-144A (CN-235) 200 Ocean Sentry.
Operational speed: 236 kt (437 km/h).
Service ceiling: 25,000 ft (7,620 m).
Range: 1,565 n miles (2,819 km).
Role/Weapon systems: First two aircraft ordered on 18 February 2004 and delivered in 2007. Roles include SAR, law enforcement, ice patrol and environmental protection. Airframe manufactured by EADS/CASA while Lockheed Martin completed integration and developmental testing of aircraft and C4ISR mission pallet. Aircraft made its first flight with the mission system pallet onboard in May 2007. Three of initial five HC-144A aircraft based at Coast Guard Aviation Training Center in Mobile, AL. Up to 36 aircraft may be acquired by 2020. Sensors: Surface search/weather radar; electro-optical/infrared sensors; advanced 406 MHz DF; C4ISR/SIPRNET/DOD COP interoperable.



CN-235 11/2008, EADS/CASA / 1353647

For details of the latest updates to *Jane's Fighting Ships* online and to discover the additional information available exclusively to online subscribers please visit jfs.janes.com

Numbers/Type: 1 Gulfstream VC-37A.
Operational speed: 459 kt (850 km/h).
Service ceiling: 51,000 ft (15,540 m).
Range: 5,600 n miles (10,370 km).

Role/Weapon: Military version of Gulfstream V which replaced a C-20B Gulfstream III in May 2002. Based at Air Station Washington DC. Serves as a long-range command and control aircraft for Department of Homeland Security and Coast Guard officials.



GULFSTREAM G 550

5/2003, Paul Jackson / 0568402

Numbers/Type: 4/7/6 AMD-BA HU-25 A/HU-25 C/HU-25 D Guardian Falcon
Operational speed: 420 kt (774 km/h).
Service ceiling: 42,000 ft (12,800 m).
Range: 1,500 n miles (2,777 km).

Role/Weapon systems: Medium-range maritime surveillance role. 17 are operational; 21 are in storage or support aircraft. Sensors: APS-127 weather/search radar, APG-66 air search radar, APS-143B surface search radar. Weapons: unarmed.



HU-25 FALCON

6/2001, Adolfo Ortigueira Gil / 0529903

Numbers/Type: 27/6 Lockheed HC-130H/C-130J.
Operational speed: 325 kt (602 km/h).
Service ceiling: 33,000 ft (10,060 m).
Range: 4,700 n miles (8,792 km); 5,500 n miles (1,018 km) (HC-130J).

Role/Weapon systems: Long-range maritime reconnaissance role. Sixteen HC-130Hs undergoing upgrade to deliver Deepwater requirement for Long Range Search (LRS) capability and provision of heavy air transport for Maritime Safety & Security Teams (MSSTs), Port Security Units (PSUs), and National Strike Force (NSF). When modernisation is complete, there will be 22 aircraft: 16 HC-130H with upgraded radar and avionics, and six HC-130J. Delivery of first of new C-130J started in 2003. All six were operational by late 2008. Three C-130Js have been equipped with EDO EL/M 2022A(V)3 maritime surface search radar, mounted beneath the plane's fuselage, a nose-mounted APN 241 weather radar, electro-optical/infrared-FLIR Systems Star Safire III, DF-430 UHF/VHF Direction Finder System, and SAAB Transponder Tech AB R4A Airborne Automatic Identification System (AIS). C-130Js will have 90 per cent C4ISR commonality with CASA CN235-300M. Sensors (HC-130H): APS-137 or APS-125 weather/search radar Wescam MX-20 EO/IR. Weapons: unarmed.



C-130J

3/2008*, USCG / 1295179

Numbers/Type: 1 Bombardier Challenger 604 C-143A.
Operational speed: 459 kt (850 km/h).
Service ceiling: 41,000 ft (12,496 m).
Range: 3,400 n miles (6,296 km).

Role/Weapon systems: Military version of Challenger 604 replaced a VC-4 Gulfstream I in December 2005. Based at Air Station Washington DC., it serves as a medium-range command and control aircraft for Department of Homeland Security and Coast Guard officials.

PATROL FORCES

41 ISLAND CLASS (WPB)

Name	No	Commissioned	Home Port
FARALLON	WPB 1301	21 Feb 1986	Miami, FL
MAUI	WPB 1304	9 May 1986	Miami, FL
OCRACOE	WPB 1307	4 Aug 1986	St Petersburg, FL
AQUIDNECK	WPB 1309	28 Sep 1986	Atlantic Beach, NC
MUSTANG	WPB 1310	3 Dec 1986	Seward, AK
NAUSHON	WPB 1311	5 Dec 1986	Ketchikan, AK
SANIBEL	WPB 1312	28 May 1987	Woods Hole, MA
EDISTO	WPB 1313	27 Mar 1987	San Diego, CA
SAPELO	WPB 1314	14 May 1987	San Juan, PR
MATINICUS	WPB 1315	19 June 1987	San Juan, PR
NANTUCKET	WPB 1316	10 Aug 1987	St Petersburg, FL
BARANOF	WPB 1318	26 May 1988	Miami, FL
CHANDELEUR	WPB 1319	8 June 1988	Miami, FL
CHINCOTEAGUE	WPB 1320	8 Aug 1988	San Juan, PR
CUSHING	WPB 1321	8 Aug 1988	San Juan, PR
CUTTYHUNK	WPB 1322	5 Oct 1988	Port Angeles, WA
DRUMMOND	WPB 1323	19 Oct 1988	Miami, FL
KEY LARGO	WPB 1324	24 Dec 1988	San Juan, PR
MONOMOY	WPB 1326	19 May 1989	Woods Hole, MA
ORCAS	WPB 1327	14 Apr 1989	Cocoa Bay, OR
SITKINAK	WPB 1329	31 May 1989	Miami, FL
TYBEE	WPB 1330	4 Aug 1989	Woods Hole, MA
WASHINGTON	WPB 1331	8 Oct 1989	Arpa Harbor, Guam
WRANGELL	WPB 1332	15 Sep 1989	South Portland, ME
ADAK	WPB 1333	17 Nov 1989	Sandy Hook, NJ
LIBERTY	WPB 1334	22 Sep 1989	Auke Bay, AK
ANACAPA	WPB 1335	13 Jan 1990	Petersburg, AK
KISKA	WPB 1336	21 Apr 1990	Hilo, HI
ASSATEAGUE	WPB 1337	15 June 1990	Arpa Harbor, Guam
GRAND ISLE	WPB 1338	19 Apr 1991	Gloucester, MA
KEY BISCAYNE	WPB 1339	23 Apr 1991	Key West, FL
JEFFERSON ISLAND	WPB 1340	16 Aug 1991	South Portland, ME
KODIAK ISLAND	WPB 1341	21 June 1991	Key West, FL
LONG ISLAND	WPB 1342	27 Aug 1991	Valdez, AK
BAINBRIDGE ISLAND	WPB 1343	20 Sep 1991	Sandy Hook, NJ
BLOCK ISLAND	WPB 1344	22 Nov 1991	Atlantic Beach, NC
STATEN ISLAND	WPB 1345	22 Nov 1991	Atlantic Beach, NC
ROANOKE ISLAND	WPB 1346	8 Feb 1992	Homer, AK
PEA ISLAND	WPB 1347	29 Feb 1992	Key West, FL
KNIGHT ISLAND	WPB 1348	22 Apr 1992	Key West, FL
GALVESTON ISLAND	WPB 1349	5 June 1992	Honolulu, HI

Displacement, tons: 168 (A series); 154 (B series); 134 (C series) full load

Dimensions, feet (metres): 110 x 21 x 7.3 (33.5 x 6.4 x 2.2)

Main machinery: 2 Paxman Valenta 16RP 200M diesels (A and B series); 6,246 hp (4.62 MW), sustained; 2 Caterpillar 3516 DITA diesels (C series); 5,596 hp (4.17 MW) sustained, 2 shafts

Speed, knots: 29

Range, n miles: 3,928 at 10 kt

Complement: 16 (2 officers)

Guns: 1 McDonnell Douglas 25 mm/87 Mk 38. 2 - 12.7 mm M60 MGs.

Combat data systems: SCCS-Lite

Radars: Navigation: Hughes/Furuno SPS-73; I-band.

Comment: All built by the Bollinger Machine Shop and Shipyard at Lockport, Louisiana.

The design is based upon the 110 ft patrol craft built by Vosper Thornycroft, UK, in service in Venezuela, UAE and UK Customs, but modified to meet Coast Guard needs. Vosper Thornycroft supplied design support, stabilisers, propellers, and steering gear. Batches: A 1301-1316, B 1317-1337, C 1338-1349. Radars replaced by 1999. As part of the Deepwater programme, eight hulls were modified to include stretching of the hull to 123 ft by insertion of a 13 ft plug to enable installation of upgraded C4ISR systems, a stern launch and recovery system and various platform improvements. WPB 1303 was first to undergo conversion at Bollinger Shipyard in February 2004. She was followed by WPBs 1317, 1325 and 1328 in 2004 and 1302, 1305, 1306 and 1308 by 2007. However, following experience of significant deck cracking, hull deformation and shaft alignment problems, the conversion planned was terminated in December 2006 and all eight vessels were taken out of operational service. The remaining 110 ft cutters are to continue in service until replaced by the Fast Response Cutter and/or a stop-gap solution can be found. Six cutters operate from Bahrain.



MAUI

9/2008*, Shaun Jones / 1353541

70 + 3 MARINE PROTECTOR CLASS (WPB)

Name	No	Commissioned	Home Port
BARRACUDA	87301	24 Feb 1998	Eureka, CA
HAMMERHEAD	87302	17 May 1998	Woods Hole, MA
MAKO	87303	28 June 1998	Cape May, NJ
MARLIN	87304	2 Dec 1998	Fort Meyers, FL
STINGRAY	87305	13 Jan 1999	Mobile, AL
DORADO	87306	24 Feb 1999	Crescent City, CA
OSPREY	87307	7 Apr 1999	Port Townsend, WA
CHINOOK	87308	18 May 1999	New London, CT
ALBACORE	87309	30 June 1999	Little Creek, VA
TARPON	87310	11 Aug 1999	Tybee Island, GA
COBIA	87311	8 Sep 1999	Mobile, AL
HAWKSBILL	87312	6 Oct 1999	Monterey, CA
CORMORANT	87313	3 Nov 1999	Fort Pierce, FL
FINBACK	87314	1 Dec 1999	Cape May, NJ
AMBERJACK	87315	29 Dec 1999	Port Isabel, TX
KITTIWAKE	87316	26 Jan 2000	Lihue, HI
BLACKFIN	87317	23 Feb 2000	Santa Barbara, CA
BLUEFIN	87318	22 Mar 2000	Fort Pierce, FL
YELLOWFIN	87319	19 Apr 2000	Charleston, SC
MANTA	87320	17 May 2000	Freeport, TX
COHO	87321	14 June 2000	Panama City, FL
KINGFISHER	87322	12 July 2000	Mayport, FL
SEAHAWK	87323	9 Aug 2000	Carrabelle, FL
STEELHEAD	87324	6 Sep 2000	Port Aransas, TX
BELUGA	87325	4 Oct 2000	Little Creek, VA
BLACKTIP	87326	1 Nov 2000	Oxnard, CA
PELICAN	87327	29 Nov 2000	Abbeville, LA
RIDLEY	87328	27 Dec 2000	Montauk, NY
COCHITO	87329	24 Jan 2001	Little Creek, VA
MANOWAR	87330	21 Feb 2001	Galveston, TX
MORAY	87331	21 Mar 2001	Jonesport, ME
RAZORBILL	87332	18 Apr 2001	Gulfport, MS
ADELIE	87333	16 May 2001	Port Angeles, WA
GANNET	87334	13 June 2001	Fort Lauderdale, FL
NARWHAL	87335	11 July 2001	Corona del Mar, CA
STURGEON	87336	8 Aug 2001	Grand Isle, LA
SOCKEYE	87337	5 Sep 2001	Bodega Bay, CA
IBIS	87338	3 Oct 2001	Cape May, NJ
POMPANO	87339	1 Nov 2001	Gulfport, MS
HALIBUT	87340	28 Nov 2001	Marina del Rey, CA
BONITO	87341	26 Dec 2001	Pensacola, FL
SHRIKE	87342	23 Jan 2002	Cape Canaveral, FL
TERN	87343	20 Feb 2002	San Francisco, CA
HERON	87344	20 Mar 2002	Sabine, TX
WAHOO	87345	17 Apr 2002	Port Angeles, WA
FLYINGFISH	87346	15 May 2002	Boston, MA
HADDOCK	87347	12 June 2002	San Diego, CA
BRANT	87348	10 July 2002	Corpus Christi, TX
SHEARWATER	87349	7 Aug 2002	Portsmouth, VA
PETREL	87350	4 Sep 2002	San Diego, CA
SEA LION	87352	19 Nov 2003	Bellingham, WA
SKIPJACK	87353	17 Dec 2003	Galveston, TX
DOLPHIN	87354	14 Jan 2004	Miami, FL
HAWK	87355	11 Feb 2004	St Petersburg, FL
SAILFISH	87356	10 Mar 2004	Sandy Hook, NJ
SAWFISH	87357	7 Apr 2004	Key West, FL
SWORDFISH	87358	9 Mar 2005	Port Angeles, WA
TIGER SHARK	87359	6 Apr 2005	Newport, RI
BLUE SHARK	87360	4 May 2005	Everett, WA
SEA HORSE	87361	1 June 2005	Portsmouth, VA
SEA OTTER	87362	29 June 2005	San Diego, CA
MANATEE	87363	27 July 2005	Corpus Christi, TX
AHI	87364	15 Feb 2006	Honolulu, HI
PIKE	87365	15 Jan 2006	San Francisco, CA
TERRAPIN	87366	1 Feb 2006	Bellingham, WA
SEA DRAGON	87367	14 Jan 2008	Kings Bay, GA
SEA DEVIL	87368	20 June 2008	Bangor, WA
CROCODILE	87369	5 Dec 2008	St Petersburg, FL
DIAMONDBACK	87370	17 Jan 2009	Miami, FL
REEF SHARK	87371	24 Mar 2009	San Juan, PR
ALLIGATOR	87372	2009	St Petersburg, FL
SEA DOG	87373	2009	Kings Bay, GA
SEA FOX	87374	2009	Bangor, WA

Displacement, tons: 91 full load
 Dimensions, feet (metres): 86.9 x 19 x 5.2 (26.5 x 5.8 x 1.6)
 Main machinery: 2 MTU 8V 396TE94 diesels; 2,680 hp(m) (1.97 MW) sustained; 2 shafts
 Speed, knots: 25
 Range, n miles: 900 at 8 kt
 Complement: 10 (1 officer)
 Guns: 2—12.7 mm MGs.
 Radars: Navigation; I-band.

Comment: Designed by David M Cannell based on the hull of the Damen Stan Patrol 2600 which is in service with the Hong Kong police. Steel hull built by Bollinger with GRP superstructure by Halmatic. A stern ramp is used for launching a 5.5 m RIB. Following delivery of 65 vessels to the USCG and a further two to the Maltese Armed Forces, an order for a further eight was made by the USCG on 25 June 2007. Four (87367, 87368, 87373, 87374) of those latter craft were funded by the US Navy but are operated by the Coast Guard



COCHITO 9/2007, Michael Winter / 1305259



MORAY 10/2008, Marco Ghiglino / 1353540

3 CYCLONE CLASS (PATROL COASTAL SHIPS) (WPC/PB)

Name	No	Builders	Commissioned	Home Port
ZEPHYR	WPC 8 (ex-PC 8)	Bollinger, Lockport	15 Oct 1994	Pascagoula, MS
SHAMAL	WPC 13 (ex-PC 13)	Bollinger, Lockport	27 Jan 1996	Pascagoula, MS
TORNADO	WPC 14 (ex-PC 14)	Bollinger, Lockport	15 May 2000	Pascagoula, MS

Displacement, tons: 386 full load
 Dimensions, feet (metres): 179 x 25.9 x 7.9 (54.6 x 7.9 x 2.4)
 Main machinery: 4 Paxman Valenta 16RP 200M diesels; 14,400 hp (10.7 MW) sustained; 4 shafts
 Speed, knots: 35
 Range, n miles: 2,500 at 12 kt
 Complement: 27 (2 officers)
 Guns: 2 McDonnell Douglas 25 mm/87 Mk 38. 4—12.7 mm M60 MGs.
 Combat data systems: SCCS-Lite
 Radars: Navigation. Hughes/Furuno SPS-73; I-band.

Comment: Contract awarded by USN for eight in August 1990 and five more in July 1991. Design based on Vosper Thornycroft Ramadan class modified for USN requirements including 1 in armour on superstructure. The craft have a slow speed loiter capability. These five vessels were modified to incorporate a semi-dry well, boat ramp and stern gate to facilitate deployment and recovery of a fully loaded RIB while the ship is making way. Transferred to the USCG 2004-05. These are to fill a gap in Coast Guard resources. *Tempest* and *Monsoon* are to return to the Navy in 2008, the other three are to be transferred in FY12. Eight unconverted (without stern-ramps) vessels remain in USN service



SHAMAL 11/2004, USCG / 1187850

460 GUARDIAN CLASS (TPSB/YP)

Displacement, tons: 3 full load
 Dimensions, feet (metres): 24.6 x 8.2 x 0.4 (7.5 x 2.5 x 0.4)
 Main machinery: 2 Evinrude outboards, 350 hp (261 kW)
 Speed, knots: 40
 Complement: 4
 Guns: 1—12.7 mm MG. 2—7.62 mm MGs.
 Radars: Navigation. Raytheon; I-band.

Comment: Transportable Port Security Boats (TPSB) which serve with the six Port Security Units and a Training Detachment. Can be transported by aircraft.



GUARDIAN 7/2000, Hachiro Nakai / 0105777

0 + 34 SENTINEL CLASS (PBO/WPC)

Displacement, tons: 353 full load
Dimensions, feet (metres): 153.4 x 25.4 x 8.4 (46.7 x 7.7 x 2.6)
Main machinery: 2 diesels; 5,760 hp (4.3 MW); 2 shafts
Speed, knots: 28+
Range, n miles: To be announced
Complement: 22
Guns: 1—25 mm, 4 12.7 mm MGs
Radars: Surface search; To be announced.
Navigation: To be announced

Comment: The Fast-Response Cutter is part of the Integrated Deepwater modernisation programme for the Coast Guard to replace the Island class patrol boats. Its principal roles include fishery protection, barrier patrols, interdiction, SAR and disaster relief. Following evaluation of bids, a contract was awarded to Bollinger Shipyards of Lockport, LA, on 26 September 2008, there are options for 34 craft, the first of which is to be delivered in 2010 and based at Miami. Ultimately, a class of 58 is sought. The design is based on the Damen Stan Patrol 4708, modified to achieve 28+ kt; a stern-launch capability is incorporated; steel hull, aluminium superstructure. The first craft is to be based at Miami, FL.



SENTINEL CLASS

9/2008*, Bollinger Shipyards / 12331/55

ICEBREAKERS

Notes. Replacement of *Polar Star* and *Polar Sea* is under consideration in view of their age and of increasing economic, political and scientific interest in the polar regions.

1 ICEBREAKER (WLBB)

Name	No	Builders	Commissioned	Home Port
MACKINAW	WLBB 30	Manitowoc Marine, Wisconsin	10 June 2006	Cheboygan, MI

Displacement, tons: 3,500 full load
Dimensions, feet (metres): 240 x 58 x 16 (73.1 x 17.7 x 4.8)
Main machinery: Diesel-electric; 3 diesel generators; 12,600 hp (9.4 MW); 2 podded propulsors; 6,700 hp (5 MW)
Speed, knots: 15
Complement: 55 (8 officers)
Radars: Surface search; Kongsberg Data Bridge 10.
Navigation: Kongsberg Integrated Bridge System.

Comment: Contract to build new icebreaker/buoy tender awarded 15 October 2001. Keel laid 10 February 2004. Launched in April 2005 and delivered in November 2005. Icebreaker replaced WAGB 83 and assumed the same name. In addition to breaking ice (up to 32 in thick at 3 kt ahead, 2 kt astern) for the primary shipping lanes on the Great Lakes, the new ship will service aids to navigation, as well as performing search and rescue, pollution control, homeland security, and law enforcement duties from its homeport of Cheboygan, Michigan. Principal feature is 'podded' or protected propellers that can rotate 360° for greater manoeuvrability. Other features include fully integrated bridge system, robust communications suite and 3,200 sq ft of buoy deck space. A crane of 60 ft can recover buoys weighing up to 20 tons



MACKINAW

3/2006, Manitowoc Marine / 1154677

1 HEALY CLASS (WAGBH)

Name	No	Builders	Commissioned	F/S	Home Port
HEALY	WAGB 20	Avondale, New Orleans	29 Oct 1999	PA	Seattle, WA

Displacement, tons: 16,400 full load
Dimensions, feet (metres): 420 oa, 397.8 w l x 82 x 29 (128; 121.2 x 25 x 8.9)
Main machinery: Diesel-electric; 4 Westinghouse/Suizer 12ZA 40S diesels; 42,400 hp (31.16 MW); 4 Westinghouse alternators; 2 motors; 30,000 hp (22.38 MW); 2 shafts; bow thruster; 2,200 hp (1.64 MW)
Speed, knots: 17
Range, n miles: 16,000 at 12.5 kt
Complement: 75 (12 officers) plus 45 scientists
Helicopters: 2 HH-65A or 1 HH-60J

Comment: In response to the 1984 Interagency Polar Icebreaker Requirements Study and Congressional mandate, approval was given for the construction of a new icebreaker as a replacement for two Wind class which were then decommissioned in 1988. However, no action was taken to provide funds for the new ship until Congress included it in the Navy's FY91 ship construction budget and after further delays the ship was ordered 15 July 1993. Icebreaking capability of 4 ft at 3 kt. Reached North Pole in September 2005, the third by a US surface ship. In a six-month Arctic expedition, the ship embarked 47 scientists from nine countries to study climate change



HEALY

1/2003, Bob Flides / 0512759

2 POLAR CLASS (WAGBH)

Name	No	Builders	Launched	Commissioned	F/S	Home Port
POLAR STAR	WAGB 10	Lockheed SB	17 Nov 1973	19 Jan 1976	PA	Seattle, WA
POLAR SEA	WAGB 11	Lockheed SB	24 June 1976	23 Feb 1978	PA	Seattle, WA

Displacement, tons: 13,190 full load
Dimensions, feet (metres): 399 x 84 x 32 (121.6 x 25.6 x 9.8)
Main machinery: CODOG; diesel-electric (AC/DC); 6 Alco 16V-251F/Westinghouse AC diesel generators; 21,000 hp (15.66 MW) sustained; 3 Westinghouse DC motors; 18,000 hp (13.42 MW) sustained; 3 Pratt & Whitney FT4A-12 gas turbines; 60,000 hp (44.76 MW) sustained; 3 Philadelphia 75 VMGS gears; 60,000 hp (44.76 MW) sustained; 3 shafts; cp props
Speed, knots: 20
Range, n miles: 28,275 at 13 kt
Complement: 134 (15 officers) plus 33 scientists and 12 aircrew
Guns: 2—762 mm MGs.
Radars: Navigation, 2 Raytheon SPS-64, 1 band Tacan; SRN 15.
Helicopters: 2 HH-65A or 1 HH-60J

Comment: At a continuous speed of 3 kt, they can break ice 6 ft (1.8 m) thick, and by ramming can break 21 ft (6.4 m) pack. Conventional icebreaker hull form with 'White' cutaway bow configuration and well-rounded body sections to prevent being trapped in ice. The ice belt is 1.75 in (44.45 mm) thick supported by framing at 16 in (0.4 m) centres. Three heeling systems assist icebreaking and ship extraction. Two 15 ton capacity cranes fitted aft, one 3 ton capacity crane fitted forward. Two over-the-side oceanographic winches, one over-the-stern trawl/core winch. Deck fixtures for scientific research vans, and research laboratories provided for arctic and oceanographic research. Between 1986-92, science facilities were upgraded including habitability, lab spaces and winch capabilities. *Polar Sea* went to the North Pole in August 1994. *Polar Star* was placed in a 'special' status in 2006. The vessel is to undergo extensive upgrade and is to be reactivated in FY12.



POLAR STAR

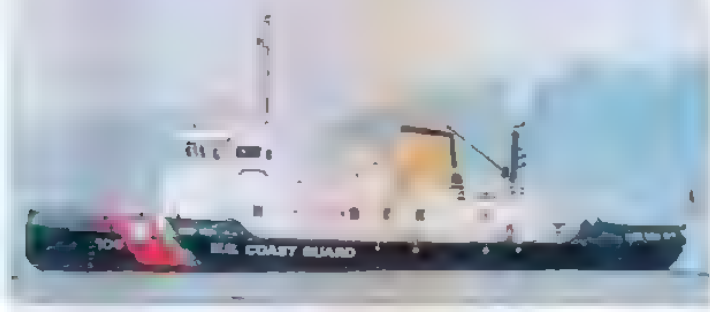
2/2006, Chris Settler / 1167646

9 BAY CLASS (TUGS—WTGB)

Name	No	Launched	Commissioned	F/S	Home Port
KATMAI BAY	WTGB 101	7 Nov 1977	8 Jan 1979	GLA	Sault Sainte Marie, MI
BRISTOL BAY	WTGB 102	13 Feb 1978	5 Apr 1979	GLA	Detroit, MI
MOBILE BAY	WTGB 103	13 Feb 1978	2 Sep 1979	GLA	Sturgeon Bay, WI
BISCAYNE BAY	WTGB 104	29 Aug 1978	8 Dec 1979	GLA	St Ignace, MI
NEAH BAY	WTGB 105	6 Aug 1979	18 Aug 1980	GLA	Cleveland, OH
MORRO BAY	WTGB 106	6 Aug 1979	25 Jan 1981	AA	New London, CT
PENOBSCOT BAY	WTGB 107	24 July 1983	4 Sep 1984	AA	Bayonne, NJ
THUNDER BAY	WTGB 108	20 July 1984	29 Dec 1985	AA	Rockland, ME
STURGEON BAY	WTGB 109	9 July 1986	20 Aug 1988	AA	Bayonne, NJ

Displacement, tons: 662 full load
 Dimensions, feet (metres): 140 x 37.6 x 12.5 (42.7 x 11.4 x 3.8)
 Main machinery: Diesel-electric; 2 Fairbanks-Morse 38D8-1/8-10 diesels; generators; 2.4 MW sustained; Westinghouse electric drive; 2,500 hp (1.87 MW); 1 shaft
 Speed, knots: 14.7. Range, n miles: 4,000 at 12 kt
 Complement: 17 (3 officers)
 Radars. Navigation: Raytheon SPS-64(V)1; I-band.

Comment: The size, manoeuvrability and other operational characteristics of these vessels are tailored for operations in harbours and other restricted waters and for fulfilling present and anticipated multimission requirements. All units are ice strengthened for operation on the Great Lakes, coastal waters and in rivers and can break 20 in of ice continuously and up to 8 ft by ramming. A self-contained portable bubbler van and system reduces hull friction. First six built at Tacoma Boatbuilding, Tacoma. WTGB 107-109 built in Tacoma by Bay City Marine, San Diego. *Bristol Bay* and *Mobile Bay* have had their bows reinforced to push the two aids-to-navigation barges on the Great Lakes. WTGB 106 was decommissioned in 1998 and re-activated on 4 February 2002.



THUNDER BAY 7/2000, Hachiro Nakai / 0105776



PENOBSCOT BAY 5/2002, van Ginderen Collection / 0144052

SEAGOING TENDERS

16 JUNIPER CLASS (BUOYTENDERS—WLB/ABU)

Name	No	Builders	Commissioned	Home Port
JUNIPER	WLB 201	Marinette Marine	12 Jan 1996	Newport, RI
WILLOW	WLB 202	Marinette Marine	27 Nov 1996	Newport, RI
KUKUI	WLB 203	Marinette Marine	9 Oct 1997	Honolulu, HI
ELM	WLB 204	Marinette Marine	29 June 1998	Atlantic Beach, NC
WALNUT	WLB 205	Marinette Marine	22 Feb 1999	Honolulu, HI
SPAR	WLB 206	Marinette Marine	9 Mar 2001	Kodiak, AK
MAPLE	WLB 207	Marinette Marine	21 June 2001	Sitka, AK
ASPEN	WLB 208	Marinette Marine	28 Sep 2001	San Francisco, CA
SYCAMORE	WLB 209	Marinette Marine	1 Mar 2002	Cordova, AK
CYPRESS	WLB 210	Marinette Marine	24 June 2002	Mobile, AL
OAK	WLB 211	Marinette Marine	17 Oct 2002	Charleston, SC
HICKORY	WLB 212	Marinette Marine	6 Mar 2003	Homer, AK
FIR	WLB 213	Marinette Marine	27 June 2003	Astoria, OR
HOLLYHOCK	WLB 214	Marinette Marine	15 Oct 2003	Port Huron, MI
SEQUOIA	WLB 215	Marinette Marine	21 Apr 2004	Apra Harbour, Guam
ALDER	WLB 216	Marinette Marine	2 Sep 2004	Duluth, MN

Displacement, tons: 2,064 full load
 Dimensions, feet (metres): 225 x 46 x 13 (68.6 x 14 x 4)
 Main machinery: 2 Caterpillar 3608 diesels; 6,200 hp (4.6 MW) sustained; 1 shaft; cp prop; bow; 460 hp (343 kW) and stern; 550 hp (410 kW) thrusters
 Speed, knots: 15
 Range, n miles: 6,000 at 12 kt
 Complement: 40 (6 officers)
 Guns: 2—12.7 mm MGs, 2—7.62 mm MGs.
 Radars. Navigation: 2 Sperry/Litton BridgeMaster E340; I-band.

Comment: On 18 February 1993, the Coast Guard awarded Marinette Marine of Marinette, WI, a contract to construct the first of a new class of seagoing buoy tenders. Capable of breaking 14 in of ice at 3 kt or a minimum of 3 ft by ramming. Main hoist can lift 20 tons, secondary 5 tons. A dynamic positioning system can maintain the ship within a 10 m circle in up to 30 kt wind. The class is named after the first *Juniper*, which was built in 1940 and decommissioned in 1975



ASPEN 10/2006, Michael Nitz / 1305177

COASTAL TENDERS

14 KEEPER CLASS (BUOYTENDERS—WLM/ABU)

Name	No	Builders	Commissioned	Home Port
IDA LEWIS	WLM 551	Marinette Marine	1 Nov 1996	Newport, RI
KATHERINE WALKER	WLM 552	Marinette Marine	27 June 1997	Bayonne, NJ
ABIGAIL BURGESS	WLM 553	Marinette Marine	19 Sep 1997	Rockland, ME
MARCUS HANNA	WLM 554	Marinette Marine	26 Nov 1997	South Portland, ME
JAMES RANKIN	WLM 555	Marinette Marine	26 Aug 1998	Baltimore, MD
JOSHUA APPLEBY	WLM 556	Marinette Marine	20 Nov 1998	St Petersburg, FL
FRANK DREW	WLM 557	Marinette Marine	17 June 1999	Portsmouth, VA
ANTHONY PETIT	WLM 558	Marinette Marine	1 July 1999	Ketchikan, AK
BARBARA MABRITY	WLM 559	Marinette Marine	29 July 1999	Mobile, AL
WILLIAM TATE	WLM 560	Marinette Marine	16 Sep 1999	Philadelphia, PA
HARRY CLAIBORNE	WLM 561	Marinette Marine	28 Oct 1999	Galveston, TX
MARIA BRAY	WLM 562	Marinette Marine	6 Apr 2000	Mayport, FL
HENRY BLAKE	WLM 563	Marinette Marine	18 May 2000	Everett, WA
GEORGE COBB	WLM 564	Marinette Marine	22 June 2000	San Pedro, CA

Displacement, tons: 840 full load
 Dimensions, feet (metres): 175 x 36 x 7.9 (53.3 x 11 x 2.4)
 Main machinery: 2 Caterpillar 3508TA diesels; 1,920 hp (1.43 MW) sustained; 2 Ulstein Z-drives; bow thruster; 460 hp (343 kW)
 Speed, knots: 12. Range, n miles: 2,000 at 10 kt
 Complement: 18 (1 officer)
 Radars. Navigation: Raytheon SPS-64, I-band.

Comment: Contract awarded 22 June 1993 for first of class with an option for 13 more. Capable of breaking 9 in of ice at 3 kt or 18 in by ramming. Named after Lighthouse Keepers for the Lighthouse Service, one of the predecessors of the modern Coast Guard. The ship is a scaled down model of the *Juniper* class for coastal services. Main hoist to lift 10 tons, secondary 3.75 tons. Able to skim and recover surface oil pollution using a vessel of opportunity skimming system.



GEORGE COBB 10/2007, Michael Nitz / 1353639

BUOYTENDERS (INLAND-WLI)

2 BUOYTENDERS (WLI/ABU)

Name	No	Builders	Launched	Home port
BLUEBELL	WLI 313	Birchfield Shipyard, Tacoma	28 Sep 1944	Portland, OR
BUCKTHORN	WLI 642	Mobile Ship Repair, Mobile	18 Aug 1963	Sault Sainte Marie, MI

Displacement, tons: 226 (174 *Bluebell*) full load
 Dimensions, feet (metres): 100 x 24 x 5 (30.5 x 7.3 x 1.5) (*Buckthorn* draught 4 (1.2))
 Main machinery: 2 Caterpillar diesels; 600 hp (448 kW); 2 shafts
 Speed, knots: 11.9; 10.5 (*Bluebell*). Range, n miles: 2,700 at 10 kt
 Complement: 15 (1 officer)

Comment: Different vintage but similar in design



BUCKTHORN 3/2006, US Coast Guard / 0084213

970 US (COAST GUARD)/Buoy tenders – Construction tenders

2 BUOY TENDERS (WLI/ABU)

Name	No	Builders	Home port
BAYBERRY	WLI 65400	Reliable Shipyard, Olympia	Oak Island, NC
ELDERBERRY	WLI 85401	Reliable Shipyard, Olympia	Petersburg, AK

Displacement, tons: 70 full load
 Dimensions, feet (metres): 65 x 17 x 4 (19.8 x 5.2 x 1.2)
 Main machinery: 2 GM diesels: 1 or 2 shafts
 Speed, knots: 10
 Complement: 8

Comment: Both completed in June 1954. *Blackberry* decommissioned in 2008.



BAYBERRY 5/1999, Hartmut Ehlers / 0084211

BUOYTENDERS (RIVER) (WLR)

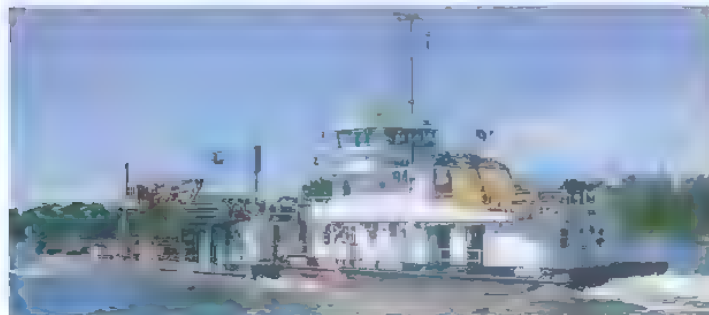
Notes: (1) All are based on rivers of USA especially the Mississippi, Missouri, Tennessee, Cumberland and their tributaries.
 (2) Two ATON (aids to navigation) barges completed in 1991–92 by Mannette Marine. For use on the Great Lakes in conjunction with icebreaker tugs *Bristol Bay* and *Mobila Bay*

6 RIVER TENDERS (WLR)

SANGAMON WLR 65506	SCIOTO WLR 65504	OSAGE WLR 65505
OUACHITA WLR 65501	CIMARRON WLR 66502	OBION WLR 65503

Displacement, tons: 146 full load
 Dimensions, feet (metres): 65 x 21 x 4.6 (19.8 x 6.4 x 0.4)
 Main machinery: 2 diesels; 750 hp (560 kW); 2 shafts
 Speed, knots: 10 Range, n miles: 3,500 at 8 kt
 Complement: 13

Comment: All commissioned 1960–62 WLR 65501 and 65502 built by Platzer Shipyard, Houston, TX, 65503–65506 by Gibbs Shipyard, Jacksonville, FL. WLR push crane-equipped barges to deploy aids-to-navigation buoys on the inland river system. Some of the class have 'jetting' devices used to set and anchor buoys in sandy or muddy river beds.



SANGAMON 8/2005, USCG / 1353111

12 RIVER TENDERS (WLR)

WEDGE WLR 75307	CHIPPEWA WLR 75494	PATOKA WLR 75408
GASCONADE WLR 75401	CHEYENNE WLR 75405	CHENA WLR 75409
MUSKINGUM WLR 75402	KICKAPOO WLR 75406	KANKAKEE WLR 75500
WYACONDA WLR 75403	KANAWHA WLR 75407	GREENBRIER WLR 75501

Displacement, tons: 150 full load
 Dimensions, feet (metres): 75 x 22 x 4 (22.9 x 6.7 x 1.2)
 Main machinery: 2 Caterpillar diesels, 660 hp (492 kW); 2 shafts
 Speed, knots: 9 Range, n miles: 3,100 at 8 kt
 Complement: 13

Comment: WLR 75401–75409 built 1964–70 by four different companies. WLR 75500 and 75501 were completed in early 1990. Details given are for the WLR 75401 series, but all are much the same size.



GASCONADE 2/2005, USCG / 1043673

TRAINING CUTTERS

1 EAGLE CLASS (WIX/AXS)

Name	No	Builders	Commissioned	Home Port
EAGLE (ex-Horst Wessel)	WIX 327	Blohm + Voss, Hamburg	15 May 1946	New London, CT

Displacement, tons: 1,816 full load
 Dimensions, feet (metres): 231 wl, 293.6 oa x 39.4 x 16.1 (70.4; 89.5 x 12 x 4.9)
 Main machinery: 1 Caterpillar D 399 auxiliary diesel; 1,125 hp (839 kW) sustained; 1 shaft
 Speed, knots: 10.5; 18 sail
 Range, n miles: 5,450 at 7.5 kt diesel only
 Complement: 185 (19 officers, 150 cadets)
 Radars: Navigation: SPS-73; I-band.

Comment: Former German training ship. Launched on 13 June 1936. Taken by the US as part of reparations after the Second World War for employment in US Coast Guard Practice Squadron. Taken over at Bremerhaven in January 1946; arrived at home port of New London, Connecticut, in July 1946. (Sister ship *Albat Leo Schiageter* was also taken by the USA in 1945 but was sold to Brazil in 1948 and re-sold to Portugal in 1962. Another ship of similar design, *Gorch Fock*, transferred to the USSR in 1946 and survives as *Tovarsch.*) *Eagle* was extensively overhauled 1981–82. When the Coast Guard added the orange-and-blue marking stripes to cutters in the 1960s *Eagle* was exempted because of their effect on her graceful lines; however, in early 1976 the stripes and words 'Coast Guard' were added in time for the July 1976 Operation Sail in New York harbour. During the Coast Guard's year long bicentennial celebration, which ended 4 August 1990, *Eagle* visited each of the 10 ports where the original revenue cutters were homeported. Baltimore, Maryland; New London, Connecticut; Washington, North Carolina; Savannah, Georgia; Philadelphia, Pennsylvania; Newburyport, Maryland; Portsmouth, New Hampshire; Charleston, South Carolina; New York, New York; and Hampton, Virginia. The cutter currently serves as a training ship for cadets and officer candidates. During 2005, *Eagle* visited Bremerhaven for the first time since leaving its original homeport in 1945.

Fore and main masts 150.3 ft (45.8 m); mizzen 132 ft (40.2 m); sail area, 25,351 sq ft.



EAGLE 8/2005, Martin Mokrus / 1154016

CONSTRUCTION TENDERS (INLAND) (WLIC)

Notes: Although all operate on inland waters, they are administered by the Atlantic Area.

4 PAMLICO CLASS (WLIC)

PAMLICO WLIC 800	HUDSON WLIC 801	KENNEBEC WLIC 802	SAGINAW WLIC 803
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Displacement, tons: 459 full load
 Dimensions, feet (metres): 160.9 x 30 x 4 (49 x 9.1 x 1.2)
 Main machinery: 2 Caterpillar diesels; 1,000 hp (746 kW); 2 shafts
 Speed, knots: 11
 Complement: 14 (1 officer)
 Radars: Navigation: Raytheon SPS 69; I-band.

Comment: Completed in 1976 at the Coast Guard Yard, Curtis Bay, Maryland. These ships maintain structures and buoys in bay areas along the Atlantic and Gulf coasts.



HUDSON 12/1989, Giorgio Arra / 0506171

1 COSMOS CLASS (WLIC)

SMILAX WLIC 315

Displacement, tons: 218 full load
Dimensions, feet (metres): 100 x 24 x 5 (30.5 x 7.3 x 1.5)
Main machinery: 2 Caterpillar D 353 diesels; 660 hp (492 kW) sustained; 2 shafts
Speed, knots: 10.5
Complement: 14 (1 officer)
Radars: Navigation: Raytheon SPS-69, I-band.

Comment: Completed in 1944. Primary areas of operation are intercoastal waters from Virginia to Georgia. Pushes a 70 ft construction barge equipped with a crane and other aids-to-navigation equipment. Based at Atlantic Beach, NC



COSMOS CLASS 7/1990, van Ginderen Collection / 0906127

8 ANVIL/CLAMP CLASSES (WLIC)

ANVIL WLIC 75301	MALLET WLIC 75304	HATCHET WLIC 75309
HAMMER WLIC 75302	WISE WLIC 75305	AXE WLIC 75310
SLEDGE WLIC 75303	CLAMP WLIC 75306	

Displacement, tons: 140 full load
Dimensions, feet (metres): 75 (76-WLIC 75306-75310) x 22 x 4 (22.9 (23.2) x 6.7 x 1.2)
Main machinery: 2 Caterpillar diesels; 750 hp (559 kW); 2 shafts
Speed, knots: 10
Complement: 13 (1 officer in Mallet, Sledge and Vise)

Comment: Completed 1962-65. Primary areas of operation are intercoastal waters from Texas to New Jersey. Push 68 ft and 84 ft construction barges equipped with cranes and other aids-to-navigation equipment



HATCHET 10/2008*, USCG / 1353709

HARBOUR TUGS

11 65 ft CLASS (WYTL)

Name	No	Home port
CAPSTAN	WYTL 65601	Philadelphia, PA
CHOCK	WYTL 65602	Portsmouth, VA
TACKLE	WYTL 65604	Rockland, ME
BRIDLE	WYTL 65607	Southwest Harbor, ME
PENDANT	WYTL 65608	Boston, MA
SHACKLE	WYTL 65609	South Portland, ME
HAWSER	WYTL 65610	Bayonne, NJ
LINE	WYTL 65611	Bayonne, NJ
WIRE	WYTL 65612	Saugerties, NY
BOLLARD	WYTL 65614	New Haven, CT
CLEAT	WYTL 65615	Philadelphia, PA

Displacement, tons: 72 full load
Dimensions, feet (metres): 65 x 19 x 7 (19.8 x 5.8 x 2.1)
Main machinery: 1 Caterpillar 3412TA diesel; 400 hp (298 kW) sustained; 1 shaft
Speed, knots: 10. Range, n miles: 2,700 at 10 kt
Complement: 6
Radars: Navigation: Raytheon SPS-69; I-band

Comment: Built between 1961 and 1967. The multimission tugs provide icebreaking, homeland security and aids-to-navigation services to several east coast areas. Re-engined 1993-96.



HAWSER 7/2000, Hachiro Nakai / 0105731

RESCUE AND UTILITY CRAFT

Notes: Craft of several different types. All carry five or six figure numbers of which the first two figures reflect the craft's length in feet.

132 UTILITY BOATS (YAG/UTB)

Displacement, tons: 13.4 full load
Dimensions, feet (metres): 41.3 x 14.1 x 4.1 (12.6 x 4.3 x 1.3)
Main machinery: 2 diesels; 680 hp (507 kW) sustained; 2 shafts
Speed, knots: 26. Range, n miles: 300 miles at 18 kt
Complement: 3

Comment: 205 built by Coast Guard Yard, Baltimore 1973-83. Aluminium hull with a towing capacity of 100 tons. Used for fast multimission response in weather conditions up to moderate



41416 9/2008*, Marco Ghigino / 1353638

117 MOTOR LIFEBOATS (MLB/SAR)

Displacement, tons: 20 full load
Dimensions, feet (metres): 47.9 x 14.5 x 4.5 (14.6 x 4.4 x 1.4)
Main machinery: 2 Detroit diesels; 850 hp (634 kW) sustained; 2 shafts
Speed, knots: 25. Range, n miles: 220 at 25 kt
Complement: 4

Comment: Built by Textron Marine, New Orleans. The prototype completed trials in mid-1991. Five production boats delivered in 1994. The final hull was delivered in June 2003. Replaced the fleet of 44 ft lifeboats. Aluminium hulls, self-righting with a 9,000 lb bollard pull and a towing capability of 150 tons. Primarily a lifeboat but it has a multimission capability.



MLB 47245 10/2008*, Frank Findler / 1353575

503 + 35 DEFENDER CLASS (RESPONSE BOATS) (PBF)

Displacement, tons: 2.7 full load
Dimensions, feet (metres): 25.0 x 8.5 x 8.8 (7.6 x 2.6 x 2.7)
Main machinery: 2 Honda outboard motors; 450 hp (335 kW)
Speed, knots: 46. Range, n miles: 175 at 35 kt
Complement: 4
Guns: 2-762 mm MGs
Radars: Furuno; I-band

Comment: High-speed inshore patrol craft of aluminum construction and foam collar built by SAFE Boats International, Port Orchard, Washington. First delivery in July 2003 to replace nearly 300 non-standard shore based boats and provide a standardised platform for the USCG's new Maritime Safety and Security Teams (MSST), established as a result of the 11 September 2001 terrorist attacks. Transportable in a C-130



DEFENDER 25579 10/2006, Michael Nitz / 1305175

1 + 0 (32) LONG RANGE INTERCEPTOR CRAFT (LRI)

Displacement, tons: 10.9
Dimensions, feet (metres): 30.0 x 10.6 x 3.0 (9.1 x 3.2 x 0.9)
Main machinery: 2 Cummins diesels; 2 Hamilton waterjets
Speed, knots: 45
Complement: 2 crew and 12 passengers

Comment: Built by Willard Marine. Aluminium construction. The first was delivered in October 2008. Interoperability trials successfully undertaken with *Bertholf* in early 2008. Launch and recovery is by a stern launch and recovery system.



LRI 10/2004, Jeff Murphy, USCG / 1121008

44 + 46 SPECIAL PURPOSE CRAFT (PBF)

Displacement, tons: 6.9 full load
Dimensions, feet (metres): 33.3 x 10.0 x 2.5 (10.1 x 3.0 x 0.7)
Main machinery: 3 Mercury outboard motors; 825 hp (615 kW)
Speed, knots: 50
Range, n miles: 250 at 30 kt
Complement: 4
Guns: 2 - 7.62 mm MGs.
Radars: Furuno, I-band.

Comment: Larger versions of the SAFE Boats International Defender class. Aluminium construction with foam collar. High-speed coastal craft procured for port security and law enforcement tasks, particularly the interception of suspicious vessels entering US territorial waters. First craft delivered in January 2006. A further 46 to be delivered by 2010.



SPECIAL PURPOSE CRAFT 10/2008, Marco Ghigino / 1353717

4 + 8 RESPONSE BOAT MEDIUM (YAG/UTB)

Displacement, tons: 16.3 full load
Dimensions, feet (metres): 44.9 x 14.6 x 3.3 (13.7 x 4.45 x 1.0)
Main machinery: 2 diesels; 2 waterjets
Speed, knots: 42
Range, n miles: 250 at 30 kt
Complement: 4
Guns: 2 - 7.62 mm MGs
Radars: Furuno, I-band.

Comment: Multimission self-righting response craft to replace 41 ft utility boat in inland waterways and offshore up to 50 n miles. Capable of towing 100 tons. First boat delivered April 2008. Built by Mannette Marine Corp., Manitowac, Wisconsin, with Kvichak Marine Industries, Seattle. Up to 180 are planned to be procured by 2013.



RESPONSE BOAT 1/2009, USCG / 1353710

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION (NOAA)



HENRY B BIGELOW

7/2007, Ships of the World / 1316256

Headquarters Appointments

Under Secretary of Commerce for Oceans and Atmosphere:

Jane Lubchenco

Director, Office of Marine and Aviation Operations and NOAA Commissioned Officer Corps:

Rear Admiral Jonathan W Bailey

Director, Marine and Aviation Operations Centers:

Rear Admiral Philip M Kenul

Establishment and Missions

NOAA is the largest bureau of the US Department of Commerce, with a diverse set of responsibilities in environmental sciences. NOAA components include the Office of Marine and Aviation Operations; National Ocean Service; National Weather Service; National Marine Fisheries Service; National Environmental Satellite, Data and Information Service; and the Office of Oceanic and Atmospheric Research. NOAA's research vessels conduct operations in hydrography, bathymetry, oceanography, atmospheric research, fisheries assessments and research, and related programmes in marine resources. Larger research vessels operate in international waters, and smaller ones primarily in Atlantic and Pacific coastal waters, and the Gulfs of Mexico and Alaska. NOAA conducts diving operations. It also operates fixed-wing aircraft for hurricane research and reconnaissance; oceanographic and atmospheric research; marine mammal observations; hydrologic forecasts, and aerial mapping and remote sensing.

NOAA's active fleet numbers 18 ships, and now includes eight former Navy ships. The T-AGOS ship *Capable*, renamed *Okeanos Explorer*, was converted to conduct ocean exploration and commissioned in 2008. It is the first US federal ship dedicated to ocean exploration. Of the remaining ex-naval ships, five are T-AGOS vessels: one has been converted for oceanographic research (*Ka'imimoana*), two for fisheries research (*Gordon Gunter*, *Oscar Elton Sette*), and two for coastal oceanographic research (*McArthur II* and *Hi'ialakai*). *Oscar Elton Sette* replaced *Townsend Cromwell* and *McArthur II* replaced *McArthur* in 2003. *Hi'ialakai* (formerly *Vindicator*), homeported in Hawaii, was commissioned in 2004. The former naval T-AGS hydrographic survey ship *Littlehales* was transferred to NOAA in 2003 and recommissioned *Thomas Jefferson*, replacing *Whiting*. A former naval Yard Torpedo Test (YTT) vessel was converted for coastal research and became operational in 2003 as *Nancy Foster*, replacing *Ferral*. A newly constructed oceanographic research ship, *Ronald H Brown* (AGOR 26), was commissioned in 1997. The hydrographic survey ship *Fairweather* was decommissioned in 1988, refurbished, and reactivated in 2004. A new class of Fisheries Survey Vessels (FSV) has been designed to NOAA specifications and standards set by the International Council for the Exploration of the Sea. *Oscar Dyson*, the first of four FSVs of the same design, was commissioned in May 2005 and operates in Alaskan waters. The second FSV, *Henry B Bigelow*, was commissioned in July 2007 and operates primarily in the northeast United States. FSV 3, *Pisces*, will be delivered in early 2009. FSV 4, *Bell M Shimada*, is expected to

be delivered in late 2009. The FSVs were built by VT Halter Marine, Moss Point, MS. A newly designed Small Waterplane Area Twin Hull (SWATH) coastal mapping vessel, *Ferdinand R Hassler*, is also under construction at VT Halter Marine. NOAA decommissioned three ships in 2008: *Rude*, a 41-year-old hydrographic survey vessel; *John N Cobb*, a 58-year-old fisheries research vessel, and *Albatross IV*, a 45-year-old fisheries research vessel.

Ships

The following ships may be met at sea.

Oceanographic Research Ships: *Ronald H Brown*, *Ka'imimoana*, *Okeanos Explorer*.

Multipurpose Oceanographic/Coastal Research Ships: *McArthur II*, *Nancy Foster*, *Hi'ialakai*.

Hydrographic Survey Ships: *Rainier*, *Thomas Jefferson*, *Fairweather*.

Fisheries Research Ships: *Miller Freeman*, *Oregon II*, *Dalawara II*, *David Starr Jordan*, *Gordon Gunter*, *Oscar Elton Sette*, *Oscar Dyson*, *Henry B Bigelow*, *Pisces*.

Personnel

2009: 300 officers plus 12,000 civilians

Bases

Major: Norfolk, VA and Seattle, WA

Minor: Woods Hole, MA; Pascagoula, MS, Honolulu, HI; Charleston, SC, San Diego, CA; Kotchikan, AK, Kodiak, AK.



OSCAR ELTON SETTE

8/2008, Michael Nitz / 1353637



HI'IALAKAI

6/2007, Ships of the World / 1305254



Uruguay

Country Overview

The Oriental Republic of Uruguay is situated in south-eastern South America. With an area of 68,037 square miles it has borders to the north with Brazil and to the west with Argentina. It has a coastline of 356 n miles with the south Atlantic Ocean and River Plata. There are some 675 n miles of navigable internal waterways. The capital, largest city and principal port is Montevideo. Territorial Seas (12 n miles) and an EEZ (200 n miles) are claimed.

Headquarters Appointments

Commander-in-Chief of the Navy:
Vice Admiral Juan Heber Fernández Maggio
Fleet Commander:
Rear Admiral Hugo Vignietti di Mattia
Commander Coast Guard:
Rear Admiral Oscar P Debali de Paléja

Diplomatic Representation

Naval Attaché in London:
Captain Fernando Franzini

Personnel

- (a) 2009: 5,491 (730 officers) (including 450 naval infantry, 300 naval air and 1,950 Coast Guard)
(b) Voluntary service

Prefectura Nacional Naval (PNN)

Established in 1934 primarily for harbour security and coastline guard duties. In 1991 it was integrated with the Navy, although patrol craft retain Prefectura markings. There are three regions: Atlantic, Rio de la Plata, and Rio Uruguay.

Bases

Montevideo: Main naval base (*Lt Carlos Machetelli*) with two dry docks (A new naval base is under construction at Punta Lobos and will replace the current harbour facilities.)
La Paloma: Naval station (*Lt Cdr Ernesto Motto*)
Laguna del Sauce: Naval air station (*Lt Cdr Carlos Curbelo*)
Fray Bentos: River base (*Lt Luis Muselti*)

Marines

Cuerpo de Fusileros Navales consisting of 450 men in three rifleman companies and one combat support company plus a command company of 100.

Prefix to Ships' Names

ROL

DELETIONS

Frigates

2005 *General Artigas*
2007 *Uruguay*
2008 *Montevideo*

Patrol Forces

2008 *Comodoro Coé*

FRIGATES

Notes: Following the acquisition of two João Belo-class frigates from Portugal in early 2008, there is a programme to replace both these ships in about 2015. Options include Bremen-class frigates from Germany

2 COMMANDANT RIVIÈRE CLASS (FF)

Name	No	Builders	Launched	Commissioned	Recommissioned
URUGUAY (ex-João Belo)	1 (ex-F 483)	ACB Nantes	6 Sep 1965	22 Mar 1966	1 July 1967
PEDRO CAMPBELL (ex-Sacadura Cabral)	2 (ex-F 483)	ACB Nantes	18 Aug 1967	15 Mar 1968	25 July 1969

Displacement, tons: 1,750 standard; 2,250 full load
Dimensions, feet (metres): 336.9 x 38.4 x 14.1
(102.7 x 11.7 x 4.3)

Main machinery: 4 SEMT-Pielstick 12 PC series diesels;
16,000 hp (m) (11.8 MW); 2 shafts
Speed, knots: 25. **Range, n miles:** 7,500 at 15 kt
Complement: 159 (9 officers)

Guns: 2 OCN 3.9 in (100 mm)/55 Mod 1953 automatic ①;
dual purpose; 60 rds/min to 17 km (9 n miles) anti-surface;
8 km (4.4 n miles) anti-aircraft; weight of shell 13.5 kg.
2 Bofors 40 mm/50 ②; 30 rds/min to 12 km (6.6 n miles);
weight of shell 0.89 kg

Torpedoes: 6—324 mm Mk 32 Mod 6 (2 triple) tubes ③;
Honeywell Mk 46 Mod 5, active/passive homing to 11 km
(5.9 n miles) at 40 kt; warhead 44 kg

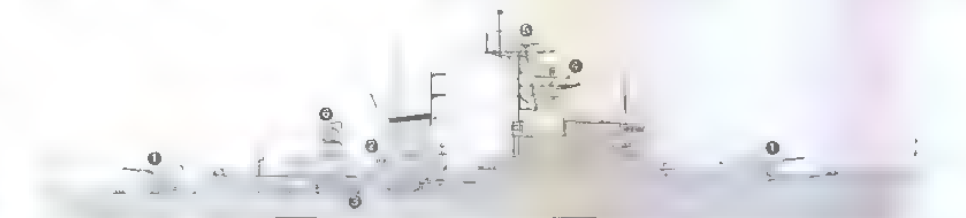
Countermeasures: Decoys: 2 Loral Hycor SRBOC
6-barrelled chaff launchers
TCM SLO 25 Nixie

ESM: AR-700 (V2); intercept.
Weapons control: C T Analogique. Sagem DMAA optical
director

Radars: Air search Thomson-CSF DRBV 22A ④, D-band
Surface search: Thomson-CSF DRBV-50 ⑤; G band
Navigation: Kelvin Hughes KH 1007; I-band
Fire control: Thomson CSF DRBC 31D ⑥; I-band

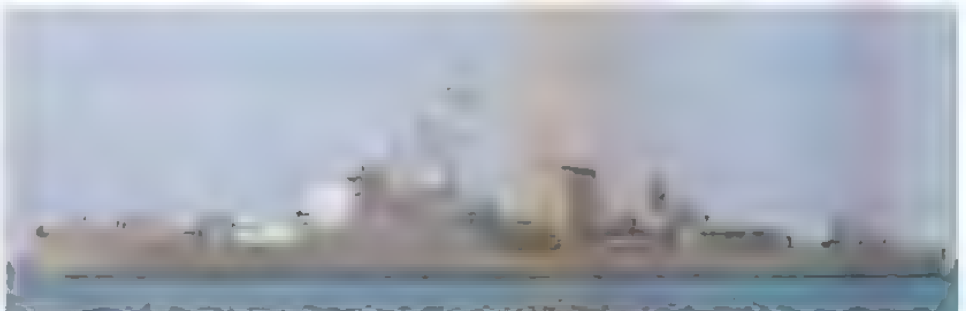
Sonars: Thomson Sintra DLBA 3; active attack; high
frequency.

Comment: *Uruguay* and *Pedro Campbell* procured from
Portugal on 8 April 2008. It is reported that SQS 510 sonar
was removed before transfer. Based at Montevideo



URUGUAY

(Scale 1 : 900), Ian Sturton / 0121391



URUGUAY

5/2008*, M Declercq / 1335314



PEDRO CAMPBELL

5/2008*, Guy Toremans / 1335313

LAND-BASED MARITIME AIRCRAFT

Notes: (1) Fixed-wing: There are five further aircraft: one Beech B 200T maritime patrol aircraft (fitted with APS 128 radar), two Beech T-34C and two Jetstream T2.
 (2) Helicopters: There are 10 helicopters: Two Westland Wessex HC Mk 2, one Bell 47G, one UH-13 AS 355 Esquilo (acquired from Brazil in October 2006 for operation from *General Artigas*) and six Bolkow BO-105 (acquired from Germany in August 2007)



JET STREAM T2

2/2008*, A E Galarce / 1335307



T-34C

6/2008*, Uruguay Navy / 1335312



AS 355

2/2008*, A E Galarce / 1335309

Numbers/Type: 1 Grumman S-2G Tracker

Operational speed: 140 kt (260 km/h).

Service ceiling: 25,000 ft (7,620 m)

Range: 1,350 n miles (2,500 km).

Role/Weapon systems: Ex-Israeli aircraft. ASW and surface search with improved systems. Sensors: Search radar, MAD, sonobuoys. Weapons: ASW; torpedoes, depth bombs or mines. ASV; rockets underwing



S-2G

2/2008*, A E Galarce / 1335306

PATROL FORCES

Notes: There is a plan to acquire one offshore patrol vessel, possibly to be built in Chile.

1 WANGEROOGE CLASS (PBO/AG)

Name	No	Builders	Commissioned
MALDONADO (ex <i>Norderney</i>)	23 (ex-A1455)	Schichau, Bremerhaven	15 Oct 1970

Displacement, tons: 854 standard; 1,024 full load

Dimensions, feet (metres): 170.6 × 39.4 × 12.8 (52 × 12.1 × 3.9)

Main machinery: Diesel-electric; 4 MWM 16-cyl diesel generators; 2 motors; 2,400 hp (m)

(1.76 MW); 2 shafts

Speed, knots: 14

Range, n miles: 5,000 at 10 kt

Complement: 24

Guns: 1 Bofors 40 mm/60

Comment: Built as a salvage tug with ice-strengthened hull. Transferred from the German Navy on 21 November 2002. Employed as a support ship and for offshore patrol duties.



MALDONADO

11/2007, A E Galarce / 1335308

2 VIGILANTE CLASS (LARGE PATROL CRAFT) (PBO)

Name	No	Builders	Commissioned
15 de NOVIEMBRE	5	CMN, Cherbourg	25 Mar 1981
25 de AGOSTO	6	CMN, Cherbourg	25 Mar 1981

Displacement, tons: 190 full load

Dimensions, feet (metres): 137 × 22.4 × 8.2 (41.8 × 6.8 × 2.4)

Main machinery: 2 MTU 12V 538 TB91 diesels; 4,600 hp (m) (3.4 MW) sustained; 2 shafts

Speed, knots: 28

Range, n miles: 2,400 at 15 kt

Complement: 28 (5 officers)

Guns: 1 Bofors 40 mm/70

Weapons control: CSEE Naja optronic director.

Radars: Surface search: Racal Decca TM 1226C; I-band

Comment: Ordered in 1979. Steel hull. First launched 16 October 1980 and second 11 December 1980. Based at La Paloma. *Comodoro Coe* decommissioned in 2008.



15 DE NOVIEMBRE

7/2001, A E Galarce / 0531452

2 CAPE CLASS (LARGE PATROL CRAFT) (PB)

Name	No	Builders	Commissioned
COLONIA (ex <i>Cape Higgon</i>)	10	Coast Guard Yard, Curtis Bay	14 Oct 1953
RIO NEGRO (ex <i>Cape Horn</i>)	11	Coast Guard Yard, Curtis Bay	3 Sep 1958

Displacement, tons: 98 standard, 148 full load

Dimensions, feet (metres): 95 × 20.2 × 6.6 (28.9 × 6.2 × 2)

Main machinery: 2 GM 16V-149TI diesels; 2,322 hp (1.73 MW) sustained; 2 shafts

Speed, knots: 20 **Range, n miles:** 2,500 at 10 kt

Complement: 14 (1 officer)

Guns: 2 – 12.7 mm MGs.

Radars: Surface search: Raytheon SPS-64; I-band.

Comment: Designed for port security and search and rescue. Steel hulled. During modernisation in 1974 received new engines, electronics and deck equipment. Superstructure modified or replaced, and habitability improved. Transferred from the US Coast Guard 25 January 1990. Both based at Fray Bentos.



COLONIA

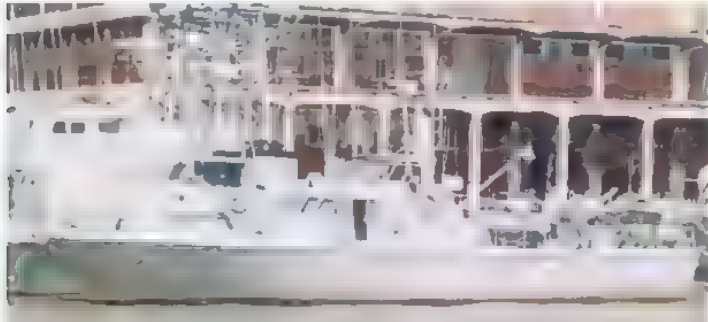
1/2007, A E Galarce / 116/929

1 COASTAL PATROL CRAFT (PB)

Name	No	Builders	Commissioned
PAYSANDU	12 (ex-PR 12)	Sewart, USA	Nov 1968

Displacement, tons: 98 standard, 148 full load
 Dimensions, feet (metres): 94.8 x 20.3 x 6.6 (28.9 x 6.2 x 2.0)
 Main machinery: 2 GM 16V-71 diesels, 811 hp (605 kW) sustained; 2 shafts
 Speed, knots: 20
 Range, n miles: 2,500 at 10 kt
 Complement: 8
 Guns: 2 12.7 mm MGs
 Radars: Surface search. Raytheon SPS-34; I-band.

Comment: Based at Montevideo.



PAYSANDU 2/2004, A E Galarca / 1044206

2 COAST GUARD PATROL CRAFT (WPB)

70 72

Displacement, tons: 90 full load
 Dimensions, feet (metres): 72.2 x 16.4 x 5.9 (22 x 5 x 1.8)
 Main machinery: 2 GM diesels; 400 hp (298 kW); 2 shafts
 Speed, knots: 12
 Complement: 8

Comment: Built in 1957 at Montevideo.



PREFECTURA 70 11/2007, A E Galarca / 1335305

4 RIVER PATROL CRAFT (PBR)

URUGUAY 1-4

Displacement, tons: 5 full load
 Dimensions, feet (metres): 37.1 x 10.7 x 2.6 (11.3 x 3.25 x 0.8)
 Main machinery: 3 Volvo AD41P 220MOP diesels
 Speed, knots: 32
 Range, n miles: 1,500 at 24 kt
 Complement: 6
 Guns: 3—7.62 mm MGs

Comment: Built by Nuevos Ayres yacht builders. Deployed to Congo as part of UN force during 2001



URUGUAY 1 2001, Uruguay Navy / D121420

16 RIVER PATROL CRAFT (PBR)

URUGUAY 5-20

Displacement, tons: 4 full load
 Dimensions, feet (metres): 26.6 x 10.0 x 1.7 (8.1 x 3.04 x 0.53)
 Main machinery: 2 Mercury outboards, 450 hp (335 kW)
 Speed, knots: 50
 Complement: 3
 Guns: 1—7.62 mm MG

Comment: Boston Whaler craft ordered in May 2008 for deployment to Haiti as part of MINUSTAH. To be used as patrol craft on Uruguay River and lakes on return.

9 TYPE 44 CLASS (WPB)

441-449

Displacement, tons: 18 full load
 Dimensions, feet (metres): 44 x 12.8 x 3.6 (13.5 x 3.9 x 1.1)
 Main machinery: 2 Detroit 6V-38 diesels; 185 hp (136 kW); 2 shafts
 Speed, knots: 14 Range, n miles: 215 at 10 kt
 Complement: 3

Comment: Acquired from the US in 1999 and operated by the Coast Guard primarily as SAR craft



PREFECTURA 442 11/2007, A E Galarca / 1335304

MINE WARFARE FORCES

3 KONDOR II CLASS (MINESWEEPERS—COASTAL) (MSC)

Name	No	Builders	Launched	Commissioned
TEMERARIO (ex-Riosa)	31	Peenewerft, Wolgast	2 Oct 1972	11 Oct 1991
FORTUNA (ex-Bernau)	33	Peenewerft, Wolgast	3 Aug 1972	11 Oct 1991
AUDAZ (ex-Eisleben)	34	Peenewerft, Wolgast	2 Jan 1973	11 Oct 1991

Displacement, tons: 310 full load
 Dimensions, feet (metres): 186 x 24.6 x 7.9 (56.7 x 7.5 x 2.4)
 Main machinery: 2 Russk/Kolomna Type 40-DM diesels; 4,408 hp(m) (3.24 MW) sustained, 2 shafts; cp props
 Speed, knots: 17 Range, n miles: 2,000 at 15 kt
 Complement: 31 (6 officers)
 Guns: 1 Bofors 40 mm/70.
 Mines: 2 rails.
 Radars: Surface search. TSR 333 or Raytheon 1900; I-band.

Comment: Belonged to the former GDR Navy. Transferred without armament. Minesweeping gear retained including MSG-3 variable depth sweep device. A fourth of class sunk after a collision with a merchant ship on 5 August 2000



AUDAZ 2/2004, A E Galarca / 1044205

SURVEY AND RESEARCH SHIPS

1 HELGOLAND (TYPE 720B) CLASS (AGS)

Name	No	Builders	Commissioned
OYARVIDE (ex-Helgoland)	22 (ex-A 1457)	Untarweser, Bremerhaven	8 Mar 1966

Displacement, tons: 1,310 standard; 1,643 full load
 Dimensions, feet (metres): 223.1 x 41.7 x 14.4 (68 x 12.7 x 4.4)
 Main machinery: Diesel-electric; 4 MWM 12-cyl diesel generators; 2 motors; 3,300 hp(m) (2.43 MW); 2 shafts
 Speed, knots: 17 Range, n miles: 6,400 at 16 kt
 Complement: 34
 Radars: Navigation: Raytheon; I-band.
 Sonars: High definition, hull-mounted for wreck search.

Comment: Former German ocean-going tug launched on 25 November 1965. Paid off in 1997 and recommissioned on 21 September 1998 after being fitted out as a survey ship. Oceanographic equipment reported to have been fitted in 2002. Ice strengthened hull. Fitted for twin 40 mm guns.



OYARVIDE 6/2002, A E Galarca / 0529549

1 INSHORE SURVEY CRAFT (AGSC)

TRIESTE

Displacement, tons: 12 full load
Dimensions, feet (metres): 39.7 x 11.8 x 3.3 (12.1 x 3.6 x 1)
Main machinery: 2 Kamewa waterjets
Speed, knots: 16. **Range, n miles:** 500 at 16 kt
Complement: 4
Sonars: Elac Compact Mk II; 180 kHz, Elac LAZ 4721; 200 kHz

Comment: Formerly owned by the Academia Marítima Internacional de Trieste. Donated by Italian government in 2000.



TRIESTE 2001, Uruguay Navy / 0171418

2 LCVPs

LD 45-46

Displacement, tons: 15 full load
Dimensions, feet (metres): 46.5 x 11.6 x 2.7 (14.1 x 3.5 x 0.8)
Main machinery: 1 GM 4-71 diesel; 115 hp (86 kW) sustained; 1 shaft
Speed, knots: 9
Range, n miles: 680 at 9 kt
Military lift: 10 tons

Comment: Built at Naval Shipyard, Montevideo and completed 1980.



LD 46 6/2007, Uruguay Navy / 1167849

TRAINING SHIPS

Notes: *Bonanza* is a 13 ton sloop used as a sail training ship. The 15 m vessel was built in UK in 1984 and commissioned in July 1997.

1 SAIL TRAINING SHIP (AXS)

Name	No	Builders	Commissioned
CAPTÁN MIRANDA	20 (ex-GS 10)	SECN Matagorda, Cádiz	1930

Displacement, tons: 839 full load
Dimensions, feet (metres): 209.9 x 26.3 x 12.4 (64 x 8 x 3.8)
Main machinery: 1 GM diesel, 750 hp (552 kW); 1 shaft
Speed, knots: 10
Complement: 49
Radars: Navigation: Racal Decca TM 1226C; I-band.

Comment: Originally a diesel-driven survey ship with pronounced clipper bow. Converted for service as a three-masted schooner, commissioning as cadet training ship in 1978. Major refit by Bazán, Cadiz from June 1993 to March 1994, including a new diesel engine and a 5 m extension to the superstructure. Now has 853.4 m² of sail.



CAPTÁN MIRANDA 7/2007, Adolfo Ortigueira Gil / 1167887

1 PIAST CLASS (PROJECT 570) (SALVAGE SHIP) (ARS)

Name	No	Builders	Commissioned
VANGUARDIA (ex-Otto Von Guericke)	26 (ex-A 441)	Northern Shipyard, Gdansk	29 Dec 1976

Displacement, tons: 1,732 full load
Dimensions, feet (metres): 240 x 39.4 x 13.1 (73.2 x 12 x 4)
Main machinery: 2 Zgoda diesels; 3,800 hp (m) (2.79 MW); 2 shafts; cp props
Speed, knots: 16
Range, n miles: 3,000 at 12 kt
Complement: 61
Radars: Navigation, 2 TSR 333, I-band.

Comment: Acquired from Germany in October 1991 and sailed from Rostock in January 1992 after a refit at Neptun-Warnow Werft. Carries extensive towing and firefighting equipment plus a diving bell forward of the bridge. Armed with four 25 mm twin guns when in service with the former GDR Navy.



VANGUARDIA 9/2007, Mario R V Carneiro / 1335310

1 BUOY TENDER (ABU)

SIRIUS 21

Displacement, tons: 290 full load
Dimensions, feet (metres): 115.1 x 32.8 x 5.9 (35.1 x 10 x 1.8)
Main machinery: 2 Detroit 12V-71TA diesels; 840 hp (626 kW) sustained; 2 shafts
Speed, knots: 11
Complement: 15

Comment: Buoy tender built at Montevideo Naval Yard and completed on 5 February 1988. Endurance, five days.



SIRIUS 6/2007, Uruguay Navy / 1167848

AUXILIARIES

Notes: (1) *Comar II* is a motor yacht used by the Commander-in-Chief. (2) A small buoy tender is to be built at Astilleros y Talleres Navales de la Armada at Montevideo. The new vessel is to be operated on the Uruguay River.



COMAR II 2/2007, A E Galarce / 1167932

2 LCM CLASS (ABU)

LD 41-42

Displacement, tons: 24 light; 57 full load
Dimensions, feet (metres): 56.1 × 14.1 × 3.9 (17.1 × 4.3 × 1.2)
Main machinery: 2 Gray Marine 64 HN9 diesels, 330 hp (264 kW); 2 shafts
Speed, knots: 9
Range, n miles: 130 at 9 kt
Complement: 5
Military lift: 30 tons

Comment: First one transferred on lease from USA October 1972. Lease extended in October 1986. Second built in Uruguay.



LD 42

6/2007, Uruguay Navy / 1335311

1 LÜNEBURG CLASS (SUPPORT SHIP) (ARL)

Name	No	Builders	Commissioned
GENERAL ARTIGAS (ex-Freiburg)	4 (ex-A 1413)	Blohm + Voss	27 May 1968

Displacement, tons: 3,900 full load
Dimensions, feet (metres): 388.1 × 43.3 × 13.8 (118.3 × 13.2 × 4.2)
Main machinery: 2 MTU MD 16V 538 TB90 diesels; 6,000 hp(m) (4.1 MW) sustained; 2 shafts; cp props; bow thruster
Speed, knots: 17
Range, n miles: 6,000 at 14 kt
Complement: 95 (15 officers)
Cargo capacity: 1,100 tons
Guns: 4 Bofors 40 mm/70 (2 twin).
Countermeasures: Decoys; 2 Breda 105 mm SCLAR launchers.
Radars: Navigation Decca 1226/9; I-band.
Helicopters: AS 355 Esquilo.

Comment: Former auxiliary transferred to Uruguay on 12 April 2005. Used as a support ship for the Bremen class in German service, she was lengthened by 14.3 m in 1984 to accommodate a flight deck and a port-side crans. Her replenishment-at-sea capability will provide a much needed enhancement to Uruguayan operational capability. Other details are as for the ship in German service



GENERAL ARTIGAS

10/2005, Mario R V Carneiro / 1133599

TUGS**1 COASTAL TUG (YTB)**

Name	No	Builders	Commissioned
BANCO ORTIZ (ex-Zingst, ex-Elbe)	27 (ex-7, ex-Y 1655)	Peenewerft, Wolgast	10 Sep 1959

Displacement, tons: 261 full load
Dimensions, feet (metres): 100 × 26.6 × 10.8 (30.5 × 8.1 × 3.3)
Main machinery: 1 R6 DV 148 diesel; 550 hp(m) (404 kW); 1 shaft
Speed, knots: 10
Complement: 12
Guns: 1–12 7 mm MG

Comment: Ex-GDR Type 270 tug acquired in October 1991 10 ton bollard pull



BANCO ORTIZ

10/2000, A E Galarce / 0105807

**Vanuatu****Country Overview**

The Republic of Vanuatu, formerly the New Hebrides, was jointly administered by Britain and France until it gained independence in 1980. Situated in the southwestern Pacific Ocean, some 1,100 n miles southeast of Papua New Guinea, the country comprises a group of about 80 islands, of which 67 are inhabited, which run generally north-south. The four main islands are Espiritu Santo

(the largest), Malekula, Efate and Tanna. Others include Epi, Pentecost, Aoba, Maewo, Erromanga and Ambrym. The capital, largest town and principal port is Port-Vila on Efate. An archipelagic state, territorial seas (12 n miles) are claimed. An Exclusive Economic Zone (EEZ) (200 n miles) is also claimed but limits have not been fully defined by boundary agreements. Disputed sovereignty of Matthew and Hunter Islands, both uninhabited, is one complication.

Headquarters Appointments

Commander, Maritime Wing:
Superintendent Tari Tamata

Bases

Port Vila, Efate Island

POLICE**1 PACIFIC CLASS (LARGE PATROL CRAFT) (PB)**

Name	No	Builders	Commissioned
TUKORO	02	Australian Shipbuilding Industries	13 June 1987

Displacement, tons: 165 full load
Dimensions, feet (metres): 103.3 × 26.6 × 6.9 (31.5 × 8.1 × 2.1)
Main machinery: 2 Caterpillar 3516TA diesels; 4,400 hp (3.28 MW) sustained; 2 shafts
Speed, knots: 18
Range, n miles: 2,500 at 12 kt
Complement: 18 (3 officers)
Guns: 1–12.7 mm MG. 1–762 mm MG.
Radars: Navigation: Furuno 1011; I-band.

Comment: Under the Defence Co-operation Programme Australia has provided one Patrol Craft to the Vanuatu government. Training and operational and technical assistance is also given by the Royal Australian Navy. Ordered 13 September 1985 and launched 20 May 1987. A half-life refit was carried out in 1995 and, following extension of the Pacific Patrol Boat programme by the Australian government, a life-extension refit was carried out at Townsville in 2004. The ship is employed on Exclusive Economic Zone (EEZ) fishery patrol and surveillance, including customs duties.



TUKORO

8/2005, Chris Sattler / 1129574

Venezuela

ARMADA DE VENEZUELA



Country Overview

The Republic of Venezuela is situated in northern South America. With an area of 352,144 square miles, it has borders to the east with Guyana, to the south with Brazil and to the west with Colombia. It has a 1,512 n mile coastline with the Caribbean Sea and Atlantic Ocean. Margarita is the principal offshore island, of which there are 70. The capital and largest city is Caracas which is served by the port of La Guaira. Other ports include Puerto Cabello, and Maracaibo. The chief port on the Orinoco River is Puerto Ordaz. Territorial Seas (12 n miles) are claimed. An EEZ (200 n miles) has also been claimed but the limits have not been fully defined by boundary agreements.

Headquarters Appointments

Commander General of the Navy:

Vice Admiral Zahim Ali Quintana Castro

Chief of Naval Staff and Inspector General:

Vice Admiral Pedro José González Díaz

Commander Operations:

Vice Admiral Luis Alberto Morales Márquez

Commander Naval Personnel:

Vice Admiral Jaime Enrique Toro Calderón

Commander Naval Logistics:

Vice Admiral Anstrides Yibirin Peluffo

Diplomatic Representation

Defence Attaché in London:

Rear Admiral Gerardo Casanas

Personnel

(a) 2009: 15,800

(b) 2 years' national service

Fleet Organisation

The fleet is split into 'Type' squadrons – frigates (except GC 11 and 12), submarines, light and amphibious forces.

Fleet Organisation – continued

Service Craft Squadron composed of RA 33, BO 11 and BE 11. The Fast Attack Squadron of the Constitución class is subordinate to the Fleet Command.

Marines

Following restructuring, the Marines are formed into a division, *General Simón Bolívar*, which consists of two amphibious brigades. The 1st Amphibious Brigade comprises four infantry battalions: *Rafael Urdaneta* (Puerto Cabello), *Francisco de Miranda* (Punto Fijo), *Renato Beluche* (Maracaibo) and *Manuel Ponce Lugo* (Puerto Cabello). The 2nd Amphibious Brigade comprises three battalions: *General Simón Bolívar* (Maiquetía), *Mariscal Antonio José de Sucre* (Cumana) and *General José Francisco Bermúdez* (Carupano). Additionally, there is an Engineer Brigade with three construction battalions; a Fluvial Brigade with the Fluvial Frontier Command at Puerto Ayacucho (Amazonas State) and several posts on border rivers.

Coast Guard

Formed in August 1982. It is part of the Navy. Its Headquarters are at La Guaira (Vargas State) and further bases at Maracaibo, Punta Fijo, Puerto Cabello, Guanta, Pampatar and Guiría. Its primary task is the surveillance of the 200 mile Exclusive Economic Zone and other jurisdictional areas of Venezuelan waters. Coast Guard Squadron includes the frigates GC 11 and GC 12 and several patrol craft.

Naval Aviation

Headquarters are at Puerto Cabello (Carabobo State). Under the command of a Rear Admiral, there are five Squadrons: Training, ASW, Surveillance, Patrol and Transport.

Naval Bases

Caracas: Navy Headquarters and *La Carlota* Naval Aviation Facility

Vargas State: Division de Infantería HQ and Naval Academy at Mamo; OCHINA (Hydrography) and OCAMAR (Marines Support) HQ. *Simón Bolívar* International Airport Naval Aviation Facility and Naval Police Training Centre at Maiquetía

Puerto Cabello (Carabobo State): Fleet Command HQ. Two battalions of 1st Amphibious Brigade at *Contralmirante Agustín Armas* Naval Base and Naval Aviation Command at *General Salom* Airport, Naval Schools and Dockyard.

Punto Fijo (Falcón State): Western Naval Zone HQ, Patrol Ships Squadron and Infantry Battalion 'Francisco de Miranda' at *Mariscal Juan Cnsóstomo Falcón* Naval Base. Carúpeno (Sucre State): Eastern Naval Zone HQ. Two battalions of the 2nd Amphibious Brigade and Marines Training Centre.

Ciudad Bolívar (Bolívar): Fluvial Brigade HQ at *Capitán de Fragata Tomás Machado* Naval Base, with several Naval Posts along the Orinoco River.

Turiamo (Aragua State): *Generalísimo Francisco de Miranda* Marines Special Operation Command at the *Capitán de Fragata Tomás Vega* Naval Station

Puerto Ayacucho (Amazonas State): Fluvial Frontier Command *General de Brigada Franz Riquéz Inbarrón* with several Naval Posts along Orinoco, Atabapo, Negro and Meta rivers.

El Amparo (Apure State): Fluvial Frontier Command HQ *Teniente de Navío Jacinto Muñoz*, with several Naval Posts along Arauca and Barinas rivers.

Puerto de Nutrias (Barinas State): River Post.

San José de Macuro (Delta Amacuro State): Atlantic naval post

La Orchila (Caribbean Sea): Minor Naval Base and Naval Aviation Station.

Puerto Hierro (Sucre State): Minor Naval Base

Maracaibo (Zulia State), Güiría (Sucre State), Guanta (Anzoátegui State) and Margarita Island (Nueva Esparta State): Main Coast Guard Stations

Los Monjes (Gulf of Venezuela), Los Testigos, Aves de Sotavento, La Tortuga and La Blanquilla Island (Caribbean Sea): Secondary Coast Guard Stations.

Prefix to Ships' Names

ARV (Armada de la República de Venezuela)

SUBMARINES

Notes. Acquisition of up to three new submarines, to replace the current force, is under negotiation. A contract for the procurement of three Project 636 Kilo-class submarines is expected in 2009. Two boats would be built at Admiralty Yard, St Petersburg, and the third in another Russian Shipyard. Deliveries are expected from 2014. The contract would also include a training package.

2 SÁBALO (TYPE 209/1300) CLASS (TYPE 1300) (SSK)

Name	No	Builders	Laid down	Launched	Commissioned
SÁBALO	S 31 (ex-S 21)	Howaldtswerke, Kiel	2 May 1973	1 July 1975	6 Aug 1976
CARIBE	S 32 (ex-S 22)	Howaldtswerke, Kiel	1 Aug 1973	6 Nov 1975	11 Mar 1977

Displacement, tons: 1,285 surfaced; 1,600 dived
Dimensions, feet (metres): 200 1 × 20.3 × 18 (51.2 × 6.2 × 5.5)
Main machinery: Diesel-electric; 4 MTU 12V992 TB 90 diesels, 2,400 hp(m) (1.76 MW) sustained; 4 alternators; 1.7 MW; 1 Siemens motor; 4,600 hp(m) (3.38 MW) sustained; 1 shaft
Speed, knots: 10 surfaced, 22 dived
Range, n miles: 7,600 at 10 kt surfaced
Complement: 33 (5 officers)

Torpedoes: 8–21 in (533 mm) bow tubes. AEG SST 4; anti-surface; wire-guided; active/passive homing to 12 km (6.6 n miles) at 35 kt or 28 km (15.3 n miles) at 23 kt; warhead 260 kg. 14 torpedoes carried. Swim-out discharge

Countermeasures: ESM Thomson-CSF DR 2000; intercept.
Weapons control: Atlas Elektronik ISUS TPCS.
Radars: Navigation. Terma Scantier MI; I-band.
Sonars: Atlas Elektronik CSU 3-32; hull mounted; passive/active search and attack; medium frequency. Thomson Sintra DUUX 2; passive ranging

Programmes: Type 209, IK81 designed by Ingenieurkontor Lübeck for construction by Howaldtswerke, Kiel and sale by Ferrostaal, Essen, all acting as a consortium. Both refitted at Kiel in 1981 and 1984 respectively.
Modernisation: Carried out by HDW at Kiel. *Sábalo* started in April 1990 and left in November 1992 without fully completing the refit. *Caribe* docked in Kiel throughout 1993 but was back in the water in mid-1994, and completed in 1995. The hull was slightly lengthened and new engines, fire control, sonar and attack periscopes fitted. Refit of both boats at Dianca Shipyard began in December 2004 (*Caribe*) and March 2005 (*Sábalo*). The upgrade includes new batteries and weapon control systems and is expected to be completed in 2009.

Structure: A single-hull design with two main ballast tanks and forward and after trim tanks. The additional length is due to the new sonar dome similar to German Type 206 system. Fitted with snort and remote machinery control. Slow revolving single screw. Very high-capacity batteries with GRP lead-acid cells and battery-cooling. Diving depth 250 m (820 ft).

Operational: Endurance, 50 days patrol. Based at Puerto Cabello.



CARIBE

6/1999 / 0084231

FRIGATES

6 MODIFIED LUPO CLASS (FFGHM)

Name	No
MARISCAL SUCRE	F 21
ALMIRANTE BRIÓN	F 22
GENERAL URDANETA	F 23
GENERAL SOUBLETTE	F 24
GENERAL SALOM	F 25
ALMIRANTE GARCIA (ex-José Félix Ribas)	F 26

Builders	Laid down
Fincantieri, Riva Trigoso	19 Nov 1976
Fincantieri, Riva Trigoso	June 1977
Fincantieri, Riva Trigoso	23 Jan 1978
Fincantieri, Riva Trigoso	26 Aug 1978
Fincantieri, Riva Trigoso	7 Nov 1978
Fincantieri, Riva Trigoso	21 Aug 1979

Launched	Commissioned
28 Sep 1978	10 May 1980
22 Feb 1979	7 Mar 1981
23 Mar 1979	8 Aug 1981
4 Jan 1980	5 Dec 1981
13 Jan 1980	3 Apr 1982
4 Oct 1980	30 July 1982

Displacement, tons: 2,208 standard; 2,520 full load
Dimensions, feet (metres): 371.3 x 37.1 x 12.1
 (113.2 x 11.3 x 3.7)

Main machinery: CODOG, 2 Fiat/GE LM 2500 gas turbines; 50,000 hp (37.3 MW) sustained; 2 GMT A230.20M or 2 MTU 20V 1163 (F 21 and F 22) diesels; 8,000 hp (m) (5.97 MW) sustained, 2 shafts; LIPS cp props

Speed, knots: 35; 21 on diesels

Range, n miles: 6,000 at 15 kt

Complement: 185

Missiles: SSM: 8 Otomat Tesco Mk 2 TG1 ●; active radar homing to 80 km (43.2 n miles) at 0.9 Mach; warhead 210 kg; sea-skimmer for last 4 km (2.2 n miles).

SAM: Selenia Elisag Albatros octuple launcher ●; 8 Aspide; semi-active radar homing to 13 km (7 n miles) at 2.5 Mach; height envelope 15-5,000 m (49.2-16,405 ft); warhead 30 kg.

Guns: 1 OTO Melara 5 in (127 mm)/54 ●; 45 rds/min to 16 km (8.7 n miles); weight of shell 32 kg.
 4 Otobreda 40 mm/70 (2 twin) ●; 300 rds/min to 12.5 km (6.8 n miles); weight of shell 0.96 kg.
 2-12.7 mm MGs.

Torpedoes: 6-324 mm (LAS 3 (2 triple) tubes ● Whitehead A244S; anti-submarine; active/passive homing to 7 km (3.8 n miles) at 33 kt; warhead 34 kg (shepod charge).

Countermeasures: Decoys: 2 Breda 105 mm SCLAR 20-barrelled trainable ●; chaff to 5 km (2.7 n miles); illuminants to 12 km (6.6 n miles). Can be used for HE bombardment.

ESM: Elisra NS 9003/9005; intercept.

Combat data systems: Selenia IPN 10. Elbit ENTCS 2000 (F 21 and F 22)

Weapons control: 2 Elisag NA 10 MFCS. 2 Dardo GFCS for 40 mm.

Radars: Air search: Selenia RAN 10S or Elta 2238 (F 21 and 22) ●; E/F-band.

Air/surface search: Selenia RAN 11X; I-band
Fire control: 2 Selenia Orion 10XP ●; I/J-band.
 2 Selenia RTN 20X ●; I/J-band.

Navigation: SMA 3RM20; I-band

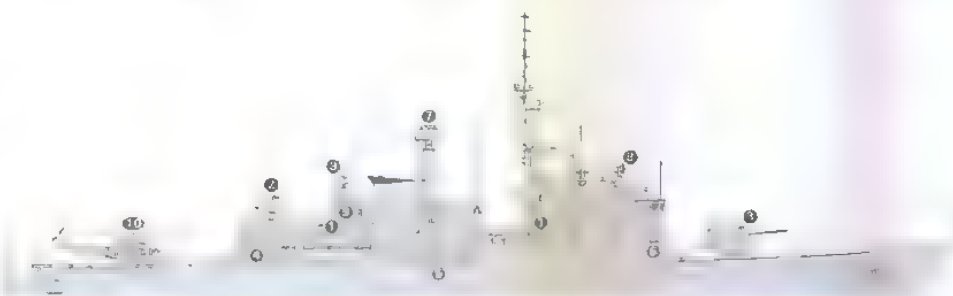
Tacan: SRN 15A.

Sonars: EDO SQS-29 (Mod 610E) or Northrop Grumman 21 HS-7 (F 21 and F 22); hull-mounted; active search and attack; medium frequency.

Helicopters: 1 AB 212ASW ●.

Programmes: All ordered on 24 October 1975. Similar to ships in the Italian and Peruvian navies.

Modernisation: F 21 and F 22 were scheduled to start a refit by Ingalls Shipyard in September 1992 but contractual problems delayed start until January 1998. Refits included upgrading the gas turbines, replacing the diesels, improving the combat data system, updating sonar and ESM, and overhauling all weapon systems. The ships were redelivered in mid-2002 but further work was later required to re-install the Elta radar on a mast above the bridge. F 23 and F 24 have been upgraded by Dianca, Puerto Cabello, and returned to service in December and October 2003 respectively. Work included



GENERAL URDANETA

(Scale 1 : 900), Ian Sturton / 0529541



ALMIRANTE BRIÓN

6/2001, Northrop Grumman Ingalls / 0096360

modernisation of the main machinery, air-conditioning and weapon systems. F 25 and F 26 began similar refits at Dianca in 2004 but these had not been completed by early 2009.

Structure: Fixed hangar means no space for Aspide reloads. Fully stabilised
Operational: Based at Puerto Cabello.



ALMIRANTE BRIÓN

8/2007, Mario R V Carneiro / 1353890

SHIPBORNE AIRCRAFT

Notes. There are seven operational Bell 412EP helicopters, equipped with radar and FLIR. Four acquired in 1999 and three more delivered in 2003 of which one has been lost. This has been replaced by an Agusta Bel. 412EP. There is also one Bell 206B which is used for training. Six Mi-17 were acquired from Russia in 2007 for use by the Marines.

Numbers/Type: 8 Agusta AB 212ASW.
Operational speed: 106 kt (196 km/h).
Service ceiling: 14,200 ft (4,330 m).
Range: 230 n miles (426 km).
Role/Weapon systems: ASW helicopter with secondary ASV role. All eight have been upgraded in Italy. Sensors: APS-705 search radar, Bendix AQS-18A dipping sonar. Weapons: ASW; two Mk 46 or A244/S torpedoes or depth bombs. ASV; mid-course guidance to Tesec Mk 2 missiles.



AB 212 6/2005, Massimo Annati / 1167652

LAND-BASED MARITIME AIRCRAFT (FRONT LINE)

Notes: (1) There are also two Beach King Air and three Cessnas used for training and transport. (2) Two CASA CN-235 maritime patrol aircraft were ordered in April 2005. The contract was signed on 29 November 2005 but cancelled in October 2006. (3) The contract for 24 Su-30 Mk 2 Flankers was signed with the Russian government on 21 July 2006. All had been delivered by mid-2008. The aircraft are capable of carrying a variety of air-to-surface weapons.

Numbers/Type: 3/2/3 CASA C-212 S 43/C-212 S 200/C-212 S 400 Aviocar.
Operational speed: 190 kt (353 km/h).
Service ceiling: 24,000 ft (7,315 m).
Range: 1,650 n miles (3,055 km).
Role/Weapon systems. Medium-range MR and coastal protection aircraft; limited armed action. Acquired in 1981-82 and 1985-86. Three modernised and augmented in 1998 by S 400 type. Previous numbers have reduced. Sensors: APS-128 radar. Weapons: ASW; depth bombs. ASV; gun and rocket pods.



C-212 6/2002, CASA/EADS / 067954R

PATROL FORCES

6 CONSTITUCIÓN CLASS (FAST ATTACK CRAFT—MISSILE AND GUN) (PBG/PG)

Name	No	Builders	Laid down	Launched	Commissioned
CONSTITUCIÓN	PC 11	Vosper Thornycroft	Jan 1973	1 June 1973	16 Aug 1974
FEDERACIÓN	PC 12	Vosper Thornycroft	Aug 1973	26 Feb 1974	26 Mar 1975
INDEPENDENCIA	PC 13	Vosper Thornycroft	Feb 1973	24 July 1973	20 Sep 1974
LIBERTAD	PC 14	Vosper Thornycroft	Sep 1973	5 Mar 1974	12 June 1975
PATRIA	PC 15	Vosper Thornycroft	Mar 1973	27 Sep 1973	9 Jan 1975
VICTORIA	PC 16	Vosper Thornycroft	Mar 1974	3 Sep 1974	22 Sep 1975

Displacement, tons: 170 full load
Dimensions, feet (metres): 121 × 23.3 × 6 (36.9 × 7.1 × 1.8)
Main machinery: 2 MTU MD 16V 538 TB90 diesels; 6,000 hp(m) (4.4 MW) sustained; 2 shafts
Speed, knots: 31
Range, n miles: 1,350 at 16 kt
Complement: 20 (4 officers)

Missiles: SSM 2 OTO Melara/Matra Tesco Mk 2 TG1 (Federación, Libertad and Victoria); active radar homing to 80 km (43.2 n miles) at 0.9 Mach; sea-skimmer for last 4 km (2.2 n miles); warhead 210 kg.
Guns: 1 OTO Melara 3 in (76 mm)/62 compact (Constitucion, Independencia and Patria); 85 rds/min to 16 km (8.7 n miles); weight of shell 6 kg.
 1 Breda 30 mm/70 (Federación, Libertad and Victoria); 800 rds/min; weight of shell 0.37 kg.
 2—12.7 mm MGs.
Weapons control: Elsig NA 10 Mod 1 GFCS (Constitución, Independencia and Patria). Alenia Elsig Medusa optronic director (Federación, Libertad and Victoria).
Radars: Surface search: SMA SPO-2D; I-band
Fire control: Selenia RTN 10X (in 76 mm ships); I/J-band.
Navigation: Racal; I-band.

Programmes: Transferred from the Navy in 1983 to the Coast Guard but now back again with Fleet Command.
Modernisation: Single Breda 30 mm guns replaced the 40 mm guns in the missile craft in 1989. All were refitted at Puerto Cabello 1992 1995
Operational: It is planned to replace these ships with new offshore patrol vessels. Meanwhile it is reported that their propulsion systems have been refitted. Based at Punta Fijo.



VICTORIA (missile craft) 7/1999, Venezuelan Navy / 0089235

0 + 4 OFFSHORE PATROL VESSELS (PSOH)

Name	No	Builders	Laid down	Launched	Commissioned
GUACAIPURO	F 30	Navantia, Puerto Real	11 Sep 2008	2009	May 2010
-	F 31	Navantia, Puerto Real	Mar 2009	2010	Sep 2010
-	F 32	Navantia, Puerto Real	Sep 2009	2010	Feb 2011
-	F 33	Navantia, Puerto Real	Mar 2010	2011	July 2011

Displacement, tons: 2,419 full load
Dimensions, feet (metres): 324.5 × 44.6 × 12.5 (98.9 × 13.6 × 3.8)
Main machinery: 4 MTU 12V 1163 TB93 diesels; 23,600 hp (17.6 MW); 2 shafts; cp props
Speed, knots: 24. **Range, n miles:** 3,500 at 12 kt
Complement: 60 plus accommodation for 32
Guns: 1—76 mm. 1—35 mm.
Combat data systems: Thales Tactics.
Electro-optic systems: Thales Sting optronic director. Thales Mirador TEOOS
Radars: Thales SMARTS, 3D, E/F-band.
Navigation: To be announced.
Fire control: Thales Sting; I/J-band
Helicopters: To be announced.

Programmes: Following agreement between the Spanish and Venezuelan governments signed on 28 November 2005, a contract for the construction of four offshore



OFFSHORE PATROL VESSEL (Scale 1 : 900), Ian Sturton / 116744Z

patrol vessels (POVZEE) was signed with Navantia on 26 May 2006. The ships are being constructed at the Puerto Real Shipyard at Cadiz and the programme is to be completed by 2012. **Operational:** The vessels are to be employed on EEZ protection duties.

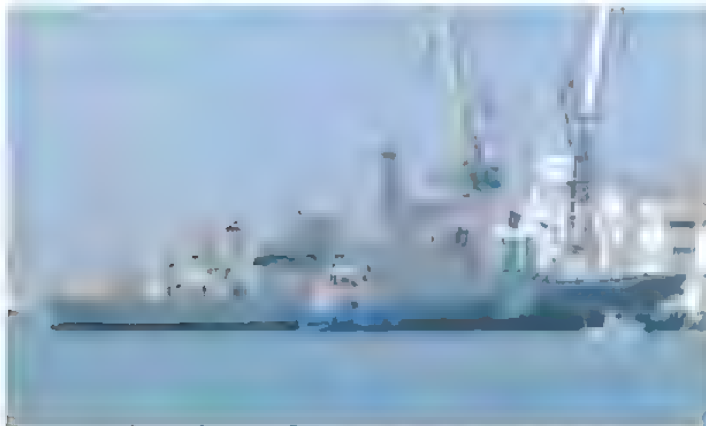
0 + 4 GUAICAMACUTO CLASS (PATROL VESSELS) (PSOH)

Name	No	Builders	Laid down	Launched	Commissioned
GUAICAMACUTO	GC 21	Navantia, San Fernando	17 Dec 2006	16 Oct 2008	Sep 2009
YAVIRE	GC 22	Navantia, San Fernando	2007	11 Mar 2009	2010
NAIGUATA	GC 23	Navantia, San Fernando	28 Nov 2007	2010	2011
TAMANACO	GC 24	Dianca, Puerto Cabello	2008	2011	2012

Displacement, tons: 1,500 full load
Dimensions, feet (metres): 262.1 x 37.7 x 12.1 (79.9 x 11.6 x 3.7)
Main machinery: To be announced
Speed, knots: 22
Range, n miles: 4,000 at 12 kt
Complement: 34 plus accommodation for 30
Guns: 1—76 mm. 1 Derlikon Contraves 35 mm.
Combat data systems: To be announced.
Weapons control: To be announced.
Radars: Surface search To be announced
Navigation: To be announced
Fire control: To be announced
Helicopters: Platform for one medium.

Programmes: Following agreement between the Spanish and Venezuelan governments signed on 28 November 2005, a contract for the construction of four patrol vessels (BVL) was signed with Navantia on 26 May 2006. Three ships are to be constructed at the San Fernando Shipyard at Cadiz and the programme is to be completed by 2012 and the fourth at Puerto Cabello (to be confirmed)

Operations: The vessels are to be employed on coastal patrol duties.



GUAICAMACUTO 10/2008, Carlos Pardo González / 1353654

4 CAPANA (ALLIGATOR) CLASS (LSTH)

Name	No	Builders	Commissioned
CAPANA	T 61	Korea Tacoma Marine	24 July 1984
ESEQUIBO	T 62	Korea Tacoma Marine	24 July 1984
GOAJIRA	T 63	Korea Tacoma Marine	20 Nov 1984
LOS LLANOS	T 64	Korea Tacoma Marine	20 Nov 1984

Displacement, tons: 4,070 full load
Dimensions, feet (metres): 343.8 x 50.5 x 9.8 (104.8 x 15.4 x 3)
Main machinery: 2 SEMT-Pielstick 16 PA6V 280 diesels; 12,800 hp(m) (9.41 MW); 2 shafts
Speed, knots: 14. **Range, n miles:** 5,600 at 11 kt
Complement: 117 (13 officers)
Military lift: 202 troops; 1,600 tons cargo; 4 LCVPs
Guns: 2 Breda 40 mm/70 (twin). 2 Oerlikon 20 mm GAM-BQ1.
Weapons control: Selenia NA 18/V; optronic director
Helicopters: Platform only.

Comment: Ordered in August 1982. Version III of Korea Tacoma Alligator type. Each has a 50 ton tank turntable and a lift between decks. *Goajira* was out of service from June 1987 to May 1993 after a serious fire. T 62 and T 63 reported to have been refitted in 2003 and T 61 2007-08. T 62 is likely to be similarly upgraded.



CAPANA 6/1998, Venezuelan Navy / 0084236



ESEQUIBO 3/1999, 0084237

AMPHIBIOUS FORCES

Notes: (1) It is reported that 39 Griffon 2000TD hovercraft are being assembled at Dianca. The first was delivered on 29 May 2007 and the remainder are to be built by 2013.
 (2) Procurement of one or more amphibious assault ships (LPD) is under consideration. The requirement is for a design to transport and deliver up to 750 troops with their equipment and vehicles in addition to civilian support and disaster relief roles.

2 AJEERA CLASS (LCU)

Name	No	Builders	Commissioned
MARGARITA	T 71	Swiftships Inc, Morgan City	20 Jan 1984
LA ORCHILA	T 72	Swiftships Inc, Morgan City	11 May 1984

Displacement, tons: 428 full load
Dimensions, feet (metres): 129.9 x 36.1 x 6.9 (39.6 x 11 x 1.8)
Main machinery: 2 Detroit 16V-149 diesels; 1,800 hp (1.34 MW) sustained, 2 shafts
Speed, knots: 13. **Range, n miles:** 1,500 at 10 kt
Complement: 26 (4 officers)
Military lift: 150 tons cargo, 100 tons fuel
Guns: 3—12.7 mm MGs.
Radars: Navigation: Raytheon 6410; I-band.

Comment: Both serve in Fluvial Command. Have a 15 ton crane.



MARGARITA 6/1999, Venezuelan Navy / 0084738

SURVEY AND RESEARCH SHIPS

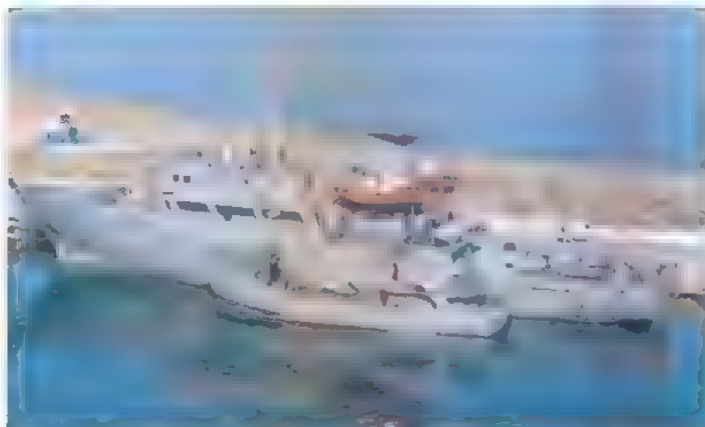
Notes: The contract for the construction of five survey ships was signed with Astillero Vulcano, Vigo, on 5 August 2008. There are to be four vessels of 90 m and a fifth Antarctic survey ship of 113 m. The latter ship is to have a reinforced hull and to be equipped with a flight deck for helicopter operations. Some of these ships may be for civilian use.

1 SURVEY AND RESEARCH SHIP (AGOR)

Name	No	Builders	Launched	Commissioned
PUNTA BRAVA	BO 11	Bazan, La Cerraca	9 Mar 1990	14 Mar 1991

Displacement, tons: 1,170 full load
Dimensions, feet (metres): 202.4 x 39 x 12.1 (61.7 x 11.9 x 3.7)
Main machinery: 2 Bazán MAN 7L20/27 diesels; 2,500 hp(m) (1.84 MW); 2 shafts, bow thruster
Speed, knots: 13. **Range, n miles:** 8,000 at 13 kt
Complement: 49 (6 officers) plus 6 scientists
Radars: Navigation: ARPA; I-band.

Comment: Ordered in September 1988. Developed from the Spanish Malaspina class. A multipurpose ship for oceanography, marine resource evaluation, geophysical and biological research. Equipped with Qubit hydrographic system. Carries two survey launches. EW equipment is fitted. Assigned to the OCHINA (Hydrographic department).



PUNTA BRAVA 11/2008, A A de Kruif / 1353653

2 SURVEY CRAFT (AGSC)

Name	No	Builders	Commissioned
GABRIELA (ex-Peninsula de Araya)	LH 11	Abeking & Rasmussen	5 Feb 1974
LELY (ex-Peninsula de Paraguane)	LH 12	Abeking & Rasmussen	7 Feb 1974

Displacement, tons: 90 full load
 Dimensions, feet (metres): 88.6 × 18.4 × 4.9 (27 × 5.6 × 1.5)
 Main machinery: 2 MTU diesels, 2,300 hp (m) (1.69 MW); 2 shafts
 Speed, knots: 20
 Complement: 9 (1 officer)

Comment: LH 12 laid down 28 May 1973, launched 12 December 1973 and LH 11 laid down 10 March 1973, launched 29 November 1973. Acquired in September 1986 from the Instituto de Canalizaciones. Both assigned to the Fluvial Command.



GABRIELA (alongside Alcatraz PG 32) 1/1994, Maritime Photographic / 050618D

TRAINING SHIPS
1 SAIL TRAINING SHIP (AXS)

Name	No	Builders	Launched	Commissioned
SIMÓN BOLÍVAR	BE 11	AT Calaya, Bilbao	21 Nov 1979	6 Aug 1980

Displacement, tons: 1,260 full load
 Measurement, tons: 934 gross
 Dimensions, feet (metres): 270.6 × 34.8 × 14.4 (82.5 × 10.6 × 4.4)
 Main machinery: 1 Detroit 12V-149T diesel, 875 hp (652 kW) sustained; 1 shaft
 Speed, knots: 10
 Complement: 93 (17 officers) plus 102 trainees

Comment: Ordered in 1978. Three-masted barque; similar to Guayas (Ecuador), Cuauhtemoc (Mexico) and Gloria (Colombia). Sail area (23 sails), 1,650 m². Highest mast, 131.2 ft (40 m). Has won several international sail competitions including Cutty Sark '96. A refit is reported to have been completed in 2008.



SIMÓN BOLÍVAR 6/2001, A Campanera i Rovira / 053411/0

AUXILIARIES

Notes: There is one navigational aids tender Macuro BB-11.

1 LOGISTIC SUPPORT SHIP (AORH)

Name	No	Builders	Commissioned
CIUDAD BOLÍVAR	T 81	Hyundai, Ulsan	2001

Displacement, tons: 9,750 full load
 Dimensions, feet (metres): 451.8 × 59 × 21.7 (1377 × 18 × 6.6)
 Main machinery: 2 Caterpillar 3616 diesels; 2 shafts LIPS cp props
 Speed, knots: 18. Range, n miles: 4,500 at 15 kt
 Complement: 104
 Guns: 2 Bofors 40 mm/70. 2—12.7 mm MGs.

Comment: Ordered from Hyundai, South Korea, in February 1999. Delivered in October 2001. Capable of carrying 4,400 tons of fuel and 900 tons of cargo. Two replenishment stations on each beam. Hangar and deck for medium size helicopter. Replenishment operations reported conducted with both French and Netherlands units. Armament is not yet fitted.

1 + (1) OCEAN TUG (ATA)

Name	No	Builders	Laid down	Launched	Commissioned
GENERAL FRANCISCO DE MIRANDA (ex-Almirante Bruzuel)	RA 11	Damen, Gorinchem and DIANCA, Puerto Caballo, Venezuela	Apr 2004	2005	Mar 2007

Displacement, tons: 700 full load
 Dimensions, feet (metres): 213.2 × 39.3 × 19.7 (65.0 × 12.0 × 6.0)
 Main machinery: 2 CAT 3606TA diesels; 5,400 hp (4 MW); 2 shafts
 Speed, knots: 16. Range, n miles: 7,000 at 10 kt
 Complement: To be announced
 Radars: Navigation, I-band.

Comment: DIANCA, a shipyard owned and operated by the Venezuelan Navy, contracted in early 2004 to build an ocean-going tug with technical assistance from Damen Shipyards. Built of aluminium and steel, the ship is used for a variety of tasks including counter-drug, counter-piracy and counter-pollution operations as well as general sea-safety duties. It has a cargo capacity of 150 tons and was completed in 2006. A second ship is expected.

COAST GUARD
7 RIVER PATROL CRAFT (PBR)

MANAURE PF 21	GUAICAIPURO PF 23	TEREPAIMA PF 31	SOROCAIMA PF 34
MARA PF 22	TAMANACO PF 24	VARACUY PF 33	

Displacement, tons: 15 full load
 Dimensions, feet (metres): 64.1 × 14.1 × 4.3 (16.5 × 4.3 × 1.3)
 Main machinery: 2 diesels; 2 shafts
 Speed, knots: 10
 Complement: 8
 Guns: 1—12.7 mm MG
 Radars: Surface search: Raytheon 6410; I-band.

Comment: River craft used by the Marines. Details given are for four Manaure class. There are also three Terepaime class which are 10 m long and capable of 45 kt.



MANAURE 6/1998, Venezuelan Navy / 0050731

4 PETREL (POINT) CLASS (WPB)

Name	No	Builders	Commissioned
PETREL (ex-Point Knoll)	PG 31	US Coast Guard Yard, Curtis Bay	26 June 1967
ALCATRAZ (ex-Point Judith)	PG 32	US Coast Guard Yard, Curtis Bay	26 July 1966
ALBATROS (ex-Point Franklin)	PG 33	US Coast Guard Yard, Curtis Bay	14 Nov 1966
PELICANO (ex-Point Ledge)	PG 34	US Coast Guard Yard, Curtis Bay	18 July 1962

Displacement, tons: 68 full load
 Dimensions, feet (metres): 83 × 17.2 × 5.8 (25.3 × 5.2 × 1.8)
 Main machinery: 2 Caterpillar diesels, 1,600 hp (1.19 MW); 2 shafts
 Speed, knots: 23.5
 Range, n miles: 1,500 at 8 kt
 Complement: 10 (1 officer)
 Guns: 2—12.7 mm MGs.
 Radars: Surface search: Raytheon SPS-64, I-band

Comment: Petrel transferred from USCG on 18 November 1991 and Alcatraz on 15 January 1992, Albatros on 23 June 1998 and Pelicano on 3 August 1998. The transfer of four further craft is unlikely. Most of the class are believed to be operational.



ALCATRAZ 4/1999 009474

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1 ALMIRANTE CLEMENTE CLASS (WFS)

Name	No	Builders	Laid down	Launched	Commissioned
GENERAL JOSÉ TRINIDAD MORAN	GC 12	Ansaldo, Livorno	5 May 1954	12 Dec 1954	9 May 1956

Displacement, tons: 1,300 standard; 1,500 full load
Dimensions, feet (metres): 325.1 x 35.5 x 12.2
 (99.1 x 10.8 x 3.7)
Main machinery: 2 GMT 16-645E7C diesels; 6,080 hp(m)
 (4.47 MW) sustained; 2 shafts
Speed, knots: 22
Range, n miles: 3,500 at 15 kt
Complement: 142 (12 officers)

Guns: 2 Otobreda 3 in (76 mm) 82 compact; 85 rds/min to 16 km (8.7 n miles); weight of shell 6 kg.
 2 Breda 40 mm/70 (twin); 300 rds/min to 12.5 km (6.8 n miles); weight of shell 0.96 kg
Torpedoes: 6—324 mm ILAS 3 (2 triple) tubes. Whitehead A 244S; anti-submarine; active/passive homing to 7 km (3.8 n miles) at 33 kt; warhead 34 kg (shaped charge).
Depth charges: 2 throwers
Weapons control: Elsag NA 10 Mod 1 GFCS
Radars: Air search: Plessey AWS 4; E/F-band.
 Surface search: Racal Decca 1225; I-band.
Fire control: Selenia RTN 10X; I/J-band.
Sonars: Plessey PMS 26; hull-mounted; active search and attack; 10 kHz.

Programmes: Survivor of a class of six ordered in 1953.
Modernisation: Refitted by Cammell Laird/Plessey group in April 1968. 4 in guns replaced by 76 mm. Both refitted again in Italy in 1984–85, prior to transfer to Coast Guard duties in 1986.
Structure: Fitted with Denny-Brown fin stabilisers and air conditioned throughout the living and command spaces.
Operational: *Almirante Clemente* decommissioned in 2008 and being used as spares.



ALMIRANTE CLEMENTE CLASS (Scale 1 : 900), Ian Sturton / 0505715



GENERAL JOSÉ TRINIDAD MORAN 10/1998, E & M Laursen / 0050734



ALMIRANTE CLEMENTE CLASS 4/2001 0114820

12 GAVION CLASS (WPB)

GAVION PG 401	CHAMAN PG 404	FARDELA PG 407	PIGARGO PG 410
ALCA PG 402	CORMORAN PG 405	FUMAREL PG 408	PAGAZA PG 411
BERNACLA PG 403	COLIMBO PG 406	NEGRON PG 409	SERRETA PG 412

Displacement, tons: 45 full load
Dimensions, feet (metres): 80 x 17 x 4.8 (24.4 x 5.2 x 1.5)
Main machinery: 2 Detroit 12V-92TA diesels; 2,160 hp (1.61 MW) sustained, 2 shafts
Speed, knots: 25
Range, n miles: 1,000 at 12 kt
Complement: 10
Guns: 2—12.7 mm MGs. 2—7.62 mm MGs. 1—40 mm Mk 19 grenade launcher
Radars: Surface search: Raytheon R1210; I-band

Comment: Ordered from Halter Marine 24 April 1998 and delivered from late 1999 to early 2000. Aluminium construction. Four craft refitted in 2003 and all believed to be operational.



GAVION 11/2008*, Marco Ghigino / 1353652



LOS CAYOS 11/2008*, A A de Kruijff / 1353651

7 POLARIS CLASS (PBF)

POLARIS LG 21	RIGEL LG 23	ANTARES LG 25	ALTAIR LG 27
SIRIUS LG 22	ALDEBARAN LG 24	CANOPUS LG 26	

Displacement, tons: 5 full load
Dimensions, feet (metres): 26 wl x 8.5 x 2.6 (7.9 x 2.6 x 0.8)
Main machinery: 1 diesel outdrive; 400 hp(m) (294 kW)
Speed, knots: 50
Complement: 4
Guns: 1—12.7 mm MG.
Radars: Surface search: Raytheon; I-band

Comment: Built by Cougar Marine and delivered in 1987. Used by the Coast Guard for drug interdiction. Two more reported operational



ALDEBARAN 4/1999, Venezuelan Navy / 008474

2 UTILITY CRAFT (YAG)

LOSTAQUES LG 11	LOS CAYOS LG 12
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Displacement, tons: 350 full load
Dimensions, feet (metres): 87.3 x 23.3 x 4.9 (26.6 x 7.1 x 1.5)
Main machinery: 1 diesel; 850 hp(m) (625 kW); 1 shaft
Speed, knots: 8
Complement: 10
Guns: 1—12.7 mm MG

Comment: Former trawlers. Commissioned 15 May 1981 and 17 July 1984 respectively. Used for salvage and SAR tasks.

1 + (14) DIANCA PATROL CRAFT (PB)

Displacement, tons: To be announced
Dimensions, feet (metres): 75.5 × 18.4 × 7 (23.0 × 5.0 × 7)
Main machinery: To be announced
Speed, knots: 32
Complement: 10
Guns: To be announced.
Radars: To be announced

Comment: Dianca Project P 698. First of class entered service in 2004 and a class of 15 is projected. Aluminium construction

18 INSHORE PATROL BOATS (PBR)

CONSTANCIA LRG 001 HONESTIDAD LRG 003 INTEGRIDAD LRG 005 +12
PERSEVERANCIA LRG 002 TENACIDAD LRG 004 LEALTAD LRG 006

Displacement, tons: 11 full load
Dimensions, feet (metres): 39.4 × 9.2 × 5.6 (12 × 2.8 × 1.7)
Main machinery: 2 diesels; 840 hp(m) (470 kW); 2 shafts
Speed, knots: 38
Complement: 4
Guns: 2 – 7.62 mm MGs.
Radars: Surface search I-band

Comment: First three speed boat type with GRP hulls delivered from a local shipyard in December 1991. Fourth completed in August 1993. Details given are for *Integridad* which is the first of two built at Guatire, and delivered in 1997/98. GRP construction. The twelve un-named craft are Boston Whaler Guardian class capable of 25 kt, mounting 2 – 12.7 mm and 2 – 6.72 mm MGs, and with Raytheon radars. These were donated by the US. All of these craft are used by Marines.



GUARDIAN INSHORE PATROL CRAFT 4/1998, Venezuelan Navy / 0084245

8 PUNTA MACOLLA CLASS (PB)

PUNTA MACOLLA LSM 001 BAJO BRITO LSM 004 VELA DE COBO LSM 007
FARALLÓN CENTINELA LSM 002 BAJO ARAYA LSM 005 CAYO MACERED LSM 008
CHARAGATO LSM 003 CARECARE LSM 006

Displacement, tons: 5 full load
Dimensions, feet (metres): 41.7 × 9.2 × 6.6 (12.7 × 2.8 × 2)
Main machinery: 2 diesels; 2 shafts
Speed, knots: 30
Complement: 4
Guns: 1 – 12.7 mm MG
Radars: Surface search Raytheon, I-band.

Comment: Built in Venezuela by Intermarine. Used by OCHINA (Hydrographic department) and for SAR. First six delivered by 1997 and last two in 2000.



BAJO ARAYA 3/1999, Venezuelan Navy / 0084246

1 SUPPORT SHIP (AKSL)

Name	No	Builders	Commissioned
FERNANDO GÓMEZ (ex-José Félix Ribas, ex-Oswegatchia)	RP 21 (ex-R 13)	Commercial Iron Works, Portland	14 Dec 1945

Displacement, tons: 245 full load
Dimensions, feet (metres): 100.1 × 25.9 × 9.5 (30.5 × 7.9 × 2.9)
Main machinery: 2 diesels; 1,270 hp (947 kW); 1 shaft
Speed, knots: 10
Complement: 12
Guns: 2 – 12.7 mm MGs.
Radars: Navigation; Raytheon; I-band.

Comment: Former tug, originally acquired from the US in 1965. Out of service for some years but now employed as a logistic support ship and for occasional patrol and SAR.



FERNANDO GOMEZ 6/1998, Venezuelan Navy / 0050738

PROTECTOR 3612 CLASS (PB)

CHICHIRIVICHE LG 31 CARUANTA LG 32

Displacement, tons: 11 full load
Dimensions, feet (metres): 36.1 × 13.1 × 1.6 (11.1 × 4.0 × 0.5)

Comment: Built by SeaArk Marine, Monticello, and delivered in 1994.

2 RIVER TRANSPORT CRAFT (LCM)

CURIAPO LC 21 YOPITO LC 01

Displacement, tons: 115 full load
Dimensions, feet (metres): 73.7 × 21 × 5.2 (22.5 × 6.4 × 1.6)
Main machinery: 2 Detroit diesels; 850 hp (625 kW); 2 shafts
Speed, knots: 9
Complement: 5
Cargo capacity: 60 tons or 200 Marines
Guns: 2 – 12.7 mm MGs.

Comment: Details given are for *Cunapo* which is a former LCM. *Yopito* is a former LCU of 18 m. Both are used by the Marines. There are also 12 11 m LCVPs.



YOPITO 7/1999, Venezuelan Navy / 0084248

1 + 3 DAMEN STAN PATROL 2606 (PB)

Displacement, tons: To be announced
Dimensions, feet (metres): 38.9 × 21.1 × 7 (26.5 × 6.9 × 7)
Main machinery: 2 diesels; 2 cp props
Speed, knots: 25
Complement: To be announced
Guns: 3 – 12.7 mm MGs

Comment: Contract signed with Damen Shipyards for construction at UCOCAR, Puerto Cabello, of one Damen Stan Patrol 2606 patrol craft. Aluminium construction. Launched on 14 August 2008. Three further craft to be built by 2010.



STAN PATROL 2606 6/2008, Damen Shipyards / 1353713

NATIONAL GUARD (GUARDIA NACIONAL)

Notes: (1) There are also a large number of US and Canadian built river craft of between 6 and 9 m length, which are armed with MGs
 (2) Four intercept launches were delivered in 2003; two in July 2003 and two in October 2003
 (3) Some 60 Pirana class river patrol craft have been ordered. The first 15 were delivered in August 2003
 (4) It is reported that 66 patrol craft were ordered from Rodman in July 2007. The order includes 30 m Rodman 101, 20 m R 66 and 16 m Rodman 55. The deliveries are likely to be split between the Navy and the Coast Guard.

10 RIO ORINOCO II CLASS (PBF)

B 9801 series

Displacement, tons: 30 full load
Dimensions, feet (metres): 54 x 14 x 4.6 (16.5 x 4.3 x 1.4)
Main machinery: 2 MTU 12V 183TE93 diesels; 2,268 hp(m) (1.67 MW) sustained; 2 shafts
Speed, knots: 36
Range, n miles: 500 at 25 kt
Complement: 5
Guns: 2–12.7 mm MGs. 2–7.62 mm MGs.
Radars: Surface search: Raytheon R1210; I-band.

Comment: Ordered from Halter Marine 24 April 1998. All delivered by late 1999. Aluminium construction. Some of the similar speed Orinoco I craft built in the 1970s are still in limited use.



ORINOCO II

1/1999, Halter Marine / 00560/39

12 PROTECTOR CLASS (PB)

RIO ARAUCA II B 8421	RIO META II B 8425	RIO SINARUCO B 8429
RIO CATATUMBO II B 8422	RIO PORTUGUESA II B 8426	RIO ICABARU B 8430
RIO APURE II B 8423	RIO SARARE B 8427	RIO GUARICO II B 8431
RIO NEGRO II B 8424	RIO URIBANTE B 8428	RIO YARACUAY B 8432

Displacement, tons: 15 full load
Dimensions, feet (metres): 43.6 x 14.8 x 3.9 (13.3 x 4.5 x 1.2)
Main machinery: 2 GM diesels, 1,100 hp (810 kW); 2 shafts
Speed, knots: 28. **Range, n miles:** 390 at 25 kt
Complement: 4
Guns: 2–12.7 mm MGs.
Radars: Navigation: Raytheon; I-band

Comment: Built by SeaArk Marine and completed in 1984.



RIO SARARE

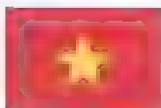
2/1996, van Ginderen Collection / 0084249

12 PUNTA CLASS (PB)

PUNTA BARIMA A 8201	PUNTA CARDON A 8205	PUNTA UNARE A 8309
PUNTA MOSQUITO A 8202	PUNTA PLAYA A 8206	PUNTA BALLENA A 8310
PUNTA MULATOS A 8203	PUNTA MACOYA A 8307	PUNTA MACURO A 8311
PUNTA PERRET A 8204	PUNTA MORON A 8308	PUNTA MARIUSA A 8312

Displacement, tons: 15 full load
Dimensions, feet (metres): 43.0 x 13.4 x 3.9 (13.1 x 4.1 x 1.2)
Main machinery: 2 MTU series 183 diesels; 1,500 hp (1.1 MW); 2 shafts
Speed, knots: 34. **Range, n miles:** 390 at 25 kt
Complement: 4
Guns: 2–12.7 mm MGs.
Radars: Navigation: Raytheon; I-band.

Comment: Built by Robert E Derektor, Mamaroneck, NY. Delivered July-December 1984



Vietnam

Country Overview

The Socialist Republic of Vietnam was established in 1976 when the Democratic Republic of Vietnam in the north and the Republic of Vietnam in the south became one nation. The country had been divided at the 17th parallel from the end of French colonial rule in 1954 and during the ensuing Vietnam War. Located on the east coast of the Indochina peninsula, it has an area of 127,844 square miles and is bordered to the north by China and to the west by Cambodia and Laos. It has a 1,858 n mile coastline with the South China Sea. Hanoi is the capital while Ho Chi Minh City (formerly Saigon) is the largest city and a major port. There are further ports at Haiphong and Da Nang. Territorial seas (12 n miles) are claimed. An EEZ (200 n miles) has also been claimed but the limits have not been defined.

Headquarters Appointments

Chief of Naval Forces:
 Vice Admiral Nguyen Van Hien
Deputy Chief of Naval Forces:
 Captain Tran Quang Khuc

Personnel

- (a) 2009: 13,000 regulars
- (b) Additional conscripts on three to four year term (about 3,000)
- (c) 27,000 naval infantry

Organisation and Bases

The Vietnamese Navy is part of the People's Army of Vietnam (PAVN) and is formally known as the PAVN Navy. The fleet is organised into four regions based on, from north to south, Haiphong (HQ), Da Nang, Nha Trang and Can Tho. There are other bases at Cam Ranh Bay, Hue and Ha Tou.

Coast Guard

A Coast Guard was formed on 1 September 1998. It is subordinate to the Navy and may take on Customs duties.

SUBMARINES

2YUGO CLASS (MIDGET SUBMARINES) (SSW)

Displacement, tons: 90 surfaced; 110 dived
Dimensions, feet (metres): 65.6 x 10.2 x 15.1 (20 x 3.1 x 4.6)
Main machinery: 2 diesels; 320 hp(m) (236 kW); 1 shaft
Speed, knots: 12 surfaced; 8 dived
Range, n miles: 550 at 10 kt surfaced; 50 at 4 kt dived
Complement: 4 plus 6/7 divers

Comment: Transferred from North Korea in 1997. May be fitted with two short torpedo tubes and a short mast, but used primarily for diver related operations. The conning tower acts as a wet/dry diver compartment. Operational status is doubtful.



YUGO (North Korean colours)
 6/1998, Ships of the World
 00875/5

FRIGATES

Notes: The Barnegat class frigate (ex-seaplane tender) *Pham Ngu Lao* HQ 01 has probably been decommissioned

0 + 2 (2) GEPARD (PROJECT 11661) CLASS (FFGM)

Name	No	Builders	Laid down	Launched	Commissioned
-	-	Zelenodolsk Shipyard	10 July 2007	2009	2010
-	-	Zelenodolsk Shipyard	28 Nov 2007	2010	2011

Displacement, tons: 1,550 standard, 2,100 full load

Dimensions, feet (metres): 335.3 × 43.0 × 17.4

(102.2 × 13.1 × 5.3)

Main machinery: CODOG; 2 gas turbines; 30,860 hp(m) (23.0 MW); 1 Type 61D diesel; 7,375 hp(m) (5.5 MW); 2 shafts, cp props

Speed, knots: 26 (18 on diesels)

Range, n miles: 5,000 at 10 kt

Complement: 103 (accommodation for 131)

Missiles: SSM: 8 Zvezda SS-N-25 (KH 35 Uran) (2 quad); IR or radar homing to 130 km (70.2 n miles) at 0.9 Mach; warhead 145 kg; sea skimmer.

SAM: 1 SA-N-4 Gecko twin launcher; semi-active radar homing to 15 km (8 n miles) at 2.5 Mach; warhead 50 kg, 20 weapons.

Guns: 1-3 in (76 mm)/59 AK-176; 120 rds/min to 15 km (8 n miles); weight of shell 5.9 kg.

2-30 mm/65 AK-630; 6 barrels per mounting; 3,000 rds/min combined to 2 km.

Torpedoes: 4-21 in (533 mm) (2 twin) tubes.

A/S mortars: 1 RBU 6000 12-tubed trainable

Mines: 2 rails, 48 mines.

Countermeasures: Decoys; 4 PK 16 chaff launchers.

ESM/ECM: 2 Bell Shroud. 2 Bell Squat. Intercept and jammers.

Weapons control: 2 Light Bulb datalink Hood Wink and Odd Box optronic systems. Band Stand datalink.

Radars: Air/surface search: Cross Dome; E/F-band.

Fire control: Bass Tilt; H/I-band (for guns). Pop Group; F/H/I-band (for SAM) Gerpun-B (for SSM); I/J-band.

Band Stand (Mineral ME); D-band (for SS-N-25).

Navigation: Nayada, I-band.

IFF: 2 Square Head, 1 Salt Pot B.

Sonars: Ox Yoke; hull mounted; active search and attack; medium frequency.

Ox Tail, VDS; active search and attack, medium frequency.



GEPARD CLASS

7/2002, Military Parade / 05/78304

Programmes: Contract signed with Rosoboronexport in late 2005 for the procurement of two Gepard-class frigates. The contract for construction was signed with Zelenodolsk Shipyard on 22 December 2006. Delivery is expected in 2010. Components may be supplied for

the construction of two further ships at Ho Chi Minh City.

Operational: Details of weapons and sensors are speculative and based on those originally designated for the ships in Russian naval service

5 PETYA (PROJECT 159A/AE) CLASS (FFL)

HQ 09 (ex SKR 82)

HQ 11 (ex-SKR-96)

HQ 13 (ex SKR 141)

HQ 15 (ex-SKR 130)

HQ 17 (ex SKR 135)

Displacement, tons: 950 standard; 1,180 full load

Dimensions, feet (metres): 268.3 × 29.9 × 9.5

(81.8 × 9.1 × 2.9)

Main machinery: CODAG; 2 gas turbines; 30,000 hp(m) (22 MW); 1 Type 61V-3 diesel; 5,400 hp(m) (3.97 MW) sustained; centre shaft; 3 shafts

Speed, knots: 32

Range, n miles: 4,870 at 10 kt, 450 at 29 kt

Complement: 98 (8 officers)

Guns: 4 USSR 3 in (76 mm)/59 AK 726 (2 twin); 90 rds/min to 15 km (8 n miles); weight of shell 5.9 kg

4-37 mm (2 twin) (HQ 11). 4-23 mm (2 twin) (HQ 11, 15).

Torpedoes: 3-21 in (533 mm) (triple) tubes (Petya III).

SAET-60; passive homing to 15 km (8.1 n miles) at 40 kt; warhead 400 kg

5-16 in (406 mm) (1 quin) tubes (Petya II). SAET-40; active/passive homing to 10 km (5.5 n miles) at 30 kt; warhead 100 kg

A/S mortars: 4 RBU 6000 12-tubed trainable (HQ 09, 13, 17); range 6,000 m; warhead 31 kg.

4 RBU 2500 16-tubed trainable (HQ 11); range 2,500 m; warhead 21 kg.

Depth charges: 2 racks.

Mines: Can carry 22.

Countermeasures: ESM: 2 Watch Dog; radar warning

Radars: Air/surface search: Strut Curve; F-band.

Navigation: Don 2; I-band

Fire control: Hawk Screech; I-band.

IFF: High Pole B. 2 Square Head



HQ 09

9/1995, G Toremans / 05/06761

Sonars: Vychada MG 311; hull-mounted; active attack, high frequency.

Programmes: All built at Khabarovsk. Two Petya III (HQ 09, 11) (export version) transferred from USSR in December 1978 and three Petya IIs, (HQ 13, 15, 17); HQ 13 transferred in December 1983; HQ 15 in May 1984 and HQ 17 in December 1984

Modernisation: Refitted and updated 1994 to 1999. The RBUs replaced by 25 mm guns and the torpedo tubes by 37 mm guns in some of the class. HQ 17 completed major overhaul at Ba Son Shipyard in 2001.

Structure: The Petya IIs have the same hulls as the Petya IIs but different armament.

Operational: Reported active between the coast and the Spratly Islands



HQ 17 (PETYA II)

11/2001 / 0131341

CORVETTES

Notes: Ex-US Admirable class HQ 07 is an alongside training hulk.

2 BPS 500 (PROJECT 12418) CLASS (FSGM)

HQ 381-382

Displacement, tons: 517 full load

Dimensions, feet (metres): 203.4 × 36.1 × 8.2
(66 × 11 × 2.5)

Main machinery: 2 MTU diesels, 19,600 hp(m) (14.41 MW);
2 Kamewa waterjets

Speed, knots: 32. Range, n miles: 2,200 at 14 kt
Complement: 28

Missiles: SSM: 8 Zvezda SS-N-25 (KH-35 Uran) (2 quad) ●;
active radar homing to 130 km (70.1 n miles) at 0.9 Mach;
warhead 145 kg.

SAM: SA-N-10: 24 missiles.

Guns: 1-3 in (76 mm)/59 AK 176 ●: 120 rds/min to 15 km
(8 n miles); weight of shell 5.9 kg

1-30 mm/65 AK 630 ●; 6 barrelled; 3,000 rds/min
combined to 2 km

2-12.7 mm MGs

Mines: Rails fitted

Countermeasures: Decoys: 2 chaff launchers ●

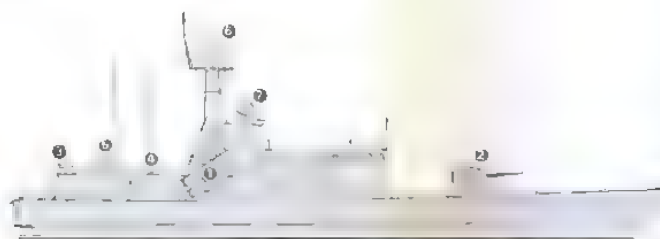
Weapons control: Optronic director ●

Radars: Air/surface search: Cross Dome ●; E/F-band.

Navigation: I-band

Fire control: BassTilt ●; H/I-band.

Comment: Severnoye design (improved Pauk) ordered in
1996 and two ships subsequently delivered in kit form to
Ba Son Shipyard, Ho Chi Minh City. First unit launched
in June 1998 and became operational in late 2001.
The second unit is reported to have been completed



BPS 500

(not to scale), Ian Sturton 1/830014

HQ 381
1353656

4 TARANTUL CLASS (PROJECT 1241RE) (FSGM)

HQ 371 HQ 372 HQ 374 HQ 378

Displacement, tons: 385 standard, 450 full load

Dimensions, feet (metres): 184.1 × 37.7 × 8.2 (56.1 × 11.5 × 2.5)

Main machinery: 2 Nikolayev Type DR 77 gas turbines; 16,016 hp(m) (11.77 MW) sustained,
2 Nikolayev Type DR 76 gas turbines with reversible gearboxes; 4,993 hp(m) (3.67 MW)
sustained, 2 shafts

Speed, knots: 36

Range, n miles: 2,000 at 20 kt, 400 at 36 kt

Complement: 41 (5 officers)

Missiles: SSM: 4 SS-N-2D Styx; IR homing to 83 km (45 n miles) at 0.9 Mach; warhead
513 kg; sea-skimmer at end of run.

SAM: SA-N-5 Grail quad launcher; manual aiming; IR homing to 6 km (3.2 n miles) at
1.5 Mach; warhead 1.5 kg.

Guns: 1-3 in (76 mm)/59 AK 176; 120 rds/min to 15 km (8 n miles); weight of shell
5.9 kg.

2-30 mm/65 AK 630; 6 barrels per mounting, 3,000 rds/min combined to 2 km

Countermeasures: Decoys: 2 PK 16 chaff launchers.

Weapons control: Hood Wink optronic director.

Radars: Air/surface search: Plank Shave, E-band.

Navigation: Pechora, I-band.

Fire control: BassTilt; H/I-band

IFF: Salt Pot, Square Head A.

Sonars: FoalTail; active; high frequency.

Programmes: First pair ordered in October 1994. These were new hulls exported
at a favourable price and completed by 1996. Some delay in delivery because
of late payments, but both were in service by April 1996. Two further vessels
were reported to have been ordered in 1999 for delivery in 2000. Imagery of
HQ 374 suggests that the contract has been completed although this may be
the result of a change in pennant numbers. Current numbers of vessels are thus
uncertain.

Operational: Based at Da Nang



HQ 371

6/2007, Mazumdar Collection / 1353655



HQ 378

6/2007, Mazumdar Collection / 1170241

2 + 8 TARANTUL V CLASS (PROJECT 1241.8) (FSGM)

HQ 375-376

Displacement, tons: 385 standard; 450 full load

Dimensions, feet (metres): 196.5 × 37.7 × 8.2 (59.9 × 11.5 × 2.5)

Main machinery: 2 Nikolayev Type DR 77 gas turbines; 16,016 hp(m) (11.77 MW) sustained,
2 Nikolayev Type DR 76 gas turbines with reversible gearboxes; 4,993 hp(m) (3.67 MW)
sustained, 2 shafts

Speed, knots: 36. Range, n miles: 2,000 at 20 kt; 400 at 36 kt

Complement: 41 (5 officers)

Missiles: SSM: 16 (4 quad) SS-N-25 (Kh 35 Uran); active radar homing to 130 km
(70.2 n miles) at 0.9 Mach; warhead 145 kg; sea-skimmer.

SAM: SA-N-5 Grail quad launcher; manual aiming; IR homing to 6 km (3.2 n miles) at
1.5 Mach; warhead 1.5 kg

Guns: 1-3 in (76 mm)/59 AK 176; 120 rds/min to 15 km (8 n miles); weight of shell
5.9 kg.

2-30 mm/65 AK 630; 6 barrels per mounting; 3,000 rds/min combined to 2 km.

Countermeasures: Decoys: 2 PK 16 chaff launchers.

Weapons control: Hood Wink optronic director

Radars: Air/surface search: Strut Curve (Pozitiv ME); I-band.

Surface search: Plank Shave; E/F-band (SS-N-25).

Fire control: BassTilt; H/I-band

Navigation: Pechora; I-band.

Comment: A contract was signed in March 2004 for the supply of 10 further modified
Tarantul V, armed with SS-N-25 (Kh 35 Uran). Two of these, built at Vympel Shipyard,
Rybinsk, were delivered in late 2007. The remaining eight are to be constructed in
Vietnam. Details are as for those in Russian service and may differ



TARANTUL V (under construction)

9/2006, Lemachko Collection / 1167503

LAND-BASED MARITIME AIRCRAFT

Notes: There are six Air Force Su-27 Flankers and 20 Su-22 Fitter H that can be used for maritime surveillance.

Numbers/Type: 2 PZL Mielec M-28 B1R Bryza

Operational speed: 181 kt (335 km/h)

Service ceiling: 13 770 ft (4 200 m)

Range: 736 n miles (1,365 km)

Role/Weapon systems: Polish-built aircraft originally based on the USSR Cash light transport. Contract in October 2003 for the procurement of up to ten aircraft configured for maritime surveillance. First two delivered in 2005 by late 2004. Sensors: MSC-400 mission system, ARS-400 radar (with SAR/SAR) modes) Weapons: to be announced



M-28 (Polish colours)

6/2003, J Cielak / 0567493

PATROL FORCES

Notes: (1) At least one Shanghai II class PC may still be operational.
(2) Some of the craft listed may be transferred to the Coast Guard and Maritime Police.

4 + (6) SVETLYAK (PROJECT 1041.2) CLASS (PGM)

HQ 261-264

Displacement, tons: 366 full load

Dimensions, feet (metres): 162.4 × 30.2 × 7.9 (49.5 - 9.2 × 2.4)

Main machinery: 3 diesels; 15,900 hp(m) (11.85 MW) sustained; 3 shafts; cp props

Speed, knots: 30

Range, n miles: 2,200 at 13 kt

Complement: 28 (4 officers)

Missiles: SAM: SA-N-10; shoulder launched and (manual aiming); IR homing to 5 km (2.7 n miles) at 1.7 Mach; warhead 1.6 kg.

Guns: 1–3 in (76 mm) /59 AK 176; 120 rds/min to 15 km (8 n miles); weight of shell 5.9 kg.
1–30 mm/65 AK 630, 6 barrels, 3,000 rds/min combined to 2 km.

Countermeasures: Decoys: 2 chaff launchers.

Weapons control: Hood Wink optronic director

Radars: Air/surface search: Peel Cone; E-band.

Fire control: Bass Tilt; H/I-band.

Navigation: Palm Frond B; I-band

Comment: Contract for two craft signed with Almaz, St Petersburg in November 2001. First vessel launched on 17 July 2002 and second on 30 July 2002. Following acceptance on 17 October 2002, both vessels were shipped from St Petersburg on 14 December 2002. Two more are reported to have been delivered in 2007 and it is understood there is an option for a further six vessels.



SVETLYAK

9/2002, Almaz / 0530061

8 OSA II (PROJECT 205) CLASS
(FAST ATTACK CRAFT—MISSILE) (PTFG)

HQ 154

HQ 357-360

HQ 384-386

Displacement, tons: 245 full load

Dimensions, feet (metres): 126.8 × 24.9 × 8.8 (38.6 × 7.6 × 2.7)

Main machinery: 3 Type M 504 diesels; 10,800 hp(m) (7.94 MW) sustained; 3 shafts

Speed, knots: 37. Range, n miles: 500 at 35 kt

Complement: 30

Missiles: SSM: 4 SS-N-2B Styx; active radar or IR homing to 48 km (25 n miles) at 0.9 Mach; warhead 513 kg.

Guns: 4 USSR 30 mm/65 (2 twin); 500 rds/min to 5 km (2.7 n miles); weight of shell 0.54 kg.

Radars: Surface search: Square Tie; I-band.

Fire control: Drum Tilt; H/I band.

IFF: High Pole. 2 Square Head.

Comment: Transferred from USSR: two in October 1979, two in September 1980, two in November 1980 and two in February 1981. All based at Da Nang. Operational status doubtful.



OSA II 354

5/2000, Bob Fildes / 0105/40

5 TURYA (PROJECT 206M) CLASS
(FAST ATTACK CRAFT—HYDROFOIL) (PCK)

HQ 321

HQ 331-332

HQ 334-335

Displacement, tons: 190 standard; 250 full load

Dimensions, feet (metres): 129.9 × 29.9 (41 over foils) × 5.9 (13.1 over foils) (39.6 × 7.6 (12.5) × 1.8 (4))

Main machinery: 3 Type M 504 diesels; 10,800 hp(m) (7.94 MW) sustained; 3 shafts

Speed, knots: 40

Range, n miles: 600 at 35 kt foilborne; 1,450 at 14 kt hullborne

Complement: 30

Guns: 2 USSR 57 mm/75 AK 725 (twin, aft); 120 rds/min to 12.7 km (6.8 n miles); weight of shell 2.8 kg.
2 USSR 25 mm/80 (twin, fwd); 270 rds/min to 3 km (1.6 n miles); weight of shell 0.34 kg.

Torpedoes: 4 21 in (533 mm) tubes (not in all).

Depth charges: 2 racks.

Radars: Surface search: Pot Drum; H/I-band

Fire control: Muff Cob; G/H-band.

IFF: High Pole B. Square Head.

Sonars: Foal/Tail (not in all); VDS; high frequency

Comment: Transferred from USSR: two in mid-1984, one in late 1984, two in January 1986. Two more acquired from Russia. Two of the five do not have torpedo tubes or sonar. Two scrapped so far, the remainder are probably non-operational.



TURYA 331

5/2000, Bob Fildes / 0105/41

3 SHERSHEN (PROJECT 206T) CLASS
(FAST ATTACK CRAFT) (PTFM)

HQ 301 series

Displacement, tons: 145 standard; 170 full load

Dimensions, feet (metres): 113.8 × 22 × 4.9 (34.7 × 6.7 × 1.5)

Main machinery: 3 Type 503A diesels; 8,025 hp(m) (5.9 MW) sustained; 3 shafts

Speed, knots: 45

Range, n miles: 850 at 30 kt; 450 at 42 kt

Complement: 23

Missiles: SAM: 1 SA-N-5 Grail quad launcher; manual aiming; IR homing to 8 km (3.2 n miles) at 1.5 Mach, altitude to 2,500 m (8,000 ft); warhead 1.5 kg.

Guns: 4 USSR 30 mm/65 (2 twin); 500 rds/min to 5 km (2.7 n miles); weight of shell 0.54 kg.

Torpedoes: 4–21 in (533 mm) tubes (not in all).

Depth charges: 2 racks (12).

Mines: Can carry 6.

Radars: Surface search: Pot Drum; H/I-band

Fire control: Drum Tilt; H/I-band.

IFF: High Pole A. Square Head

Comment: A total of 16 transferred from USSR: two in 1973, two in April 1979 (without torpedo tubes), two in September 1979, two in August 1980, two in October 1980, two in January 1983 and four in June 1983. Most have been cannibalised for spares.



SHERSHEN (refitting in Haiphong)

8/2000, P Marsan / 0105742

14 ZHUK (PROJECT 1400M) CLASS (PB)

T 864

T 874

T 880

T 881

+10

Displacement, tons: 39 full load

Dimensions, feet (metres): 78.7 × 16.4 × 3.9 (24 × 5 × 1.2)

Main machinery: 2 Type M 401B diesels; 2,200 hp(m) (1.6 MW) sustained; 2 shafts

Speed, knots: 30

Range, n miles: 1,100 at 15 kt

Complement: 11 (3 officers)

Guns: 4–14.5 mm (2 twin) MGs

Radars: Surface search: Spin Trough; I-band.

Comment: Transferred: three in 1978, three in November 1979, one in November 1981, one in May 1985, three in February 1986, two in December 1989, two in January 1990, three in January 1996, two in January 1998 and two in April 1998. So far seven have been deleted but operational numbers are uncertain. Some are allocated to the Coast Guard.

990 Vietnam/Patrol forces – Amphibious forces

4 + (12) STOLKRAFT CLASS (PBR)

HQ 56-59

Displacement, tons: 44 full load
Dimensions, feet (metres): 73.5 × 24.6 × 3.9 (22.4 × 7.5 × 1.2)
Main machinery: 2 MTU 12V 183 TE93 diesels; 2,301 hp(m) (1.69 MW) sustained; 2 Doorn waterjets
 1 Volvo Penta diesel, 360 hp(m) (265 kW); 1 shaft
Speed, knots: 30
Complement: 7
Guns: 1 Oerlikon 20 mm

Comment: Four built by Oceanfast Marine, Western Australia and delivered in early 1997. Trimaran construction forward, transforming into a catamaran at the stern. Shallow draft needed for inshore and river operations. The centreline single shaft is used for loitering. The craft show the colours of the Customs department. Up to 12 more may have been built in Vietnam but this has not been confirmed.



STOLKRAFT

8/2005, *Kuvel/Marsan* / 1154063

4 MODIFIED ZHUK CLASS (PB)

HQ 37 HQ 55 BP-29-01-01 BP-29-98-01

Displacement, tons: 38 full load
Dimensions, feet (metres): 85.1 × 7 × 7 (29.0 × 7 × 7)
Main machinery: 2 Saab Scania diesels; 2,500 hp(m) (18.64 MW) sustained; 2 shafts
Speed, knots: 30
Complement: 11 (3 officers)
Guns: 2—12.7 mm MGs (2 twin).
Radars: Navigation I-band.

Comment: Built in Vietnam to design based on Zhuk class.



HQ 55 (under construction)

8/2000, *P Marsan* / 0105744

3 BP-29-12-01 PATROL CRAFT (PB)

BP-29-12-01 BP-33-11-01 BP-33-12-01

Displacement, tons: To be announced
Dimensions, feet (metres): To be announced
Main machinery: 2 diesels; 2 shafts
Speed, knots: To be announced
Guns: 2—12.7 mm MGs
Radars: Navigation I-band.

Comment: Indigenously-built patrol craft of an unknown type.



PATROL CRAFT

11/2004, *Marcel/Marsan* / 1154064

2 POLUCHAT (PROJECT 368) CLASS (COASTAL PATROL CRAFT) (PB/YPT)

Displacement, tons: 100 full load
Dimensions, feet (metres): 97.1 × 19 × 4.8 (29.6 × 5.8 × 1.5)
Main machinery: 2 Type M 50 diesels; 2,200 hp(m) (1.6 MW) sustained; 2 shafts
Speed, knots: 20. **Range, n miles:** 1,500 at 10 kt
Complement: 15
Guns: 2—12.7 mm MGs
Radars: Navigation: SpinTrough; I-band.

Comment: Both transferred from USSR in January 1990. Can be used as torpedo recovery vessels.



POLUCHAT (Russian colours)

7/1993, *Hartmut Ehlers* / 0506181

RIVER PATROL CRAFT

Comment: There are large numbers of river patrol boats, mostly armed with MGs. A 14.5 m craft ordered from Singapore TSE in 1994. More are being built locally with Volvo Penta engines.



RIVER PATROL BOAT

8/2000, *P Marsan* / 0105743

AMPHIBIOUS FORCES

Notes: There is a landing ship HQ 521 of approximately 72 m.

3 POLNOCHNY (PROJECT 771) CLASS (LCM)

HQ 511 (ex-SDK-71) HQ 512 (ex-SDK-112) HQ 513 (ex-SDK-74)

Displacement, tons: 760 standard; 834 full load
Dimensions, feet (metres): 246.1 × 31.5 × 7.5 (75 × 9.6 × 2.3)
Main machinery: 2 Kolomna Type 40-D diesels; 4,400 hp(m) (3.2 MW) sustained; 2 shafts
Speed, knots: 19
Complement: 40
Guns: 2 or 4 USSR 30 mm/65 (1 or 2 twin), 2—140 mm rocket launchers.
Radars: Surface search. SpinTrough; I-band
Fire control: DrumTilt; H/I-band

Comment: Transfers from USSR: one in May 1979 (B), one in November 1979 (A) and one in February 1980 (B). Details are for Polnochny B class. All are reported to be in poor condition.



HQ 512 and 513

6/1995, *Giorgio Arra* / 0084254

3 TANK LANDING SHIPS (LST)

TRAN KHANH DU (ex-Da Nang, ex-Marcopa County LST 938) HQ 501
VUNG TAU (ex Cochino County LST 603) HQ 502
QUI NONH (ex-Bulloch County LST 509) HQ 503

Displacement, tons: 2,366 beaching; 4,080 full load
Dimensions, feet (metres): 328 × 50 × 14 (100 × 15.2 × 4.3)
Main machinery: 2 GM 12-567A diesels; 1,800 hp (1.34 MW); 2 shafts
Speed, knots: 11 **Range, n miles:** 6,000 at 10 kt
Complement: 110
Guns: 8 Bofors 40 mm/60 (2 twin, 4 single), 4 Oerlikon 20 mm.

Comment: HQ 501 is LST 1-510 class and HQ 502 and 503 are LST 512 1152 class. All built in 1943-44. Transferred from US to South Vietnam in mid 1960s. Seldom seen at sea.



TRAN KHANH DU 8/2000 / 0105/45

30 LANDING CRAFT (LCM AND LCU)

Comment: About five LCUs, 12 LCM 8 and LCM 6, and three LCVPs remain of the 180 minor landing craft left behind by the USA in 1975. In addition there are about 10 TA LCU's acquired from the USSR in 1979.



LCU 6/2001 / 0131/363

MINE WARFARE FORCES

2 YURKA (RUBIN) (PROJECT 266) CLASS (MINESWEEPERS—OCEAN) (MSO)

HQ 851 HQ 885

Displacement, tons: 540 full load
Dimensions, feet (metres): 171.9 × 30.8 × 8.5 (52.4 × 9.4 × 2.6)
Main machinery: 2 Type M 503 diesels; 5,350 hp(m) (3.91 MW) sustained; 2 shafts
Speed, knots: 17 **Range, n miles:** 1,500 at 12 kt
Complement: 45
Guns: 4 USSR 30 mm/65 (2 twin), 500 rds/min to 5 km (2.7 n miles); weight of shell 0.54 kg.
Mines: 10.
Radars: Surface search Don 2; I-band.
Fire control: Drum Tilt; H/I-band
Sonars: Stag Ear; hull-mounted; active minshunting; high frequency.

Comment: Transferred from USSR December 1979. Steel-hulled, built in early 1970s.



YURKA (Egyptian colours) 10/1998, F Sadek / 001/818

4 SONYA (YAKHONT) (PROJECT 1265) CLASS (MINESWEEPERS/HUNTER—COASTAL) (MHSC)

HQ 861 HQ 862 (ex-BT-228) HQ 863 (ex-BT-296) HQ 864 (ex-BT-212)

Displacement, tons: 450 full load
Dimensions, feet (metres): 157.4 × 28.9 × 6.6 (48 × 8.8 × 2)
Main machinery: 2 Kolomna 9-D-8 diesels; 2,000 hp(m) (1.47 MW) sustained; 2 shafts
Speed, knots: 15 **Range, n miles:** 3,000 at 10 kt
Complement: 43
Guns: 2 USSR 30 mm/65 AK 630, 2—25 mm/80 (twin).
Mines: 8.
Radars: Surface search: Nayada; I-band.
Sonars: MG 69/79; active; high frequency.

Comment: First one transferred from USSR 16 February 1987, second in February 1988, third in July 1989, fourth in March 1990 Two based at Da Nang



SONYA 862 5/2000, R Fildes / 0105/745

2 YEVGENYA (KOROND) (PROJECT 1258) CLASS (MINEHUNTERS—INSHORE) (MHI)

HQ 782 HQ 871

Displacement, tons: 90 full load
Dimensions, feet (metres): 80.7 × 18 × 4.9 (24.6 × 5.5 × 1.5)
Main machinery: 2 Type 3-D-12 diesels; 600 hp(m) (440 kW) sustained; 2 shafts
Speed, knots: 11 **Range, n miles:** 300 at 10 kt
Complement: 10
Guns: 2 USSR 25 mm/80 (twin).
Mines: 8.
Radars: Surface search, Spin Trough; I-band.
Sonars: MG 7; active; high frequency

Comment: First transferred from USSR in October 1979; two in December 1986. One deleted in 1990



YEVGENYA (Ukraine colours) 6/2003, Ships of the world 0572652

5 K 8 (PROJECT 361T) CLASS (MINESWEEPING BOATS) (PBR)

Displacement, tons: 26 full load
Dimensions, feet (metres): 55.4 × 10.5 × 2.6 (16.9 × 3.2 × 0.8)
Main machinery: 2 Type 3-D-5 diesels; 300 hp(m) (220 kW) sustained; 2 shafts
Speed, knots: 18
Complement: 6
Guns: 2 14.5 mm (twin) MGs.

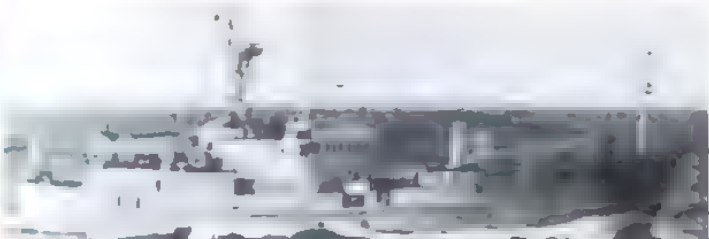
Comment: Transferred from USSR in October 1980. Probably used as river patrol craft

SURVEY AND RESEARCH SHIPS

1 KAMENKA (PROJECT 870) CLASS (AGS)

Displacement, tons: 760 full load
Dimensions, feet (metres): 175.5 × 29.8 × 8.5 (53.5 × 9.1 × 2.6)
Main machinery: 2 Sulzer diesels; 1,800 hp(m) (1.32 MW); 2 shafts, cp props
Speed, knots: 14 **Range, n miles:** 4,000 at 10 kt
Complement: 25
Radars: Navigation: Don 2; I-band.

Comment: Transferred from USSR December 1979. Built at Northern Shipyard, Gdansk in the late 1960s. May be civilian manned



KAMENKA (Russian colours) 1984 / 0506/127

0 + 1 SURVEY SHIP (AGSH)

Name	No	Builders	Laid down	Launched	Commissioned
-	-	SongThu, Danang	26 July 2008	2010	2011

Displacement, tons: To be announced
Dimensions, feet (metres): 217.5 x 50.2 x 10.2 (66.3 x 13.2 x 3.1)
Main machinery: Diesel-electric; 3 diesel generators; 2,852 hp(m) (1.95 MW); 1 motor; 1,073 hp(m) (800 kW); 2 azimuth thrusters; 1 bow thruster
Speed, knots: 12 **Range, n miles:** 3,000 at 12 kt
Complement: 13 (accommodation for 71)
Radars: Navigation: E/F- and I-band.
Sonars: Multi and single beam; high frequency; active

Comment: Damen 6613 design multipurpose hydrographic and oceanographic survey, training and mine countermeasures vessel. The ship is to be a derivative of the Snellius-class vessels built for the RNLN and is similar to the ship that entered Thai service in 2008. This ship is being built by SongThu Company in Danang, Vietnam from a design and material package supplied by Damen Shipyards, Gorinchem. The hydrographical survey equipment is to be supplied by Atlas.



DAMEN 6613 12/2005, Damen Shipyards / 1159274

20 OFFSHORE SUPPLY VESSELS (AKL)

TRUONG HQ 966	HQ 601	HQ 618-619	HQ 651	HQ 673
BD 621-622	HQ 608	HQ 627	HQ 681	HQ 996
BD 630-632	HQ 614	HQ 643	HQ 669-671	

Measurement, tons: 1,000 dwt
Dimensions, feet (metres): 231.6 x 38.7 x 13.1 (70.5 x 11.8 x 4)
Main machinery: 1 diesel; 1 shaft
Speed, knots: 12
Complement: 30

Comment: Details are for HQ 966 launched at HaLong Shipyard in June 1994. This is one of a group of 20 freighters reported as used by the Navy for coastal transport, and to service the Spratleys garrison. BD pennant numbers have been assigned to Spratly Islands service. The ships are of various sizes and include fishing vessels adapted for supply tasks. All are likely to be armed with machine guns.



BD 621 (old number) 3/1997 / 0050747

AUXILIARIES

Notes: In addition to the vessels listed below there are two YOG 5 fuel lighters, two floating cranes, two ex-USSR unarmed Nyrpat 2 diving tenders and approximately 10 harbour tugs.

1 VODA (PROJECT 561) CLASS (WATER TANKER) (AWT)

BO 82 (ex-MVT 19)

Displacement, tons: 2,115 full load
Dimensions, feet (metres): 267.4 x 37.7 x 14.1 (81.5 x 11.5 x 4.3)
Main machinery: 2 diesels; 1,600 hp (1.2 MW); 2 shafts
Speed, knots: 12
Range, n miles: 3,000 at 10 kt
Complement: 38
Radars: Navigation: Don 2; I-band

Comment: Built by Yantar, Kaliningrad, in the 1950s. Probably an ex-Russian Pacific Fleet unit transferred in about 1996. Carries about 1,000 tons of water.

1 SORUM (PROJECT 745) CLASS (ATA)

III

Displacement, tons: 1,660 full load
Dimensions, feet (metres): 190.2 x 41.3 x 15.1 (58.0 x 12.6 x 4.6)
Main machinery: Diesel-electric; 2 Type 2-DW2 diesel generators; 2,900 hp (2.13 MW); 1 motor; 2,000 hp (1.47 MW); 1 shaft
Speed, knots: 14
Range, n miles: 3,500 at 13 kt
Complement: 35
Radars: Navigation: I-band

Comment: Ocean tug built at Yaroslavl. Transferred from Russia in 1995

2 FLOATING DOCKS

Comment: One has a lift capacity of 8,500 tons. Transferred from USSR August 1983. Second one (Kheresson) has a lift capacity of 4,500 tons and was supplied in 1988.



Virgin Islands (UK)

Country Overview

A British dependency, the British Virgin Islands are situated in the eastern Caribbean Sea at the northern end of the Leeward Islands in the Lesser Antilles chain. Puerto Rico lies some 52 n miles to the west. Comprising a group of 36 islands, 16 of them inhabited, and more than 20 islets and cays there are four main islands: Tortola (21 square miles); Anegada

(15 square miles); Virgin Gorda (8 square miles); and Jost Van Dyke (3.5 square miles). Other inhabited islands include Peter Island, Cooper Island, Beef Island, Salt Island, and Norman Island. The capital, only town and principal port is Road Town, Tortola. Territorial seas (3 n miles) and a Fishery Zone (200 n miles) are claimed. The remainder of the Virgin Islands form a separate external territory of the US.

Headquarters Appointments

Commissioner of Royal Virgin Islands Police Force: Reynell Frazer

Bases

Road Town, Tortola

POLICE

Notes: (1) There is also a 12 m Scarab, fitted with three 225 hp outboard motors, and a 10 m Mako with two 150 hp outboards. (2) Two Dauntless class 12 m patrol boats are operated by the US Virgin Islands whose waters are also patrolled by USCG craft.

1 DAUNTLESS CLASS (PATROL CRAFT) (PB)

ST URSULA

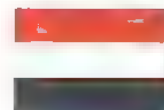
Displacement, tons: 17.4 full load
Dimensions, feet (metres): 55.0 x 16.0 x 5.0 (16.8 x 4.9 x 1.5)
Main machinery: 2 Caterpillar C-15 diesels; 1,600 hp (1.2 MW); 2 shafts
Speed, knots: 32
Range, n miles: 300 at 28 kt
Complement: 4
Radars: Navigation: Furuno; I-band.

Comment: Dauntless design craft constructed by SeaArk Marine, Monticello, AR, and delivered on 1 December 2006 to replace previous vessel of same name decommissioned in 2003. Aluminium construction. The craft is employed on drug interdiction, combating illegal immigration, search and rescue and border control duties.



ST URSULA 12/2006, SeaArk Marine / 1167566

Yemen



Country Overview

The Republic of Yemen was formed in 1990 through the union of the People's Democratic Republic of Yemen and the Yemen Arab Republic. The country includes the islands of Socotra, Kamaran and Perim. With an area of 207,285 square miles, it is situated on the south-west coast of the Arabian Peninsula and is bordered to the north by Saudi Arabia and to the east by Oman. It has a 1,030 n mile coastline with the Red Sea and the Gulf of Aden, which are linked by a strategic strait, the Bab el Mandeb.

The capital and largest city is Sanaa while the principal ports are Aden and Al Hudaydah. Territorial seas (12 n miles) are claimed. A 200 n mile EEZ has been claimed but the limits have only been partly defined by boundary agreements.

Personnel

2009: 1,700 naval plus 500 marines

Bases

Main Aden, Hodeida
Secondary: Mukalla, Perim, Socotra, Al Katib
Coast Defence regions: Al Ghaydah, Aden and Cameron Island

Coast Defence

Two mobile SS-C-3 Styx batteries. Some 100 mm guns installed in tank turrets at Perim Island

PATROL FORCES

Notes: (1) In addition there are two 'Osa IIs', 122 and 124. One is in a poor state of repair and may have been decommissioned. The other was sighted in a floating dock in mid-2002 and may be seaworthy, although the SSM system is probably not operational.
(2) Three 32 m Hatter Marine Broadsword patrol craft have been reported: 26th of September (141); Sanaa (200); Ghamdan (300).
(3) There are 13 11 m Sea Spirit patrol craft.

1 TARANTUL I CLASS (PROJECT 1241) (FSGM)

124 (ex-971)

Displacement, tons: 385 standard, 580 full load

Dimensions, feet (metres): 184.1 × 37.7 × 8.2 (56.1 × 11.5 × 2.5)

Main machinery: 2 Nikolayev Type DR 77 gas turbines; 16,016 hp(m) (11.77 MW) sustained, 2 Nikolayev Type DR 76 gas turbines with reversible gearboxes; 4,993 hp(m) (3.67 MW) sustained; 2 shafts

Speed, knots: 36

Range, n miles: 400 at 36 kt; 2,000 at 20 kt

Complement: 50

Missiles: SSM: 4 SS-N-2C Styx (2 twin) launchers; active radar or IR homing to 83 km (45 n miles) at 0.9 Mach; warhead 513 kg, sea-skimmer at end of run.

SAM: SA-N-5 Grail quad launcher; manual aiming; IR homing to 10 km (5.4 n miles) at 1.5 Mach; altitude to 2,500 m (8,000 ft); warhead 1.1 kg

Guns: 1—3 in (76 mm)/59 AK 176; 120 rds/min to 5.9 km (3.8 n miles); weight of shell 7 kg.

2—30 mm/65 AK 630; 6 barrels per mounting; 3,000 rds/min to 2 km.

Countermeasures: Decoys; 2 PK 16 chaff launchers.

Weapons control: Hood Wink optronic director.

Radars: Air/surface search: Plank Shave (also for missile control), E-band

Navigation: Spin Trough; I-band.

Fire control: Bass Tilt; H/I-band.

IFF: Square Head. High Pole.

Programmes: Two export versions of the ship originally delivered from the USSR. First one on 7 December 1990, second on 15 January 1991. One decommissioned by 2001.

Operational: Facilities for servicing missiles in Aden were destroyed in mid-1994. This remaining ship is still in a reasonable state of repair although probably without missiles.



TARANTUL 124

10/1995 / 0016617

3 HOUNAN (TYPE 021) CLASS (FAST ATTACK CRAFT—MISSILE) (PTG)

126–128

Displacement, tons: 171 standard; 205 full load

Dimensions, feet (metres): 126.6 × 24.9 × 8.9 (38.6 × 7.6 × 2.7)

Main machinery: 3 Type 42-160 diesels, 12,000 hp(m) (8.8 MW) sustained; 3 shafts

Speed, knots: 34

Range, n miles: 800 at 30 kt

Complement: 28

Missiles: SSM: 4 YJ-1 (Eagle Strike) (C-801); inertial cruise; active radar homing to 40 km (22 n miles) at 0.9 Mach; warhead 165 kg; sea-skimmer

Guns: 4 30 mm (2 twin AK 230), 500 rds/min to 5 km (2.7 n miles).

Radars: Surface search: Square Tie; I-band.

Fire control: Rice Lamp; H/I-band.

IFF: 2 Square Head. High Pole A.

Comment: A variation of the Chinese Huangfen (Osa 1 type) class design. Delivered on 6 June 1995 at Aden having been built by the China Shipbuilding Corporation and completed in 1993. Payment was delayed by the Yemeni civil war. Based at Al Katib. 128 ran aground in September 1997 but was salvaged and may be operational again. 126 is in a reasonable state of repair but is not armed with missiles.



HOUNAN 126

5/1995 / 0505339

6 BAKLAN (CMN 15-60) CLASS (HSIC)

BAKLAN 1201
SIYAN 1202

ZUHRAB 1203
AKISSAN 1204

HUNAISH 1205
ZAKR 1206

Displacement, tons: 12 full load

Dimensions, feet (metres): 50.9 × 9.8 × 2.6 (15.5 × 3 × 0.8)

Main machinery: 2 diesels; 2 surface drives

Speed, knots: 55

Range, n miles: 400 at 30 kt

Complement: 4

Guns: 2—12.7 mm MGs

Radars: Surface search: Furuno, I-band.

Comment: Ordered from CMN Cherbourg on 3 March 1996. First five were delivered 1 August 1996 and the last one in mid-1997. Top speed in Sea States up to 3. Composite hull construction.



BAKLAN CLASS

8/1996, C M N Cherbourg / 0084259

10 AUSTAL PATROL SHIPS (PB)

P 1022–1031

Displacement, tons: 90 full load

Dimensions, feet (metres): 123.0 × 23.6 × 7.2 (37.5 × 7.2 × 2.2)

Main machinery: 2 Caterpillar 3512 diesels; 3,500 hp (2.61 MW); 2 shafts

Speed, knots: 29

Range, n miles: 1,000 at 25 kt

Complement: 19 (3 officers)

Guns: 2—14.5 mm (twin), 2—12.7 mm MGs.

Comment: Contract with Austal Ships on 9 June 2003 for a total of 10 patrol craft. All were shipped to Yemen in February 2005. Of aluminium construction, the design is based on the Bay class Australian Customs vessels. The contract included engineering and practical training for 60 Yemeni crew.



P 1022

3/2007 / 11/00245

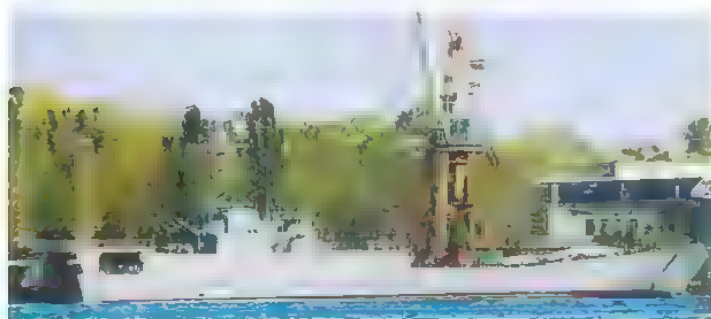
AMPHIBIOUS FORCES

Notes: Ropucha 139 is an alongside hulk

1 NS-722 CLASS (LSMM)**MSMs**

Displacement, tons: 1,383 full load
Dimensions, feet (metres): 295.4 × 31.8 × 7.9 (90 × 9.7 × 2.4)
Main machinery: 2 Caterpillar diesels; 5,670 hp (4.2 MW); 2 shafts
Speed, knots: 18
Complement: 49
Military lift: 6 T-72 tanks and 111 marines
Missiles: SAM SA-16 or ZM Mesko
Guns: 4 ZSU-23-2MR Wrobel 23 mm (2 twin)

Comment: Ordered in late 1999 for delivery in 2002, development of the Poinochny class built by Naval Shipyard Gdynia, Poland. Shipped from Poland to Yemen on 24 May 2002. Roles include disaster relief and cadet training as well as amphibious warfare



BILQIS

10/2001, J Ciślak / 0131343

3 DEBA CLASS (PROJECT NS-717) (LCU)

HIMYER (ex-Dhaffar) SAMBA ABDULKORI (ex-Thamoud)

Displacement, tons: 221 full load
Dimensions, feet (metres): 134.5 × 23.3 × 5.6 (41 × 7.1 × 1.7)
Main machinery: 2 Cummins diesels; 2 shafts
Speed, knots: 15. **Range, n miles:** 500 at 14.5 kt
Complement: 10
Military lift: 16 tons and 50 troops
Guns: 2 ZU-23-2MR Wrobel 23 mm/87 (1 twin)
 2—12 7 mm MGs
Radars: Navigation, I-band

Comment: Ordered from Poland in October 1999 and delivered in mid-2001. AK-630 CIWS may also be fitted at a later date



ABDULKORI (on transport ship)

5/2001, J Ciślak / 0131342

MINE WARFARE FORCES**1 NATYA CLASS (PROJECT 266ME) (MINESWEEPER—OCEAN) (MSO)**

201

Displacement, tons: 804 full load
Dimensions, feet (metres): 200.1 × 33.5 × 10.8 (61 × 10.2 × 3)
Main machinery: 2 Type M 504 diesels; 5,000 hp(m) (3.67 MW) sustained; 2 shafts; cp props
Speed, knots: 16. **Range, n miles:** 3,000 at 12 kt
Complement: 67
Guns: 4—30 mm/85 (2 twin); 500 rds/min to 5 km (2.7 n miles); weight of shell 0.54 kg.
 4—25 mm/80 (2 twin); 270 rds/min to 3 km (1.6 n miles); weight of shell 0.34 kg
A/S mortars: 2 RBU 1200 five-tubed fixed launchers; range 1,200 m; warhead 34 kg
Mines: 10
Countermeasures: MCM: Carries contact, acoustic and magnetic sweeps.
Radars: Surface search. Don 2; I-band.
Sonars: MG 69/79, hull-mounted; active minehunting, high frequency.

Comment: Transferred from USSR in February 1991. Operational status doubtful. A second of class was delivered to Ethiopia in October 1991 but sheltered in Aden for a time in 1992



NATYA 201

6/2002, Rahn/Globke / 0530089

5 YEYGENYA (PROJECT 1258) CLASS (MINEHUNTERS) (MHC)

11-12 15 20 +1

Displacement, tons: 90 full load
Dimensions, feet (metres): 80.7 × 18 × 4.9 (24.6 × 5.5 × 1.5)
Main machinery: 2 Type 3-D-12 diesels; 600 hp(m) (440 kW) sustained, 2 shafts
Speed, knots: 11
Range, n miles: 300 at 10 kt
Complement: 10
Guns: 2—25 mm/80 (twin).
Radars: Navigation. Spin Trough, I-band
Sonars: MG 7 small transducer lifted over stern on crane.

Comment: GRP hulls. Two transferred from USSR in May 1982, third in November 1987 and three more in March 1990. One deleted in 1994. Two based at Aden and three at Al Katib. Operational status doubtful



YEVGENYA 20

2/1997 0016615

AUXILIARIES

Notes: (1) A 4,500 ton Floating Dock acquired from the USSR
 (2) A 14 m Hydrographic craft acquired from Cougar Marine in 1988
 (3) An oil-pollution control craft acquired in 1999
 (4) Two Toplivo class tankers, 135 and 140, are reported to have been decommissioned.

COAST GUARD

Notes: (1) The Yemeni Coast Guard was established in 2002 and began operating in 2003. Its tasks include counter-smuggling and immigration control duties, SAR, fishery protections, environmental protection and pollution control. Its headquarters are at Sana'a with regional headquarters at Aden (Gulf of Aden), Hodeidah (Red Sea) and Mukalla (Arabian Sea). There are plans to establish a coastal radar system with Italian assistance.

(2) In addition to the craft listed, there are reported to be a Fairey Marine Tracker II (1034), four Plassco 15 m fast patrol craft (1501-1504) and three Geraldton 23 m patrol craft (2201-2203).



P 2202

3/2007 / 1170746

16 PATROL CRAFT (PC)

1301-1316

Displacement, tons: 177 full load
Dimensions, feet (metres): 44.0 × 12.5 × 3.9 (13.4 × 3.8 × 1.2)
Main machinery: 2 General Motors Detroit 6V53 diesels, 2 shafts
Speed, knots: 13
Range, n miles: 200 at 11 kt
Complement: 4

Comment: Former US Coast Guard lifeboats constructed in the 1960s. First eight transferred on 16 February 2004 and the remainder in 2006.

2 ARCHANGEL CLASS (RESPONSE BOATS) (PBF)

Displacement, tons: To be announced
Dimensions, feet (metres): 42.0 × 13.0 × 2.5 (12.8 × 4.0 × 0.8)
Main machinery: 2 Caterpillar diesels; 2 Hamilton 322 waterjets
Speed, knots: 40
Range, n miles: 300 at 25 kt
Complement: 4
Guns: 1 12.7 mm MG
Radars: To be announced.

Comment: High-speed inshore patrol craft of aluminium construction and foam collar built by SAFE Boats International, Port Orchard, Washington. Donated by the US government in October 2005.



ARCHANGEL CLASS

6/2006, SAFE BOATS / 1167667

4 DEFENDER CLASS (RESPONSE BOATS) (PBF)

0801-0804

Displacement, tons: 2.7 full load
Dimensions, feet (metres): 25.0 × 8.5 × 8.8 (7.6 × 2.6 × 2.7)
Main machinery: 2 Honda outboard motors; 450 hp (335 kW)
Speed, knots: 46 **Range, n miles:** 175 at 35 kt
Complement: 4
Guns: 1 12.7 mm MG
Radars: To be announced

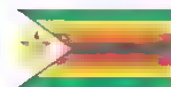
Comment: High speed inshore patrol craft of aluminium construction and foam collar built by SAFE Boats International, Port Orchard, Washington. Donated by the US government in October 2005.



DEFENDER 0804

6/2006, SAFE BOATS / 1167668

Zimbabwe

**Country Overview**

The Republic of Zimbabwe gained independence on 17 April 1980. Formerly the British colony of Southern Rhodesia and, between 1953 and 1963, part of the Federation of Rhodesia and Nyasaland (now Malawi), a unilateral declaration of independence on 11 November 1965 precipitated a turbulent period of guerrilla war. This eventually led

to a peace settlement in 1979 and elections in 1980. A landlocked country with an area of 150,873 square miles, it is situated in central southern Africa and is bordered to the north by Zambia, to the east by Mozambique, to the south by South Africa and to the west by Botswana and Namibia. It has a shoreline of approximately 350 n miles with Lake Kariba, artificially formed by the Kariba Dam, from which the country gets much of its electric power

The capital, largest city and commercial centre is Harare (formerly Salisbury). The railway system is linked to the port of Beira in Mozambique

Bases

Kariba, Binga

PATROL FORCES

2 RODMAN 46HJ CLASS (PB)

Displacement, tons: 12.5 full load
Dimensions, feet (metres): 45.9 × 12.5 × 2.0 (14.0 × 3.8 × 0.6)
Main machinery: 2 Caterpillar 3280 diesels; 850 hp (633 kW)
Speed, knots: 30
Range, n miles: 350 at 18 kt
Complement: 4

Comment: GRP hull. Built in 1999 by Rodman, Vigo. Operated by Zimbabwe Police.



RODMAN 46

6/1999, Rodman / 05/01948

3 RODMAN 38 CLASS (PB)

Displacement, tons: 10 full load
Dimensions, feet (metres): 38.1 × 12.8 × 2.3 (11.0 × 3.9 × 0.7)
Main machinery: 2 diesels; 2 waterjets
Speed, knots: 28
Range, n miles: 300 at 15 kt
Complement: 4

Comment: GRP hull. Built in 1999 by Rodman, Vigo. Operated by Zimbabwe Police



RODMAN 38

6/1999, Rodman / 05/11006

5 RODMAN 790 CLASS (PB)

Displacement, tons: 2.4 full load
Dimensions, feet (metres): 26.6 × 8.9 × 2.3 (8.1 × 2.72 × 0.7)
Main machinery: 2 Volvo PentaTAMD diesels
Speed, knots: 30
Complement: 2

Comment: GRP hull. Built in 1999 by Rodman, Vigo. Operated by Zimbabwe Police.



RODMAN 790

6/1999, Rodman / 05/10999

Indexes

Country abbreviations

Aib	Albania	DR	Dominican Republic	Lat	Latvia	San	Samoa
Alg	Algeria	Ecu	Ecuador	Lby	Libya	Sar	Saudi Arabia
Ana	Anguilla	Egy	Egypt	Lcb	Lebanon	Sen	Senegal
Ang	Angola	EIS	El Salvador	Lit	Lithuania	Ser	Serbia
Ant	Antigua and Barbuda	EqG	Equatorial Guinea	Mex	Macedonia, Former Yugoslav Republic of	Sey	Seychelles
Arg	Argentina	Eri	Eritrea	Mad	Madagascar	Sin	Singapore
Aus	Australia	Est	Estonia	Mes	Mexico	SL	Sierra Leone
Az	Azerbaijan	ETim	East Timor	Mic	Micronesia, Federated States of	Slo	Slovenia
Ban	Bangladesh	Fag	Faroe Islands	MI	Marshall Islands	Sol	Solomon Islands
Bar	Barbados	FI	Falkland Islands	Mic	Micronesia, Federated States of	Spn	Spain
Bel	Belgium	Fiji	Fiji	Mld	Maldives	Sri	Sri Lanka
Ben	Benin	Fin	Finland	Mlt	Malta	StK	St Kitts and Nevis
Bhm	Bahamas	Fra	France	Mlw	Malawi	StL	St Lucia
Bhr	Bahrain	Gab	Gabon	Mly	Malaysia	StV	St Vincent and the Grenadines
BIGT	British Indian Ocean Territory	Gam	Gambia	Mon	Montenegro	Sud	Sudan
Biz	Belize	GB	Guinea-Bissau	Mor	Morocco	Sw	Switzerland
Bmd	Bermuda	Geo	Georgia	Moz	Mozambique	Swe	Sweden
Bol	Bolivia	Ger	Germany	Mun	Mauritania	Syr	Syria
Bra	Brazil	Gha	Ghana	Mri	Mauritius	Taj	Tajikistan
Brs	Brazil	Gn	Guinea	Myn	Myanmar	TKM	Turkmenistan
Bul	Bulgaria	Gra	Grenada	Nam	Namibia	Ton	Tonga
Can	Canada	Grc	Greece	NATD	NATO	Trn	Trinidad and Tobago
Can	Canada	Gua	Guatemala	Nic	Nicaragua	Tun	Tunisia
Cay	Cayman Islands	Guy	Guyana	Nig	Nigeria	Tur	Turkey
Chi	Chile	HK	Hong Kong	Nld	Netherlands	Tuz	Turkmenistan
CI	Cook Islands	Hon	Honduras	Nor	Norway	Uzb	Uzbekistan
Cmb	Cambodia	Hun	Hungary	NZ	New Zealand	UAE	United Arab Emirates
Col	Colombia	Ice	Iceland	Om	Oman	UK	United Kingdom
Com	Comoros	Ind	India	Pak	Pakistan	USA	United States
ConD	Cong. Democratic Republic	Indo	Indonesia	Pal	Palestine	Ven	Venezuela
CPR	China, People's Republic	Iran	Iran	Pan	Panama	VI	Virgin Islands, UK
Cpv	Cape Verde	Iraq	Iraq	Par	Paraguay	VN	Vietnam
CR	Cosia Rica	Ire	Ireland	Per	Peru	Yem	Yemen
Cro	Croatia	Isr	Israel	Pfp	Philippines	Zim	Zimbabwe
Cil	Côte d'Ivoire	Ita	Italy	PNG	Papua New Guinea		
Cub	Cuba	Jam	Jamaica	Pol	Poland		
Cyp	Cyprus (Republic)	Jor	Jordan	Por	Portugal		
Den	Denmark	Jpn	Japan	Qat	Qatar		
Dji	Djibouti	Kaz	Kazakhstan	RoK	Korea, Republic of (South)		
Dom	Dominica	Ken	Kenya	Rom	Romania		
DPKR	Korea, Democratic People's Republic (North)	Kir	Kiribati	Rus	Russian Federation		
		Kwt	Kuwait	SA	South Africa		

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1st Lt Harry L. Martin (US)	960	Abaleme (Can)	125	Acera (US)	964	Acacia (Tur)	86	Aiyar Ma (Myn)	517
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3 de Noviembre (Pan)	593	Abdul Rahim Ali Jaded (Bhr)	49	Adang (Thl)	813	Agradoot (Ban)	59	Ajay (Ind)	841
4 de Noviembre (Pan)	593	Abdullah (Yem)	984	Adar (US)	715	Agri (Thl)	41	Ajera (Bhr)	76
5 de Noviembre (Pan)	593	Abdelhak (Yem)	984	Adelade (AusD)	35	AGS 5166 (Jpn)	47	Ajoni (Fra)	273
6 of October (Egy)	77	Abesha II (Sri)	62	Adelle (US)	967	Aia (Sri)	865	Aia (Ind)	841
10 de Noviembre (Pan)	593	Abette Boatman (Fra)	324	Adept (US)	953	Aia (Sri)	865	AK 1776 (Ger)	704
15 de Noviembre (Uru)	775	Abette Flanck (Fra)	274	ADF 104, 106-107 (Per)	615	Aguascalientes (Mex)	526	Akca (K. S. Tur)	686
18 Mart (Tur)	828	Abette Langrenee (Fra)	274	Adhara (Mex)	520	Aguayay (Per)	520	Akca (K. S. Tur)	686
18 of June (Egy)	717	Abette Libert (Fra)	274	Adhara II (Arg)	74	Aguayay (Per)	520	Akademik Vladimir Kotelnikov (Rus)	695
21 of October (Egy)	217	Aber Wnach (Fra)	776	Adhara III (Arg)	526	Aguayay (Per)	520	Akagi (Jpn)	44
23 of July (Egy)	27	Abha (S. Ar)	712	Adhara IV (Arg)	526	Aguayay (Per)	520	Akai (Tur)	841
25 de Agosto (Uru)	95	Abhay (Ind)	341	Adhara V (Arg)	526	Aguayay (Per)	520	Akai (Tur)	841
25 of April (Egy)	217	Adnan Burgess (US)	969	Adhara VI (Arg)	526	Aguayay (Per)	520	Akai (Tur)	841
26 de Noviembre (Pan)	593	Adn (US)	957	Adhara VII (Arg)	526	Aguayay (Per)	520	Akai (Tur)	841
101 series (Swe)	75	Abou Abdallah El Avachi (Mor)	536	Adhara VIII (Arg)	526	Aguayay (Per)	520	Akai (Tur)	841
		Aboubakar Ben. Auer (Mor)	510	Adhara IX (Arg)	526	Aguayay (Per)	520	Akai (Tur)	841
		Abraham Lincoln (US)	917	Adhara X (Arg)	526	Aguayay (Per)	520	Akai (Tur)	841
		Abrolhos (Brs)	82	Adhara XI (Arg)	526	Aguayay (Per)	520	Akai (Tur)	841
		Abysalon (Den)	497	Adhara XII (Arg)	526	Aguayay (Per)	520	Akai (Tur)	841
		Abu Al Barak (Mor)	536	Adhara XIII (Arg)	526	Aguayay (Per)	520	Akai (Tur)	841
		Abu Dhabi (UAE)	857	Adhara XIV (Arg)	526	Aguayay (Per)	520	Akai (Tur)	841
		Abu J. Gasson (US)	771	Adhara XV (Arg)	526	Aguayay (Per)	520	Akai (Tur)	841
		Abu Qadaf (S. Ar)	712	Adhara XVI (Arg)	526	Aguayay (Per)	520	Akai (Tur)	841
		Abu Qar (Egy)	274	Adhara XVII (Arg)	526	Aguayay (Per)	520	Akai (Tur)	841
		Abukuma (Jpn)	426	Adhara XVIII (Arg)	526	Aguayay (Per)	520	Akai (Tur)	841
		Abv (Ch)	150	Adhara XIX (Arg)	526	Aguayay (Per)	520	Akai (Tur)	841
		Abumar (DR)	202	Adhara XX (Arg)	526	Aguayay (Per)	520	Akai (Tur)	841
		Abumar (Mex)	520	Adhara XXI (Arg)	526	Aguayay (Per)	520	Akai (Tur)	841
		Abumar (S. Ar)	712	Adhara XXII (Arg)	526	Aguayay (Per)	520	Akai (Tur)	841
		Abumar (US)	954	Adhara XXIII (Arg)	526	Aguayay (Per)	520	Akai (Tur)	841
		Abumar (Spn)	749	Adhara XXIV (Arg)	526	Aguayay (Per)	520	Akai (Tur)	841
		Achame (Fra)	274	Adhara XXV (Arg)	526	Aguayay (Per)	520	Akai (Tur)	841
		Achenon (Fra)	206	Adhara XXVI (Arg)	526	Aguayay (Per)	520	Akai (Tur)	841
		Acheher (Mex)	520	Adhara XXVII (Arg)	526	Aguayay (Per)	520	Akai (Tur)	841
		Achimota (Ch)	299	Adhara XXVIII (Arg)	526	Aguayay (Per)	520	Akai (Tur)	841
		Aconcuaga (Ch)	126	Adhara XXIX (Arg)	526	Aguayay (Per)	520	Akai (Tur)	841
				Adhara XXX (Arg)	526	Aguayay (Per)	520	Akai (Tur)	841
				Adhara XXXI (Arg)	526	Aguayay (Per)	520	Akai (Tur)	841
				Adhara XXXII (Arg)	526	Aguayay (Per)	520	Akai (Tur)	841
				Adhara XXXIII (Arg)	526	Aguayay (Per)	520	Akai (Tur)	841
				Adhara XXXIV (Arg)	526	Aguayay (Per)	520	Akai (Tur)	841
				Adhara XXXV (Arg)	526	Aguayay (Per)	520	Akai (Tur)	841
				Adhara XXXVI (Arg)	526	Aguayay (Per)	520	Akai (Tur)	841
				Adhara XXXVII (Arg)	526	Aguayay (Per)	520	Akai (Tur)	841
				Adhara XXXVIII (Arg)	526	Aguayay (Per)	520	Akai (Tur)	841
				Adhara XXXIX (Arg)	526	Aguayay (Per)	520	Akai (Tur)	841
				Adhara XL (Arg)	526	Aguayay (Per)	520	Akai (Tur)	841
				Adhara XLI (Arg)	526	Aguayay (Per)	520	Akai (Tur)	841
				Adhara XLII (Arg)	526	Aguayay (Per)	520	Akai (Tur)	841
				Adhara XLIII (Arg)	526	Aguayay (Per)	520	Akai (Tur)	841
				Adhara XLIV (Arg)	526	Aguayay (Per)	520	Akai (Tur)	841
				Adhara XLV (Arg)	526	Aguayay (Per)	520	Akai (Tur)	841
				Adhara XLVI (Arg)	526	Aguayay (Per)	520	Akai (Tur)	841
				Adhara XLVII (Arg)	526	Aguayay (Per)	520	Akai (Tur)	841
				Adhara XLVIII (Arg)	526	Aguayay (Per)	520	Akai (Tur)	841
				Adhara XLIX (Arg)	526	Aguayay (Per)	520	Akai (Tur)	841
				Adhara L (Arg)	526	Aguayay (Per)	520	Akai (Tur)	841
				Adhara LI (Arg)	526	Aguayay (Per)	520	Akai (Tur)	841
				Adhara LII (Arg)	526	Aguayay (Per)	520	Akai (Tur)	841
				Adhara LIII (Arg)	526	Aguayay (Per)	520	Akai (Tur)	841
				Adhara LIV (Arg)	526	Aguayay (Per)	520	Akai (Tur)	841
				Adhara LV (Arg)	526	Aguayay (Per)	520	Akai (Tur)	841
				Adhara LVI (Arg)	526	Aguayay (Per)	520	Akai (Tur)	841
				Adhara LVII (Arg)	526	Aguayay (Per)	520	Akai (Tur)	841
				Adhara LVIII (Arg)	526	Aguayay (Per)	520	Akai (Tur)	841
				Adhara LIX (Arg)	526	Aguayay (Per)	520	Akai (Tur)	841
				Adhara LX (Arg)	526	Aguayay (Per)	520	Akai (Tur)	841
				Adhara LXI (Arg)	526	Aguayay (Per)	520	Akai (Tur)	841
				Adhara LXII (Arg)	526	Aguayay (Per)	520	Akai (Tur)	841
				Adhara LXIII (Arg)	526	Aguayay (Per)	520	Akai (Tur)	841
				Adhara LXIV (Arg)	526	Aguayay (Per)	520	Akai (Tur)	841
				Adhara LXV (Arg)	526	Aguayay (Per)	520	Akai (Tur)	841
				Adhara LXVI (Arg)	526	Aguayay (Per)	520	Akai (Tur)	841
				Adhara LXVII (Arg)	526	Aguayay (Per)	520	Akai (Tur)	841
				Adhara LXVIII (Arg)	526	Aguayay (Per)	520	Akai (Tur)	841
				Adhara LXIX (Arg)	526	Aguayay (Per)	520	Akai (Tur)	841
				Adhara LXX (Arg)	526	Aguayay (Per)	520	Akai (Tur)	841
				Adhara LXXI (Arg)	526	Aguayay (Per)	520	Akai (Tur)	841
				Adhara LXXII (Arg)	526	Aguayay (Per)	520	Akai (Tur)	841
				Adhara LXXIII (Arg)	526	Aguayay (Per)	520	Akai (Tur)	841
				Adhara LXXIV (Arg)	526	Aguayay (Per)	520	Akai (Tur)	841
				Adhara LXXV (Arg)	526	Aguayay (Per)	520	Akai (Tur)	841
				Adhara LXXVI (Arg)	526	Aguayay (Per)	520	Akai (Tur)	841
				Adhara LXXVII (Arg)	526	Aguayay (Per)	520	Akai (Tur)	841
				Adhara LXXVIII (Arg)	526	Aguayay (Per)	520	Akai (Tur)	841
				Adhara LXXIX (Arg)	526	Aguayay (Per)	520	Akai (Tur)	841
				Adhara LXXX (Arg)	526	Aguayay (Per)	520	Akai (Tur)	841
				Adhara LXXXI (Arg)	526	Aguayay (Per)	520	Akai (Tur)	841
				Adhara LXXXII (Arg)	526	Aguayay (Per)	520	Akai (Tur)	841
				Adhara LXXXIII (Arg)	526	Aguayay (Per)	520	Akai (Tur)	841
				Adhara LXXXIV (Arg)	526	Aguayay (Per)	520	Akai (Tur)	841
				Adhara LXXXV (Arg)	526	Aguayay (Per)	520	Akai (Tur)	841
				Adhara LXXXVI (Arg)	526	Aguayay (Per)	520	Akai (Tur)	841
				Adhara LXXXVII (Arg)	526	Aguayay (Per)	520	Akai (Tur)	841
				Adhara LXXXVIII (Arg)	526	Aguayay (Per)	520	Akai (Tur)	841
				Adhara LXXXIX (Arg)	526	Aguayay (Per)	520	Akai (Tur)	841
				Adhara LXXXX (Arg)	526	Aguayay (Per)	520	Akai (Tur)	841
				Adhara LXXXXI (Arg)	526	Aguayay (Per)	520	Akai (Tur)	841
				Adhara LXXXXII (Arg)	526	Aguayay (Per)	520	Akai (Tur)	841
				Adhara LXXXXIII (Arg)	526	Aguayay (Per)	520	Akai (Tur)	841
				Adhara LXXXXIV (Arg)	526	Aguayay (Per)	520	Akai (Tur)	841
				Adhara LXXXXV (Arg)	526	Aguayay (Per)	520	Akai (Tur)	841
				Adhara LXXXXVI					

Gurbet (Tur)	855	Hankonieni (Fin)	258	SSFM Julio Correa Hernandez (Col)	77	HQ 261-264, 301, 321, 331-332, 341, 352, 374, 357, 368, 384-386 (Vin)	989	Ilma (Alb)...	3
Gurna (Geo)	279	Hanna (Jpn)	486	Heron (Arg)	12	HQ 301 series (Vin)	989	Illichivsk (Ukr)	854
Garapa (Brz)	78	Hansabai (Jpn)	824	Heron (US)	967	HQ 37, 55, 59, 316, 317, 327, 374, 376, 378, 381, 387 (Vin)	990	Ilustrious (UK)	822
Garupa (Brz)	78	Hansaya (Sri)	766	Heron I-IV (Bnd)	67	HQ 37, 55, 59, 316, 317, 327, 374, 376, 378, 381, 387 (Vin)	990	Ileofs Norie (Jpn)	614
Gawen (Tur)	844	Haaruz (Mor)	538	Herrera (Per)	201	HQ 37, 55, 59, 316, 317, 327, 374, 376, 378, 381, 387 (Vin)	990	Iloilo (Jpn)	610
Gwadar (Pak)	583	Haras 1-5 (Oma)	581	Herten (Ger)	201	HQ 37, 55, 59, 316, 317, 327, 374, 376, 378, 381, 387 (Vin)	990	Ilya Muromets (Rus)	697
GY SGT Fred W Stockham (US)	960	Haras 21-34 (Oma)	581	Hervy Bay (Aust)	41	HQ 37, 55, 59, 316, 317, 327, 374, 376, 378, 381, 387 (Vin)	990	Iman (Rus)	991
H									
H 4-10 (Pol)	126	Haras 6-10 (Oma)	581	Hess (Arg)	73	HQ 601, 608, 614, 618, 619, 627, 643, 651, 661, 669-671, 673, 996 (Vin)	992	Iman Bonjol (Indo)	356
H 22 (It)	489	Haras 11 (Oma)	581	Hesse (Ger)	287	HQ 782, 851, 861, 864, 871, 885 (Vin)	991	Iman Gazzali (Ban)	80
H 181 186 (Ind)	352	Harrisand (US)	945	Herman Savandachuy (Kr)	849	Hrvatska Kostajnica (Cro)	181	Imanta (Lat)	480
H 500-502 (Tur)	841	Hartel (Esp)	945	Heter (Esp)	78	Hsu (Dai) (Tai)	543	Imbas (Tur)	855
H K Taurus (SV)	709	Harp (Can)	89	Hewes (US)	673	Hsu (Dai) (Tai)	543	IMP I-II (Spn)	760
Hainson (Iran)	380	Harpes Ferry (US)	945	Hewes (US)	673	Hsu (Dai) (Tai)	543	Impeccable (US)	976
Hairlem (Nld)	550	Hartel Lane (US)	961	Hewes (US)	673	Hsu (Dai) (Tai)	543	Imperial Marinheiro (Brz)	79
Habbah Khan (Ind)	351	Harry Carbone (US)	960	Hewes (US)	673	Hsu (Dai) (Tai)	543	Inagua (Blm)	16
Hachico (Jpn)	431	Harris Truman (US)	977	Hewes (US)	673	Hsu (Dai) (Tai)	543	Inaba (Jpn)	447
Hada (Mex)	539	Hartford (US)	971	Hewes (US)	673	Hsu (Dai) (Tai)	543	Inazuma (Jpn)	432
Haddock (US)	967	Hartland Point (UK)	897	Hewes (US)	673	Hsu (Dai) (Tai)	543	Inlaw (My)	741
Al Hadi (Egy)	719	Hartman (Jpn)	894	Hewes (US)	673	Hsu (Dai) (Tai)	543	Inoepandocia (Brz)	75
El Hadi (Algeria)	-	Hartmann (Jpn)	894	Hewes (US)	673	Hsu (Dai) (Tai)	543	Independencia (Mex)	572
CPL Louis J Hauge, Jr (US)	960	Hartmann (Jpn)	894	Hewes (US)	673	Hsu (Dai) (Tai)	543	Independencia (Per)	606
H 4-10 (Pol)	126	Hartmann (Jpn)	894	Hewes (US)	673	Hsu (Dai) (Tai)	543	Independencia (Per)	606
H 22 (It)	489	Hartmann (Jpn)	894	Hewes (US)	673	Hsu (Dai) (Tai)	543	Independencia (Per)	606
H 181 186 (Ind)	352	Hartmann (Jpn)	894	Hewes (US)	673	Hsu (Dai) (Tai)	543	Independencia (Per)	606
H 500-502 (Tur)	841	Hartmann (Jpn)	894	Hewes (US)	673	Hsu (Dai) (Tai)	543	Independencia (Per)	606
H K Taurus (SV)	709	Hartmann (Jpn)	894	Hewes (US)	673	Hsu (Dai) (Tai)	543	Independencia (Per)	606
Hainson (Iran)	380	Hartmann (Jpn)	894	Hewes (US)	673	Hsu (Dai) (Tai)	543	Independencia (Per)	606
Hairlem (Nld)	550	Hartmann (Jpn)	894	Hewes (US)	673	Hsu (Dai) (Tai)	543	Independencia (Per)	606
Habbah Khan (Ind)	351	Hartmann (Jpn)	894	Hewes (US)	673	Hsu (Dai) (Tai)	543	Independencia (Per)	606
Hachico (Jpn)	431	Hartmann (Jpn)	894	Hewes (US)	673	Hsu (Dai) (Tai)	543	Independencia (Per)	606
Hada (Mex)	539	Hartmann (Jpn)	894	Hewes (US)	673	Hsu (Dai) (Tai)	543	Independencia (Per)	606
Haddock (US)	967	Hartmann (Jpn)	894	Hewes (US)	673	Hsu (Dai) (Tai)	543	Independencia (Per)	606
Al Hadi (Egy)	719	Hartmann (Jpn)	894	Hewes (US)	673	Hsu (Dai) (Tai)	543	Independencia (Per)	606
El Hadi (Algeria)	-	Hartmann (Jpn)	894	Hewes (US)	673	Hsu (Dai) (Tai)	543	Independencia (Per)	606
CPL Louis J Hauge, Jr (US)	960	Hartmann (Jpn)	894	Hewes (US)	673	Hsu (Dai) (Tai)	543	Independencia (Per)	606
H 4-10 (Pol)	126	Hartmann (Jpn)	894	Hewes (US)	673	Hsu (Dai) (Tai)	543	Independencia (Per)	606
H 22 (It)	489	Hartmann (Jpn)	894	Hewes (US)	673	Hsu (Dai) (Tai)	543	Independencia (Per)	606
H 181 186 (Ind)	352	Hartmann (Jpn)	894	Hewes (US)	673	Hsu (Dai) (Tai)	543	Independencia (Per)	606
H 500-502 (Tur)	841	Hartmann (Jpn)	894	Hewes (US)	673	Hsu (Dai) (Tai)	543	Independencia (Per)	606
H K Taurus (SV)	709	Hartmann (Jpn)	894	Hewes (US)	673	Hsu (Dai) (Tai)	543	Independencia (Per)	606
Hainson (Iran)	380	Hartmann (Jpn)	894	Hewes (US)	673	Hsu (Dai) (Tai)	543	Independencia (Per)	606
Hairlem (Nld)	550	Hartmann (Jpn)	894	Hewes (US)	673	Hsu (Dai) (Tai)	543	Independencia (Per)	606
Habbah Khan (Ind)	351	Hartmann (Jpn)	894	Hewes (US)	673	Hsu (Dai) (Tai)	543	Independencia (Per)	606
Hachico (Jpn)	431	Hartmann (Jpn)	894	Hewes (US)	673	Hsu (Dai) (Tai)	543	Independencia (Per)	606
Hada (Mex)	539	Hartmann (Jpn)	894	Hewes (US)	673	Hsu (Dai) (Tai)	543	Independencia (Per)	606
Haddock (US)	967	Hartmann (Jpn)	894	Hewes (US)	673	Hsu (Dai) (Tai)	543	Independencia (Per)	606
Al Hadi (Egy)	719	Hartmann (Jpn)	894	Hewes (US)	673	Hsu (Dai) (Tai)	543	Independencia (Per)	606
El Hadi (Algeria)	-	Hartmann (Jpn)	894	Hewes (US)	673	Hsu (Dai) (Tai)	543	Independencia (Per)	606
CPL Louis J Hauge, Jr (US)	960	Hartmann (Jpn)	894	Hewes (US)	673	Hsu (Dai) (Tai)	543	Independencia (Per)	606
H 4-10 (Pol)	126	Hartmann (Jpn)	894	Hewes (US)	673	Hsu (Dai) (Tai)	543	Independencia (Per)	606
H 22 (It)	489	Hartmann (Jpn)	894	Hewes (US)	673	Hsu (Dai) (Tai)	543	Independencia (Per)	606
H 181 186 (Ind)	352	Hartmann (Jpn)	894	Hewes (US)	673	Hsu (Dai) (Tai)	543	Independencia (Per)	606
H 500-502 (Tur)	841	Hartmann (Jpn)	894	Hewes (US)	673	Hsu (Dai) (Tai)	543	Independencia (Per)	606
H K Taurus (SV)	709	Hartmann (Jpn)	894	Hewes (US)	673	Hsu (Dai) (Tai)	543	Independencia (Per)	606
Hainson (Iran)	380	Hartmann (Jpn)	894	Hewes (US)	673	Hsu (Dai) (Tai)	543	Independencia (Per)	606
Hairlem (Nld)	550	Hartmann (Jpn)	894	Hewes (US)	673	Hsu (Dai) (Tai)	543	Independencia (Per)	606
Habbah Khan (Ind)	351	Hartmann (Jpn)	894	Hewes (US)	673	Hsu (Dai) (Tai)	543	Independencia (Per)	606
Hachico (Jpn)	431	Hartmann (Jpn)	894	Hewes (US)	673	Hsu (Dai) (Tai)	543	Independencia (Per)	606
Hada (Mex)	539	Hartmann (Jpn)	894	Hewes (US)	673	Hsu (Dai) (Tai)	543	Independencia (Per)	606
Haddock (US)	967	Hartmann (Jpn)	894	Hewes (US)	673	Hsu (Dai) (Tai)	543	Independencia (Per)	606
Al Hadi (Egy)	719	Hartmann (Jpn)	894	Hewes (US)	673	Hsu (Dai) (Tai)	543	Independencia (Per)	606
El Hadi (Algeria)	-	Hartmann (Jpn)	894	Hewes (US)	673	Hsu (Dai) (Tai)	543	Independencia (Per)	606
CPL Louis J Hauge, Jr (US)	960	Hartmann (Jpn)	894	Hewes (US)	673	Hsu (Dai) (Tai)	543	Independencia (Per)	606
H 4-10 (Pol)	126	Hartmann (Jpn)	894	Hewes (US)	673	Hsu (Dai) (Tai)	543	Independencia (Per)	606
H 22 (It)	489	Hartmann (Jpn)	894	Hewes (US)	673	Hsu (Dai) (Tai)	543	Independencia (Per)	606
H 181 186 (Ind)	352	Hartmann (Jpn)	894	Hewes (US)	673	Hsu (Dai) (Tai)	543	Independencia (Per)	606
H 500-502 (Tur)	841	Hartmann (Jpn)	894	Hewes (US)	673	Hsu (Dai) (Tai)	543	Independencia (Per)	606
H K Taurus (SV)	709	Hartmann (Jpn)	894	Hewes (US)	673	Hsu (Dai) (Tai)	543	Independencia (Per)	606
Hainson (Iran)	380	Hartmann (Jpn)	894	Hewes (US)	673	Hsu (Dai) (Tai)	543	Independencia (Per)	606
Hairlem (Nld)	550	Hartmann (Jpn)	894	Hewes (US)	673	Hsu (Dai) (Tai)	543	Independencia (Per)	606
Habbah Khan (Ind)	351	Hartmann (Jpn)	894	Hewes (US)	673	Hsu (Dai) (Tai)	543	Independencia (Per)	606
Hachico (Jpn)	431	Hartmann (Jpn)	894	Hewes (US)	673	Hsu (Dai) (Tai)	543	Independencia (Per)	606
Hada (Mex)	539	Hartmann (Jpn)	894	Hewes (US)	673	Hsu (Dai) (Tai)	543	Independencia (Per)	606
Haddock (US)	967	Hartmann (Jpn)	894	Hewes (US)	673	Hsu (Dai) (Tai)	543	Independencia (Per)	606
Al Hadi (Egy)	719	Hartmann (Jpn)	894	Hewes (US)	673	Hsu (Dai) (Tai)	543	Independencia (Per)	606
El Hadi (Algeria)	-	Hartmann (Jpn)	894	Hewes (US)	673	Hsu (Dai) (Tai)	543	Independencia (Per)	606
CPL Louis J Hauge, Jr (US)	960	Hartmann (Jpn)	894	Hewes (US)	673	Hsu (Dai) (Tai)	543	Independencia (Per)	606
H 4-10 (Pol)	126	Hartmann (Jpn)	894	Hewes (US)	673	Hsu (Dai) (Tai)	543	Independencia (Per)	606
H 22 (It)	489	Hartmann (Jpn)	894	Hewes (US)	673	Hsu (Dai) (Tai)	543	Independencia (Per)	606
H 181 186 (Ind)	352	Hartmann (Jpn)	894	Hewes (US)	673	Hsu (Dai) (Tai)	543	Independencia (Per)	606
H 500-502 (Tur)	841	Hartmann (Jpn)	894	Hewes (US)	673	Hsu (Dai) (Tai)	543	Independencia (Per)	606
H K Taurus (SV)	709	Hartmann (Jpn)	894	Hewes (US)	673	Hsu (Dai) (Tai)	543	Independencia (Per)	606
Hainson (Iran)	380	Hartmann (Jpn)	894	Hewes (US)	673	Hsu (Dai) (Tai)	543	Independencia (Per)	606
Hairlem (Nld)	550	Hartmann (Jpn)	894	Hewes (US)	673	Hsu (Dai) (Tai)	543	Independencia (Per)	606
Habbah Khan (Ind)	351	Hartmann (Jpn)	894	Hewes (US)	673	Hsu (Dai) (Tai)	543	Independencia (Per)	606
Hachico (Jpn)	431	Hartmann (Jpn)	894	Hewes (US)	673	Hsu (Dai) (Tai)	543	Independencia (Per)	606
Hada (Mex)	539	Hartmann (Jpn)	894	Hewes (US)	673	Hsu (Dai) (Tai)	543	Independencia (Per)	606
Haddock (US)	967	Hartmann (Jpn)	894	Hewes (US)	673	Hsu (Dai) (Tai)	543	Independencia (Per)	606
Al Hadi (Egy)	719	Hartmann (Jpn)	894	Hewes (US)	673	Hsu (Dai) (Tai)	543	Independencia (Per)	606
El Hadi (Algeria)	-	Hartmann (Jpn)	894	Hewes (US)	673	Hsu (Dai) (Tai)	543	Independencia (Per)	606
CPL Louis J Hauge, Jr (US)	960	Hartmann (Jpn)	894	Hewes (US)	673	Hsu (Dai) (Tai)	543	Independencia (Per)	606
H 4-10 (Pol)	126	Hartmann (Jpn)	894	Hewes (US)	673	Hsu (Dai) (Tai)	543	Independencia (Per)	606
H 22 (It)	489	Hartmann (Jpn)	894	Hewes (US)	673	Hsu (Dai) (Tai)	543	Independencia (Per)	606
H 181 186 (Ind)	352	Hartmann (Jpn)	894	Hewes (US)	673	Hsu (Dai) (Tai)	543	Independencia (Per)	606
H 500-502 (Tur)	841	Hartmann (Jpn)	894	Hewes (US)	673	Hsu (Dai) (Tai)	543	Independencia (Per)	606
H K Taurus (SV)	709	Hartmann (Jpn)	894	Hewes (US)	673	Hsu (Dai) (Tai)	543	Independencia (Per)	606
Hainson (Iran)	380	Hartmann (Jpn)	894	Hewes (US)	673	Hsu (Dai) (Tai)	543	Independencia (Per)	606
Hairlem (Nld)	550	Hartmann (Jpn)	894	Hewes (US)	673	Hsu (Dai) (Tai)	543	Independencia (Per)	606
Habbah Khan (Ind)	351	Hartmann (Jpn)	894	Hewes (US)	673	Hsu (Dai) (Tai)	543	Independencia (Per)	606
Hachico (Jpn)	431	Hartmann (Jpn)	894	Hewes (US)	673	Hsu (Dai) (Tai)	543	Independencia (Per)	606
Hada (Mex)	539	Hartmann (Jpn)	894	Hewes (US)	673	Hsu (Dai) (Tai)	543	Independencia (Per)	606
Haddock (US)	967	Hartmann (Jpn)	894	Hewes (US)	673	Hsu (Dai) (Tai)	543	Independencia (Per)	606
Al Hadi (Egy)	719	Hartmann (Jpn)	894	Hewes (US)	673	Hsu (Dai) (Tai)	543	Independencia (Per)	606
El Hadi (Algeria)	-	Hartmann (Jpn)	894	Hewes (US)	673	Hsu (Dai) (Tai)	543	Independencia (Per)	606
CPL Louis J Hauge, Jr (US)	960	Hartmann (Jpn)	894	Hewes (US)	673	Hsu (Dai) (Tai)	543	Independencia (Per)	606
H 4-10 (Pol)	126	Hartmann (Jpn)	894	Hewes (US)	673	Hsu (Dai) (Tai)	543	Independencia (Per)	606
H 22 (It)	489	Hartmann (Jpn)	894	Hewes (US)	673	Hsu (Dai) (Tai)	543	Independencia (Per)	606
H 181 186 (Ind)	352	Hartmann (Jpn)	894	Hewes (US)	673	Hsu (Dai) (Tai)	543	Independencia (Per)	606
H 500-502 (Tur)	841	Hartmann (Jpn)	894	Hewes (US)	673	Hsu (Dai) (Tai)	543	Independencia (Per)	606
H K Taurus (SV)	709	Hartmann (Jpn)	894	Hewes (US)	673	Hsu (Dai) (Tai)	543	Independencia (Per)	606
Hainson (Iran)	380								

Krakow (Pol)	622	La Fayette (Fra)	256	LC 01-02 (NZ)	561	Lane (US)	971	M 325-326 (AZ)	31
Kralj Dmitar Zvonimir (Cro)	87	La Fayette (Fra)	267	LC 1 (Mld)	897	Lanlen (CPR)	144	M 327-328 (AZ)	1
Kralj Petar Kresimir IV (Cro)	87	La Galite (Tan)	823	LCM 701-710 (Myn)	542	Lara (Esp)	479	MA 1-3 (Ger)	91
Krasnodarsk (Rus)	601	La Glorieuse (Fra)	762	LCP 1-4 (Den)	195	Larson (US)	55	Maanshan (CPR)	66
Krasnoperekopsk (Ukr)	555	La Gloireuse (Fra)	767	LCT 101-102-104 (Ban)	60	Larsen (Nor)	153	Maanshan (Nld)	584
Krasnoyarsk (Rus)	651	La Gracieuse (Esp)	754	LCVP 9473 (UK)	886	Larsen (Nor)	153	Al Mabrukah (Omni)	575
Krestov (Gre)	300	La Grania (Fra)	759	LD 41-42 (Uru)	978	Larsen (Nor)	153	Macareu (Por)	64
Krechet (Rus)	707	La Grania (Fra)	768	LD 45-46 (Uru)	977	Larsen (Nor)	153	Macchi (Ita)	1
Kremenchuk (Ukr)	55	La Grania (Fra)	768	Le Four (Fra)	265	Larsen (Nor)	153	Macchi (Per)	603
Kremenets (Ukr)	588	La Granzetta (Fra)	486	Le Malin (Fra)	70	Larsen (Nor)	153	Machado (Chi)	7
Krona (Rus)	585	La Gloireuse (Fra)	773	Le Comorant (Fra)	736	Larsen (Nor)	153	Macham (Iran)	79
Krosna (Ind)	337	La Grania (Fra)	914	Le Comorant (Fra)	736	Larsen (Nor)	153	Machao (Fra)	37
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Kronshott (Ger)	292	La Motte-Picquet (Fra)	754	L'Étoile De Mer (Fra)	771	Larsen (Nor)	153	Macon (US)	9
Kubovozas (Rus)	707	La Oriflora (Ven)	982	Lech (Pol)	625	Larsen (Nor)	153	Mactan (Plp)	613
Kuasa (Jpn)	438	La Oriflora (Ven)	111	Lech (Pol)	500	Larsen (Nor)	153	Madan Singh (Ind)	310
Kuhle 21 (Den)	236	La Plata (Arg)	22	Ledbury (UK)	887	Larsen (Nor)	153	Madecme (Lit)	489
Kunene (Indo)	567	La Punta (Per)	606	Lee Bokgi (RoK)	459	Larsen (Nor)	153	Madhumati (Ban)	55
Kuka (US)	669	La Rallieuse (Fra)	262	Lee Jungmu (RoK)	459	Larsen (Nor)	153	Madoa S'Ve	77
Kukukari (Gua)	875	La Rieuse (Fra)	767	Lee Sunsin (RoK)	459	Larsen (Nor)	153	Madryn (Arg)	53
Kukup (Mly)	503	La Sola (Ban)	66	Al Leeth (SAU)	716	Larsen (Nor)	153	Maeyama (Jpn)	132
Kura (Jpn)	733	La Spina (Ita)	110	Leewinn (Aus)	36	Larsen (Nor)	153	Maestrale (Ita)	306
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Kurken (Swe)	777	Lebas (Mly)	563	Leskeri (Nor)	573	Larsen (Nor)	153	Magenta (Rus)	656
Kurmbach (Ger)	791	Laboe (Ger)	761	Leskeri (Nor)	573	Larsen (Nor)	153	Magenta (Rus)	70
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Kupang (Indo)	561	Lake Bahr (Plp)	615	Leonid Demin (Rus)	685	Larsen (Nor)	153	Magneto-Gorsk (Rus)	669
Kupang (Mly)	502	Lake Bausen (Plp)	615	Leopard (Fra)	268	Larsen (Nor)	153	Magneto-Gorsk (Rus)	669
Kuruna (Jpn)	725	Lake Champarny (US)	771	Leopard (Rus)	656	Larsen (Nor)	153	Magneto-Gorsk (Rus)	669
Kuruman (Mly)	503	Lake Erie (US)	921	Leopold I (Bel)	62	Larsen (Nor)	153	Magneto-Gorsk (Rus)	669
Kureven (Den)	195	Lake Pasa (Plp)	613	Leopoldo Regis (Plp)	617	Larsen (Nor)	153	Magneto-Gorsk (Rus)	669
Kurui (Tun)	823	Lake Tana (Plp)	615	Leopoldo Regis (Plp)	617	Larsen (Nor)	153	Magneto-Gorsk (Rus)	669
Kurhama (Jpn)	153	Laksamana Hang Nadim (Mly)	197	Leopoldo Regis (Plp)	617	Larsen (Nor)	153	Magneto-Gorsk (Rus)	669
Kurikoma (Jpn)	138	Laksamana Muhammad Anan (Mly)	497	Leopoldo Regis (Plp)	617	Larsen (Nor)	153	Magneto-Gorsk (Rus)	669
Kurur (Rus)	688	Laksamana Tan Pusmah (Mly)	497	Leopoldo Regis (Plp)	617	Larsen (Nor)	153	Magneto-Gorsk (Rus)	669
Kururagi (Jpn)	444	Laksamana Tun Abdul Jamil (Mly)	197	Leopoldo Regis (Plp)	617	Larsen (Nor)	153	Magneto-Gorsk (Rus)	669
Kurur (Jpn)	734	Laksamana Tun Abdul Jamil (Mly)	197	Leopoldo Regis (Plp)	617	Larsen (Nor)	153	Magneto-Gorsk (Rus)	669
Kurur (Sud)	76	Laksamana Tun Abdul Jamil (Mly)	197	Leopoldo Regis (Plp)	617	Larsen (Nor)	153	Magneto-Gorsk (Rus)	669
Kurur (Jpn)	131	Laksamana Tun Abdul Jamil (Mly)	197	Leopoldo Regis (Plp)	617	Larsen (Nor)	153	Magneto-Gorsk (Rus)	669
SGT Maley Kocak (US)	961	Lakshmi (Ban)	55	Leopoldo Regis (Plp)	617	Larsen (Nor)	153	Magneto-Gorsk (Rus)	669
SSGT Robert T Kuroda (US)	917	Lampung Mangkurat (Indo)	650	Leopoldo Regis (Plp)	617	Larsen (Nor)	153	Magneto-Gorsk (Rus)	669
Kurokumi (Jpn)	111	Lampo B'long (Indo)	668	Leopoldo Regis (Plp)	617	Larsen (Nor)	153	Magneto-Gorsk (Rus)	669
Kuroshima (Jpn)	151	Lan Yang (Twn)	790	Leopoldo Regis (Plp)	617	Larsen (Nor)	153	Magneto-Gorsk (Rus)	669
Kuroshio (Jpn)	715	Lan Yang (Twn)	790	Leopoldo Regis (Plp)	617	Larsen (Nor)	153	Magneto-Gorsk (Rus)	669
Kurs (Rus)	704	Lancaster (UK)	878	Leopoldo Regis (Plp)	617	Larsen (Nor)	153	Magneto-Gorsk (Rus)	669
Kurs (Lat)	488	Lancaster (UK)	878	Leopoldo Regis (Plp)	617	Larsen (Nor)	153	Magneto-Gorsk (Rus)	669
Kururagi (Jpn)	446	Lancaster (UK)	878	Leopoldo Regis (Plp)	617	Larsen (Nor)	153	Magneto-Gorsk (Rus)	669
Kururagi (Tur)	536	Lancaster (UK)	878	Leopoldo Regis (Plp)	617	Larsen (Nor)	153	Magneto-Gorsk (Rus)	669
Kusyara (Ban)	56	Lancaster (UK)	878	Leopoldo Regis (Plp)	617	Larsen (Nor)	153	Magneto-Gorsk (Rus)	669
Kurur (Mly)	502	Lancaster (UK)	878	Leopoldo Regis (Plp)	617	Larsen (Nor)	153	Magneto-Gorsk (Rus)	669
Kurur (Jpn)	339	Lancaster (UK)	878	Leopoldo Regis (Plp)	617	Larsen (Nor)	153	Magneto-Gorsk (Rus)	669
Kurur (Jpn)	341	Lancaster (UK)	878	Leopoldo Regis (Plp)	617	Larsen (Nor)	153	Magneto-Gorsk (Rus)	669
Kurur (Jpn)	342	Lancaster (UK)	878	Leopoldo Regis (Plp)	617	Larsen (Nor)	153	Magneto-Gorsk (Rus)	669
Kurur (Jpn)	343	Lancaster (UK)	878	Leopoldo Regis (Plp)	617	Larsen (Nor)	153	Magneto-Gorsk (Rus)	669
Kurur (Jpn)	344	Lancaster (UK)	878	Leopoldo Regis (Plp)	617	Larsen (Nor)	153	Magneto-Gorsk (Rus)	669
Kurur (Jpn)	345	Lancaster (UK)	878	Leopoldo Regis (Plp)	617	Larsen (Nor)	153	Magneto-Gorsk (Rus)	669
Kurur (Jpn)	346	Lancaster (UK)	878	Leopoldo Regis (Plp)	617	Larsen (Nor)	153	Magneto-Gorsk (Rus)	669
Kurur (Jpn)	347	Lancaster (UK)	878	Leopoldo Regis (Plp)	617	Larsen (Nor)	153	Magneto-Gorsk (Rus)	669
Kurur (Jpn)	348	Lancaster (UK)	878	Leopoldo Regis (Plp)	617	Larsen (Nor)	153	Magneto-Gorsk (Rus)	669
Kurur (Jpn)	349	Lancaster (UK)	878	Leopoldo Regis (Plp)	617	Larsen (Nor)	153	Magneto-Gorsk (Rus)	669
Kurur (Jpn)	350	Lancaster (UK)	878	Leopoldo Regis (Plp)	617	Larsen (Nor)	153	Magneto-Gorsk (Rus)	669
Kurur (Jpn)	351	Lancaster (UK)	878	Leopoldo Regis (Plp)	617	Larsen (Nor)	153	Magneto-Gorsk (Rus)	669
Kurur (Jpn)	352	Lancaster (UK)	878	Leopoldo Regis (Plp)	617	Larsen (Nor)	153	Magneto-Gorsk (Rus)	669
Kurur (Jpn)	353	Lancaster (UK)	878	Leopoldo Regis (Plp)	617	Larsen (Nor)	153	Magneto-Gorsk (Rus)	669
Kurur (Jpn)	354	Lancaster (UK)	878	Leopoldo Regis (Plp)	617	Larsen (Nor)	153	Magneto-Gorsk (Rus)	669
Kurur (Jpn)	355	Lancaster (UK)	878	Leopoldo Regis (Plp)	617	Larsen (Nor)	153	Magneto-Gorsk (Rus)	669
Kurur (Jpn)	356	Lancaster (UK)	878	Leopoldo Regis (Plp)	617	Larsen (Nor)	153	Magneto-Gorsk (Rus)	669
Kurur (Jpn)	357	Lancaster (UK)	878	Leopoldo Regis (Plp)	617	Larsen (Nor)	153	Magneto-Gorsk (Rus)	669
Kurur (Jpn)	358	Lancaster (UK)	878	Leopoldo Regis (Plp)	617	Larsen (Nor)	153	Magneto-Gorsk (Rus)	669
Kurur (Jpn)	359	Lancaster (UK)	878	Leopoldo Regis (Plp)	617	Larsen (Nor)	153	Magneto-Gorsk (Rus)	669
Kurur (Jpn)	360	Lancaster (UK)	878	Leopoldo Regis (Plp)	617	Larsen (Nor)	153	Magneto-Gorsk (Rus)	669
Kurur (Jpn)	361	Lancaster (UK)	878	Leopoldo Regis (Plp)	617	Larsen (Nor)	153	Magneto-Gorsk (Rus)	669
Kurur (Jpn)	362	Lancaster (UK)	878	Leopoldo Regis (Plp)	617	Larsen (Nor)	153	Magneto-Gorsk (Rus)	669
Kurur (Jpn)	363	Lancaster (UK)	878	Leopoldo Regis (Plp)	617	Larsen (Nor)	153	Magneto-Gorsk (Rus)	669
Kurur (Jpn)	364	Lancaster (UK)	878	Leopoldo Regis (Plp)	617	Larsen (Nor)	153	Magneto-Gorsk (Rus)	669
Kurur (Jpn)	365	Lancaster (UK)	878	Leopoldo Regis (Plp)	617	Larsen (Nor)	153	Magneto-Gorsk (Rus)	669
Kurur (Jpn)	366	Lancaster (UK)	878	Leopoldo Regis (Plp)	617	Larsen (Nor)	153	Magneto-Gorsk (Rus)	669
Kurur (Jpn)	367	Lancaster (UK)	878	Leopoldo Regis (Plp)	617	Larsen (Nor)	153	Magneto-Gorsk (Rus)	669
Kurur (Jpn)	368	Lancaster (UK)	878	Leopoldo Regis (Plp)	617	Larsen (Nor)	153	Magneto-Gorsk (Rus)	669
Kurur (Jpn)	369	Lancaster (UK)	878	Leopoldo Regis (Plp)	617	Larsen (Nor)	153	Magneto-Gorsk (Rus)	669
Kurur (Jpn)	370	Lancaster (UK)	878	Leopoldo Regis (Plp)	617	Larsen (Nor)	153	Magneto-Gorsk (Rus)	669
Kurur (Jpn)	371	Lancaster (UK)	878	Leopoldo Regis (Plp)	617	Larsen (Nor)	153	Magneto-Gorsk (Rus)	669
Kurur (Jpn)	372	Lancaster (UK)	878	Leopoldo Regis (Plp)	617	Larsen (Nor)	153	Magneto-Gorsk (Rus)	669
Kurur (Jpn)	373	Lancaster (UK)	878	Leopoldo Regis (Plp)	617	Larsen (Nor)	153	Magneto-Gorsk (Rus)	669
Kurur (Jpn)	374	Lancaster (UK)	878	Leopoldo Regis (Plp)	617	Larsen (Nor)	153	Magneto-Gorsk (Rus)	669
Kurur (Jpn)	375	Lancaster (UK)	878	Leopoldo Regis (Plp)	617	Larsen (Nor)	153	Magneto-Gorsk (Rus)	669
Kurur (Jpn)	376	Lancaster (UK)	878	Leopoldo Regis (Plp)	617	Larsen (Nor)	153	Magneto-Gorsk (Rus)	669
Kurur (Jpn)	377	Lancaster (UK)	878	Leopoldo Regis (Plp)	617	Larsen (Nor)	153	Magneto-Gorsk (Rus)	669
Kurur (Jpn)	378	Lancaster (UK)	878	Leopoldo Regis (Plp)	617	Larsen (Nor)	153	Magneto-Gorsk (Rus)	669
Kurur (Jpn)	379	Lancaster (UK)	878	Leopoldo Regis (Plp)	617	Larsen (Nor)	153	Magneto-Gorsk (Rus)	669
Kurur (Jpn)	380	Lancaster (UK)	878	Leopoldo Regis (Plp)	617	Larsen (Nor)	153	Magneto-Gorsk (Rus)	669
Kurur (Jpn)	381	Lancaster (UK)	878	Leopoldo Regis (Plp)	617	Larsen (Nor)	153	Magneto-Gorsk (Rus)	669
Kurur (Jpn)	382	Lancaster (UK)	878	Leopoldo Regis (Plp)	617	Larsen (Nor)	153	Magneto-Gorsk (Rus)	669
Kurur (Jpn)	383	Lancaster (UK)	878	Leopoldo Regis (Plp)	617	Larsen (Nor)	153	Magneto-Gorsk (Rus)	669
Kurur (Jpn)	384	Lancaster (UK)	878	Leopoldo Regis (Plp)	617	Larsen (Nor)	153	Magneto-Gorsk (Rus)	669
Kurur (Jpn)	385	Lancaster (UK)	878	Leopoldo Regis (Plp)	617	Larsen (Nor)	153	Magneto-Gorsk (Rus)	669
Kurur (Jpn)	386	Lancaster (UK)	878	Leopoldo Regis (Plp)	617	Larsen (Nor)	153	Magneto-Gorsk (Rus)	669
Kurur (Jpn)	387	Lancaster (UK)	878	Leopoldo Regis (Plp)	617	Larsen (Nor)	153	Magneto-Gorsk (Rus)	669
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Manila (U)	773	Mancho (Per)	718	Maipo (Ch)	527	Montpelier (U)	914		
Manistee (US)	954	Mancho (Per)	718	Maiaco (Ch)	12	Montreal (Can)	100	Naantali (Fin)	245
Manjang (Mly)	504	Mancho (Per)	718	Maiaco (Ch)	410	Montrose (UK)	878	Nacome (Hon)	318
Mans (Den)	194	Mancho (Per)	718	Maiaco (Ch)	928	Moonam (Iran)	379	Nachi (Jpn)	443
Manawa (Aust)	32	Mancho (Per)	718	Maipo (Ch)	926	Moonmu Daewang (RoK)	461	Na Daejong (RoK)	459
Al Manoud (Lby)	486	Mancho (Per)	718	Maipo (Ch)	417	Moose (Can)	104	Nadzhnyy (Rus)	699
Manowar (US)	967	Mancho (Per)	718	Maipo (Ch)	911	Moran Valverde (Esp)	206	Nadzhnyy (Rus)	699
Al Mansour (Omn)	577	Mancho (Per)	718	Maipo (Ch)	415	Moran Valverde (Esp)	967	Nadzhnyy (Rus)	699
Manta (US)	967	Mancho (Per)	718	Maipo (Ch)	527	Moravia (Cyp)	21	Nagasaki (Jpn)	443
Manatzen (US)	730	Mancho (Per)	718	Maipo (Ch)	551	Moravia (Cyp)	681	Nagasaki (Jpn)	443
Manatzen (US)	734	Mancho (Per)	718	Maipo (Ch)	112	Moravia (Cyp)	597	Nagasaki (Jpn)	443
Mantilla (Arg)	22	Mancho (Per)	718	Maipo (Ch)	887	Moravia (Cyp)	963	Nagasaki (Jpn)	443
Manuel Clavero (Per)	603	Mancho (Per)	718	Maipo (Ch)	963	Moravia (Cyp)	822	Nahid (Can)	168
Manuel Dolado (Mex)	201	Mancho (Per)	718	Maipo (Ch)	507	Moravia (Cyp)	605	Nahid (Can)	168
Manuel Gomez (Pip)	611	Mancho (Per)	718	Maipo (Ch)	646	Moravia (Cyp)	678	Nahid (Can)	168
Manuel Gutierrez Zamora (Mex)	520	Mancho (Per)	718	Maipo (Ch)	622	Moravia (Cyp)	969	Nahid (Can)	168
Manuel Jose Arce (EIS)	226	Mancho (Per)	718	Maipo (Ch)	65	Moravia (Cyp)	175	Nahid (Can)	168
Manuel Lopez (Per)	597	Mancho (Per)	718	Maipo (Ch)	227	Moravia (Cyp)	773	Nahid (Can)	168
Manuel Saenz (Ch)	71	Mancho (Per)	718	Maipo (Ch)	610	Moravia (Cyp)	677	Nahid (Can)	168
Manuel (Rus)	692	Mancho (Per)	718	Maipo (Ch)	177	Moravia (Cyp)	821	Nahid (Can)	168
Mantilla (Arg)	22	Mancho (Per)	718	Maipo (Ch)	597	Moravia (Cyp)	571	Nahid (Can)	168
Mantilla (Arg)	22	Mancho (Per)	718	Maipo (Ch)	535	Moravia (Cyp)	293	Nahid (Can)	168
Manuel Dolado (Mex)	201	Mancho (Per)	718	Maipo (Ch)	649	Moravia (Cyp)	698	Nahid (Can)	168
Manowar (US)	967	Mancho (Per)	718	Maipo (Ch)	706	Moravia (Cyp)	666	Nahid (Can)	168
Mar Caribe (Spn)	756	Mancho (Per)	718	Maipo (Ch)	693	Moravia (Cyp)	720	Nahid (Can)	168
Mar Del Plata (Arg)	72	Mancho (Per)	718	Maipo (Ch)	885	Moravia (Cyp)	439	Nahid (Can)	168
Mara (Ven)	985	Mancho (Per)	718	Maipo (Ch)	760	Moravia (Cyp)	683	Nahid (Can)	168
Marajo (Brz)	86	Mancho (Per)	718	Maipo (Ch)	439	Moravia (Cyp)	441	Nahid (Can)	168
Marathon (Per)	602	Mancho (Per)	718	Maipo (Ch)	324	Moravia (Cyp)	796	Nahid (Can)	168
Maraseni (Rom)	642	Mancho (Per)	718	Maipo (Ch)	198	Moravia (Cyp)	97	Nahid (Can)	168
Marban (UAE)	860	Mancho (Per)	718	Maipo (Ch)	276	Moravia (Cyp)	8	Nahid (Can)	168
Marbus Hanna (US)	969	Mancho (Per)	718	Maipo (Ch)	441	Moravia (Cyp)	6	Nahid (Can)	168
Margaria (Ven)	982	Mancho (Per)	718	Maipo (Ch)	683	Moravia (Cyp)	7	Nahid (Can)	168
Maria Bray (US)	969	Mancho (Per)	718	Maipo (Ch)	434	Moravia (Cyp)	6	Nahid (Can)	168
Maria L. Pendo (Arg)	23	Mancho (Per)	718	Maipo (Ch)	900	Moravia (Cyp)	555	Nahid (Can)	168
Mariano Abasolo (Mex)	514	Mancho (Per)	718	Maipo (Ch)	912	Moravia (Cyp)	939	Nahid (Can)	168
Mariano Escobedo (Mex)	520	Mancho (Per)	718	Maipo (Ch)	445	Moravia (Cyp)	893	Nahid (Can)	168
Mariano Matamoros (Mex)	520	Mancho (Per)	718	Maipo (Ch)	311	Moravia (Cyp)	4	Nahid (Can)	168
Mariano (Per)	601	Mancho (Per)	718	Maipo (Ch)	702	Moravia (Cyp)	750	Nahid (Can)	168
Maria Miljo (Den)	169	Mancho (Per)	718	Maipo (Ch)	522	Moravia (Cyp)	6	Nahid (Can)	168
Mariano Jarano (Spn)	756	Mancho (Per)	718	Maipo (Ch)	678	Moravia (Cyp)	571	Nahid (Can)	168
Mario Marino (Ita)	401	Mancho (Per)	718	Maipo (Ch)	646	Moravia (Cyp)	176	Nahid (Can)	168
Mario Villegas (Col)	122	Mancho (Per)	718	Maipo (Ch)	573	Moravia (Cyp)	177	Nahid (Can)	168
Mariwaldk Zapfen Boot	68	Mancho (Per)	718	Maipo (Ch)	428	Moravia (Cyp)	177	Nahid (Can)	168
Mariwaldk Zapfen Boot	68	Mancho (Per)	718	Maipo (Ch)	541	Moravia (Cyp)	177	Nahid (Can)	168
Mariwaldk Zapfen Boot	68	Mancho (Per)	718	Maipo (Ch)	947	Moravia (Cyp)	177	Nahid (Can)	168
Mariwaldk Zapfen Boot	68	Mancho (Per)	718	Maipo (Ch)	912	Moravia (Cyp)	177	Nahid (Can)	168
Mariwaldk Zapfen Boot	68	Mancho (Per)	718	Maipo (Ch)	263	Moravia (Cyp)	814	Nahid (Can)	168
Mariwaldk Zapfen Boot	68	Mancho (Per)	718	Maipo (Ch)	731	Moravia (Cyp)	36	Nahid (Can)	168
Mariwaldk Zapfen Boot	68	Mancho (Per)	718	Maipo (Ch)	405	Moravia (Cyp)	195	Nahid (Can)	168
Mariwaldk Zapfen Boot	68	Mancho (Per)	718	Maipo (Ch)	324	Moravia (Cyp)	683	Nahid (Can)	168
Mariwaldk Zapfen Boot	68	Mancho (Per)	718	Maipo (Ch)	392	Moravia (Cyp)	839	Nahid (Can)	168
Mariwaldk Zapfen Boot	68	Mancho (Per)	718	Maipo (Ch)	438	Moravia (Cyp)	576	Nahid (Can)	168
Mariwaldk Zapfen Boot	68	Mancho (Per)	718	Maipo (Ch)	441	Moravia (Cyp)	214	Nahid (Can)	168
Mariwaldk Zapfen Boot	68	Mancho (Per)	718	Maipo (Ch)	820	Moravia (Cyp)	560	Nahid (Can)	168
Mariwaldk Zapfen Boot	68	Mancho (Per)	718	Maipo (Ch)	835	Moravia (Cyp)	588	Nahid (Can)	168
Mariwaldk Zapfen Boot	68	Mancho (Per)	718	Maipo (Ch)	447	Moravia (Cyp)	448	Nahid (Can)	168
Mariwaldk Zapfen Boot	68	Mancho (Per)	718	Maipo (Ch)	442	Moravia (Cyp)	48, 50	Nahid (Can)	168
Mariwaldk Zapfen Boot	68	Mancho (Per)	718	Maipo (Ch)	444	Moravia (Cyp)	588	Nahid (Can)	168
Mariwaldk Zapfen Boot	68	Mancho (Per)	718	Maipo (Ch)	573	Moravia (Cyp)	503	Nahid (Can)	168
Mariwaldk Zapfen Boot	68	Mancho (Per)	718	Maipo (Ch)	694	Moravia (Cyp)	9	Nahid (Can)	168
Mariwaldk Zapfen Boot	68	Mancho (Per)	718	Maipo (Ch)	689	Moravia (Cyp)	365	Nahid (Can)	168
Mariwaldk Zapfen Boot	68	Mancho (Per)	718	Maipo (Ch)	694	Moravia (Cyp)	337	Nahid (Can)	168
Mariwaldk Zapfen Boot	68	Mancho (Per)	718	Maipo (Ch)	694	Moravia (Cyp)	578	Nahid (Can)	168
Mariwaldk Zapfen Boot	68	Mancho (Per)	718	Maipo (Ch)	689	Moravia (Cyp)	486	Nahid (Can)	168
Mariwaldk Zapfen Boot	68	Mancho (Per)	718	Maipo (Ch)	814	Moravia (Cyp)	963	Nahid (Can)	168
Mariwaldk Zapfen Boot	68	Mancho (Per)	718	Maipo (Ch)	589	Moravia (Cyp)	588	Nahid (Can)	168
Mariwaldk Zapfen Boot	68	Mancho (Per)	718	Maipo (Ch)	477	Moravia (Cyp)	245	Nahid (Can)	168
Mariwaldk Zapfen Boot	68	Mancho (Per)	718	Maipo (Ch)	921	Moravia (Cyp)	773	Nahid (Can)	168
Mariwaldk Zapfen Boot	68	Mancho (Per)	718	Maipo (Ch)	418	Moravia (Cyp)	443	Nahid (Can)	168
Mariwaldk Zapfen Boot	68	Mancho (Per)	718	Maipo (Ch)	27	Moravia (Cyp)	623	Nahid (Can)	168
Mariwaldk Zapfen Boot	68	Mancho (Per)	718	Maipo (Ch)	524	Moravia (Cyp)	20	Nahid (Can)	168
Mariwaldk Zapfen Boot	68	Mancho (Per)	718	Maipo (Ch)	774	Moravia (Cyp)	858	Nahid (Can)	168
Mariwaldk Zapfen Boot	68	Mancho (Per)	718	Maipo (Ch)	661	Moravia (Cyp)	852	Nahid (Can)	168
Mariwaldk Zapfen Boot	68	Mancho (Per)	718	Maipo (Ch)	700	Moravia (Cyp)	8	Nahid (Can)	168
Mariwaldk Zapfen Boot	68	Mancho (Per)	718	Maipo (Ch)	527	Moravia (Cyp)	860	Nahid (Can)	168
Mariwaldk Zapfen Boot	68	Mancho (Per)	718	Maipo (Ch)	555	Moravia (Cyp)	701	Nahid (Can)	168
Mariwaldk Zapfen Boot	68	Mancho (Per)	718	Maipo (Ch)	958	Moravia (Cyp)	674	Nahid (Can)	168
Mariwaldk Zapfen Boot	68	Mancho (Per)	718	Maipo (Ch)	241	Moravia (Cyp)	607	Nahid (Can)	168
Mariwaldk Zapfen Boot	68	Mancho (Per)	718	Maipo (Ch)	124	Moravia (Cyp)	466	Nahid (Can)	168
Mariwaldk Zapfen Boot	68	Mancho (Per)	718	Maipo (Ch)	547	Moravia (Cyp)	947	Nahid (Can)	168
Mariwaldk Zapfen Boot	68	Mancho (Per)	718	Maipo (Ch)	36	Moravia (Cyp)	604	Nahid (Can)	168
Mariwaldk Zapfen Boot	68	Mancho (Per)	718	Maipo (Ch)	23	Moravia (Cyp)	39	Nahid (Can)	168
Mariwaldk Zapfen Boot	68	Mancho (Per)	718	Maipo (Ch)	105	Moravia (Cyp)	926	Nahid (Can)	168
Mariwaldk Zapfen Boot	68	Mancho (Per)	718	Maipo (Ch)	883	Moravia (Cyp)	821	Nahid (Can)	168
Mariwaldk Zapfen Boot	68	Mancho (Per)	718	Maipo (Ch)	503	Moravia (Cyp)	637	Nahid (Can)	168
Mariwaldk Zapfen Boot	68	Mancho (Per)	718	Maipo (Ch)	912	Moravia (Cyp)	614	Nahid (Can)	168
Mariwaldk Zapfen Boot	68	Mancho (Per)	718	Maipo (Ch)	839	Moravia (Cyp)	93	Nahid (Can)	168
Mariwaldk Zapfen Boot	68	Mancho (Per)	718	Maipo (Ch)	739	Moravia (Cyp)	96	Nahid (Can)	168
Mariwaldk Zapfen Boot	68	Mancho (Per)	718	Maipo (Ch)	671	Moravia (Cyp)	267	Nahid (Can)	168
Mariwaldk Zapfen Boot	68	Mancho (Per)	718	Maipo (Ch)	750	Moravia (Cyp)	878	Nahid (Can)	168
Mariwaldk Zapfen Boot	68	Mancho (Per)	718	Maipo (Ch)	199	Moravia (Cyp)	820	Nahid (Can)	168
Mariwaldk Zapfen Boot	68	Mancho (Per)	718	Maipo (Ch)	269	Moravia (Cyp)	966	Nahid (Can)	168
Mariwaldk Zapfen Boot	68	Mancho (Per)	718	Maipo (Ch)	622	Moravia (Cyp)	180	Nahid (Can)	168
Mariwaldk Zapfen Boot	68	Mancho (Per)	718	Maipo (Ch)	947	Moravia (Cyp)	200	Nahid (Can)	168
Mariwaldk Zapfen Boot	68	Mancho (Per)	718	Maipo (Ch)	947	Moravia (Cyp)	754	Nahid (Can)	168
Mariwaldk Zapfen Boot	68	Mancho (Per)	718	Maipo (Ch)	542	Moravia (Cyp)	921	Nahid (Can)	168
Mariwaldk Zapfen Boot	68	Mancho (Per)	718	Maipo (Ch)	94	Moravia (Cyp)	681	Nahid (Can)	168
Mariwaldk Zapfen Boot	68	Mancho (Per)	718	Maipo (Ch)	142	Moravia (Cyp)	947	Nahid (Can)	168
Mariwaldk Zapfen Boot	68	Mancho (Per)	718	Maipo (Ch)	527	Moravia (Cyp)	914	Nahid (Can)	168
Mariwaldk Zapfen Boot	68	Mancho (Per)	718	Maipo (Ch)	12	Moravia (Cyp)	100	Nahid (Can)	168
Mariwaldk Zapfen Boot	68	Mancho (Per)	718	Maipo (Ch)	410	Moravia (Cyp)	878	Nahid (Can)	168
Mariwaldk Zapfen Boot	68	Mancho (Per)	718	Maipo (Ch)	928	Moravia (Cyp)	379	Nahid (Can)	168
Mariwaldk Zapfen Boot	68	Mancho (Per)	718	Maipo (Ch)	926	Moravia (Cyp)	461	Nahid (Can)	168
Mariwaldk Zapfen Boot	68	Mancho (Per)	718	Maipo (Ch)	417	Moravia (Cyp)	104	Nahid (Can)	168
Mariwaldk Zapfen Boot	68	Mancho (Per)	718	Maipo (Ch)	911	Moravia (Cyp)	206	Nahid (Can)	168
Mariwaldk Zapfen Boot	68	Mancho (Per)	718	Maipo (Ch)	415	Moravia (Cyp)	967	Nahid (Can)	168
Mariwaldk Zapfen Boot	68	Mancho (Per)	718	Maipo (Ch)	527	Moravia (Cyp)	21	Nahid (Can)	168
Mariwaldk Zapfen Boot	68	Mancho (Per)	718	Maipo (Ch)	112	Moravia (Cyp)	681	Nahid (Can)	168
Mariwaldk Zapfen Boot	68	Mancho (Per)	718	Maipo (Ch)	887	Moravia (Cyp)	597	Nahid (Can)	168
Mariwaldk Zapfen Boot	68	Mancho (Per)	718	Maipo (Ch)	963	Moravia (Cyp)	963	Nahid (Can)	168
Mariwaldk Zapfen Boot	68	Mancho (Per)	718	Maipo (Ch)	507	Moravia (Cyp)	822	Nahid (Can)	168
Mariwaldk Zapfen Boot	68	Mancho (Per)	718	Maipo (Ch)	646	Moravia (Cyp)	605	Nahid (Can)	168
Mariwaldk Zapfen Boot	68	Mancho (Per)	718	Maipo (Ch)	622	Moravia (Cyp)	678	Nahid (Can)	168
Mariwaldk Zapfen Boot	68	Mancho (Per)	718	Maipo (Ch)	65	Moravia (Cyp)	969	Nahid (Can)	168
Mariwaldk Zapfen Boot	68	Mancho (Per)	718	Maipo (Ch)	227	Moravia (Cyp)	175	Nahid (Can)	168
Mariwaldk Zapfen Boot	68	Mancho (Per)	718	Maipo (Ch)	610	Moravia (Cyp)	773	Nahid (Can)	168
Mariwaldk Zapfen Boot	68	Mancho (Per)	718	Maipo (Ch)	177	Moravia (Cyp)	677	Nahid (Can)	168
Mariwaldk Zapfen Boot	68	Mancho (Per)	718	Maipo (Ch)	597	Moravia (Cyp)	821	Nahid (Can)	168
Mariwaldk Zapfen Boot	68	Mancho (Per)	718	Maipo (Ch)	535	Moravia (Cyp)	571	Nahid (Can)	168
Mariwaldk Zapfen Boot	68	Mancho (Per)	718	Maipo (Ch)	649	Moravia (Cyp)	293	Nahid (Can)	168
Mariwaldk Zapfen Boot	68	Mancho (Per)	718	Maipo (Ch)	706	Moravia (Cyp)	698	Nahid (Can)	168
Mariwaldk Zapfen Boot	68	Mancho (Per)	718	Maipo (Ch)	693	Moravia (Cyp)	666	Nahid (Can)	168
Mariwaldk Zapfen Boot	68	Mancho (Per)	718	Maipo (Ch)	885	Moravia (Cyp)	720	Nahid (Can)	168
Mariwaldk Zapfen Boot									

Y 675-679 (Fra)	572	Yara (Aust.)	35	Yoshino (Jpn)	447	Yung Ren (Twn)	794	Zeeleeuw (Nld)	547
Y 830-835 (CPR)	156	Yasuni (Tur)	843	Young Endeavour (Aust)	3	Yung Shun (Twn)	794	Zeeleeuw (Bel)	65
Y 1500 series (SAI)	737	Yasuna (Jpn)	457	YP 663, 665, 680-692, 694-698, 700-702 (US)	952	Yung Sui (Twn)	794	Zellulo (C)	390
Yacoub Qaid Raje (Mtn)	511	Yastreb (Rus)	707	Ypoplourchos Damalos (Gre)	304	Yung Ten (Twn)	794	Zelires (Gre)	309
Yad. Jaron (Myn)	544	Yavros (Mex)	825	Ypoplourchos Degiannis (Gre)	305	Yung Tzu (Twn)	794	Zelenodolsk (Rus)	675
El Yadekh (Alp)	6	Yavre (Ven)	982	Ypoplourchos Gingoropoulos (Gre)	304	Yung Yung (Twn)	794	Zelenograd (Rus)	657
Yadryn (Rus)	684	Yavuz (Tur)	831	Ypoplourchos Kristallidis (Gre)	304	Yung Yung (Rus)	674	Zemaitis (Lit)	158
Yaeshio (Jpn)	415	Yay Bo (Myn)	543	Ypoplourchos Mikontos (Gre)	305	Yung Yung (CPR)	153	Zeske Gramme (Bel)	64
Yayoi (Cpa)	141	YD 200, 201, 205 (Pl)	614	Ypoplourchos Roussen (Gre)	304	Yunwashan (CPR)	153	Zephy (US)	967
Yezaki (Jpn)	443	YD1 01 06 (Jpn)	435	Ypoplourchos Timmas (Gre)	305	Yun (Jpn)	430	Zeus (Gre)	310
Yfho (Cst)	585	YD1 11 (Can)	105	Ypoplourchos Thoupakis (Gre)	305	Yuri Dolgoruky (Rus)	653	Zeus (US)	956
Yafan Chi	175	YD1 17 (US)	952	Ypoplourchos Toumas (Gre)	305	Yusuan (CPR)	654	Zeyda (Myn)	540
Yahko (Jpn)	438	Yee Ree (Rok)	496	Ypoplourchos Voits (Gre)	305	Yusuan (CPR)	654	Zhantian (CPR)	40
Yak. Pipi	613	Yegorik (Rus)	692	YR 01-02 (Jpn)	435	Yusuan (CPR)	654	Zhaotang (CPR)	11
Yak (Tur)	847	Yehua (Arg)	73	Yser (Fra)	276	Yusuan (CPR)	654	Zheleznyakov (Rus)	685
Yakusami (Jpn)	431	Yellow Elder (Bun)	6	YF 58-94 (Jpn)	436	Yuzhuo (CPR)	654	Zhengde (CPR)	59
Yadagin (Jp)	151	Yellowfin (US)	967	YIB 48-49, 150, 157 (Twi)	795	Yuzhuo (CPR)	654	Zhouping (CPR)	41
Yaguano (Jpn)	143	Yellowknife (Can)	103	YTE 13 (Jpn)	431	Zachary (CPR)	423	Zhuang (CPR)	685
Yaniakumi (Jpn)	441	Yelnya (Rus)	681	Yuan Wang 1-2 (CPR)	157	Zachary (CPR)	423	Zhoushan (CPR)	41
Yanad (Rus)	681	Yevgeny Kochushkov (Rus)	681	Yuan Wang 3-6 (CPR)	158	Zachary (CPR)	423	Zhuang (CPR)	140
Al Yamama (SAr)	716	YF 2121, 2124-25, 2127-29, 2132, 2135, 2138, 2141, 2150-51 (Jpn)	430	Yubari (Jpn)	441	Zachary (CPR)	423	Zhuang (CPR)	94
Yamayuka (Jpn)	474	YH200 (Par)	507	Yucatan (Mex)	521	Zachary (CPR)	423	Zhuang (CPR)	47
Yan Aye Aung (Myn)	541	Y. Chen (Rok)	459	Yueh Fen (Twn)	788	Zachary (CPR)	423	Zhuang (CPR)	685
Yan Khwin Aung (Myn)	54	Y. J (Rok)	467	Yuen Feng (Twn)	795	Zachary (CPR)	423	Zhuang (CPR)	140
Yan Min Aung (Myn)	54	Y. Jang (Twn)	796	Yugeshima (Jpn)	432	Zachary (CPR)	423	Zhuang (CPR)	94
Yan Myat Aung (Myn)	54	Yimin (CPR)	44	Yukon (US)	955	Zachary (CPR)	423	Zhuang (CPR)	47
Yan Nsein Aung (Myn)	54	Yichang (CPR)	42	Yulin (CPR)	147	Zachary (CPR)	423	Zhuang (CPR)	685
Yan Zwe Aung (Myn)	54	Yikira (Tur)	829	Yun Hsing (Twn)	799	Zachary (CPR)	423	Zhuang (CPR)	685
Yana (Rus)	697	Yidim (Tur)	831	Yunhou (SAr)	715	Zachary (CPR)	423	Zhuang (CPR)	685
Yandanshang (CPR)	153	Yidiz (Tur)	835	Yunes (Iran)	366	Zachary (CPR)	423	Zhuang (CPR)	685
Yang Yang (Rok)	47	Yinchan (CPR)	139	Yung Chau (Twn)	793	Zachary (CPR)	423	Zhuang (CPR)	685
Yang Yang (CPR)	150	Yi 9 15 (Jpn)	436	Yung Chuan (Twn)	794	Zachary (CPR)	423	Zhuang (CPR)	685
Yang Ma (Lun) (Rok)	663	Yo Sa (Rok)	166	Yung Feng (Twn)	794	Zachary (CPR)	423	Zhuang (CPR)	685
Yao (US)	358	Yodo (Jpn)	413	Yung Fu (Twn)	794	Zachary (CPR)	423	Zhuang (CPR)	685
Yaqui (Mex)	526	Yogaga (Cba)	299	Yung Ku (Twn)	794	Zachary (CPR)	423	Zhuang (CPR)	685
Yaracay (Ven)	983	Yonakuni (Jpn)	439			Zachary (CPR)	423	Zhuang (CPR)	685
Yarbay Kudret Güngör (Tur)	830	Yong Ju (Rok)	466			Zachary (CPR)	423	Zhuang (CPR)	685
Al Yamook (SAr)	734	Yongkingdo (CPR)	161			Zachary (CPR)	423	Zhuang (CPR)	685
Al Yamook (Kw)	476	Yoon Young-Ha (Rok)	467			Zachary (CPR)	423	Zhuang (CPR)	685
Al Yamook (Lyn)	238	Yopito (Ven)	985			Zachary (CPR)	423	Zhuang (CPR)	685
Yaroslav Mady (Rus)	677	York (UK)	876			Zachary (CPR)	423	Zhuang (CPR)	685
Yaruslex (Rus)	702	Yos Sudarso (Indo)	354			Zachary (CPR)	423	Zhuang (CPR)	685

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